Central Queensland Coal Project

Appendix 13 – EIS and SEIS v1 Submissions Register

Central Queensland Coal

CQC SEIS, Version 3

October 2020

Central Queensland Coal Project

Appendix 13 - EIS Submissions

Supplementary Environmental Impact Statement

Central Queensland Coal Project

Appendix A13 – Submission Register

15 January 2019

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Appendix A13 - Submission Register

A total of 34 interested parties including independent organisations, State and Commonwealth advisory agencies and government departments made submissions.

This submission register (Table 1-1) identifies the submitter number, the submission reference number, the relevant section of the EIS that the issue relates to, if applicable, details of the issue and Central Queensland Coal's response or cross-reference location to the response within the Supplementary Environmental Impact Statement (SEIS). Where comments were received as part of the SEIS adequacy review, the review comments have also been included.

Further comments, separate to the original comments to the EIS, were received in response to the submission of the SEIS for adequacy. The comments and associated responses are provided at Table 1-2. Response to additional comments by the Independent Expert Scientific Committee arising out of the SEIS adequacy are at Table 1-3.

As a number of Chapters required updating and new Appendices have been prepared as part of updating the SEIS following the adequacy review, the comments for Table 1-1 have been updated to reflect the changes in the SEIS.

1 Submissions Register

1.1 EIS Submissions and SEIS Adequacy Review Comments

Submitter No.	Submission Reference No.	Relevant EIS Section	EIS Review Issue Detail	SEIS Adequacy Review Comments	Central Queensland Coal Response/SEIS Cross-reference Location
1			No comments	No adequacy review comment	No update to the EIS is proposed.
2			No response	No adequacy review comment	No update to the EIS is proposed.
3	3.1	Chapter 3, Section 3.5.2.1, p.3-42	Proposed closure of the Bruce Highway for blasting for 15-20 minutes every fortnight. Minimum blast sights are located between 150 and 400 metres of the Bruce Highway. This would require almost 2 kilometres of the Highway being closed. Consideration of the proposed blast areas would require a detailed risk management plan. A traffic management plan for each occurrence of road closure should be developed in consultation with QPS (local command).	Now meets requirement - See Page 3-19 Table 3-4 Material changes to the Project description since the EIS release. Following discussions with the Department of Transport and Main Roads (DTMR), it has been determined by Central Queensland Coal that no blasting will be undertaken requiring the closure of the Bruce Highway.	Addressed in Chapter 3, Sections 3.4.1.6 and variously in Chapter 6, Sections 6.7.4 and 6.7.5.
3	3.2	Chapter 3, Section 3.6.1.3 and 3.6.1.4, p.3-60	B-Double vehicles with an average load of 50,000 L will deliver fuel to the installation. Total lubricant consumption is estimated to average around 10,000 L per week. A detailed traffic management plan needs to be developed and provided to QPS (local command) for consideration on transportation of bulk fuel into the site.	Now meets requirement - see Page 6-29 Section 6.10.2. The management measures will be prepared and implemented in close consultation with DTMR and LSC and will be in accordance with relevant transport authorities; work programs, methodologies, guidelines and design manuals.	Addressed in Chapter 6, Section 6.10.7

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3	3.3	Chapter 3, Section 3.6.11, p.3-59	Appropriately designed crib facilities will be included in the administration building, CHPP office, HME workshop and mine office. Mobile Crib Hut Facilities will be provided for mining personnel operating in the field. The Queensland Police Service are to be provided with information about the expected minimum population of crib facilities (fixed and mobile) at peak times.	Now meets requirement- see Page 1-7 Section 1.5 also see Page 6-33 Section 3.4.7. Central Queensland Coal is no longer considering the establishment of an accommodation camp on the Mamelon property as overflow accommodation for construction and operational workers. The Marlborough Caravan Park is currently working with the LSC to add additional accommodation facilities to the Caravan Park. The Caravan Park will be used for overflow accommodation as needed.	Addressed in Chapter 6, Section 3.6.1.
3	3.4	Chapter 3, Section 3.7.4, p.3-64	The majority of the workforce for the Project is anticipated to come from the local area as a drive-in drive-out workforce. Where personnel require local accommodation, this will be provided at the townships of Marlborough, Ogmore, St Lawrence and Clairview. A detailed traffic management plan needs to be developed to ensure the safety of all road users with traffic accessing and egressing the Bruce Highway during change of shift. The construction and operation of the project should aim to: ▪ maintain the safety and efficiency of all affected transport modes for the project workforce and other transport system users ▪ avoid and mitigate impacts including those on the condition of transport infrastructure ▪ ensure any required works are compatible with existing infrastructure and future transport corridors.	Now meets requirement -Appendix 4a - TIA Report Estimates of the workforce generated traffic are detailed in Table E.1. Also see Page 1-7 Section 1.5.	Addressed in Chapter 6, Section 6.5.1.
4	4.1		This Project will be great for local employment and increased royalties to the Government. It should proceed as soon as possible.	No adequacy review comment.	No update to the EIS is proposed.

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5	5.1		Mackay Regional Council's areas of interest relates to direct and cumulative impacts of the Central Queensland Coal Project: ▪ 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; ▪ Potential impact on Council's regional road infrastructure.	No adequacy review comment.	No recommendation. No update to the EIS proposed.
5	5.2		Mackay Regional Council recognises that due to the location of the Central Queensland Coal Project, the project's local environmental impacts will be experienced and addressed through measures in the Livingstone Shire Council area. Mackay Regional Council recognise the positive economic impacts to the regional economy from the Central Queensland Coal Project. The impacts on the Mackay region can include: ▪ A number the workforce of up to 200 construction employees and up to 500 operational employees being sourced from the Mackay Region; ▪ The use of the Paget industrial area in Mackay, as a well-established mining serviced hub,' to provide mining support services to the project; ▪ The use for the preferred coal export port at the Dalrymple Bay Coal Terminal at the Port of Hay Point to provide export and import services for the project, in collaboration with the North Coast Rail Line.	No adequacy review comment.	No recommendation. No update to the EIS proposed.
5	5.3		The EIS notes the potential for adverse visual amenity impacts, including visibility from homesteads and persons travelling in both directions on the Bruce Highway. Mackay Regional Council would recommend and support additional mitigation measures to address visual amenity, including vegetation screening as mentioned in the EIS to minimise the visual impact.	No adequacy review comment.	The EIS already proposes vegetation screening to minimising visual impacts. No update to the EIS proposed.

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5	5.4		In summary, Council recognises the positive economic impacts that will arise from the proposed Central Queensland Coal Project to the Central Queensland and Mackay region and supports the project, subject to the appropriate consideration of environmental impacts and achieving the relevant approvals from local and state government and agencies.	No adequacy review comment.	No recommendation. No update to the EIS proposed.
6	6.1	Chapter 6, Section 6.5.1. p.6-6	The EIS proposes all traffic associated with the Project is assumed to access the site via a single vehicular access point proposed on the Bruce Highway. Provide Queensland Ambulance Service (QAS) with a copy of the site map and access road egress to all areas of the site. Provide a visible sign from the roadside that clearly identifies QAS entry to the project areas in the event of an emergency, including access via haul roads.	QAS is satisfied that a site map will be provided as it will form part of the Emergency Plan. QAS is satisfied that a visible sign will be installed from the roadside for emergency services entry. These issues have been addressed in Section 20.7.4.	Addressed in Chapter 20, Section 20.7.4
6	6.2	Chapter 20, Section 20.7.4, p.20-14	The EIS proposes an Emergency Response Plan will be developed. The QAS request a copy of any emergency and risk plans once formulated.	QAS is satisfied that a copy of the Emergency Response Plan will be provided.	Addressed in Chapter 20, Section 20.7.4
6	6.3	Chapter 20, Section 20.7.4, p.20-15	The EIS proposes that a Mine Emergency Exercise will be conducted each year. Notification to QAS of planned exercises, either practical or tabletop, for attendance and participation.	QAS is satisfied that notification will be provided of planned exercises.	Addressed in Chapter 20, Section 20.7.4
6	6.4	Chapter 20, Section 20.7.4, p.20-15	The EIS proposes that provisions will be made for a QAS paramedic to service the site to work with the health team to ensure time loss during emergencies/incidents are reduced where possible and provide paramedical services including emergency patient care, health and welfare checks, certification in first-aid and low voltage rescue and drug and alcohol testing. Further contact with QAS is required should health and welfare checks and drug and alcohol testing be required, as these services are not currently offered.	QAS is satisfied that the Proponent understands that QAS does not provide health and welfare checks or drug and alcohol testing.	Addressed in Chapter 20, Section 20.7.4

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7	7.1	Chapter 1, Section 1.10.3.9, p.1-39 and Chapter 3, Section 3.4.4.1, p.3-36	The project documentation has not recognised that the other tenures within the project area aside from freehold, with these tenures being three road reserves and two State-issued leases, on which any quarry materials belong to the State. Consequently, the following statements are not complete: ▪ S1.10.3.9 "The Project and associated infrastructure are located on freehold land with no forest products or quarry materials reserved to the State and as such no authorities are required under the Forestry Act". ▪ S3.4.4.1, last paragraph "The Project is located on freehold land with no forest products or quarry materials reserved to the State". The Proponent should recognise that there are tenures within the mining leases on which any quarry materials are State-owned. The Proponent should alter the documentation as necessary to reflect this. The Proponent should note that: ▪ Department of Agriculture and Fisheries (DAF) acknowledges that a mining lessee is authorised under the mining lease to remove and use State-owned quarry material from within the mining lease for mining and mining related purposes undertaken by the mining lessee within the boundaries of the mining lease. ▪ Authorisation under the Forestry Act 1959 is however required to remove State-owned quarry material from within the mining lease for whatever proposed use outside of the mining lease. ▪ Authorisation under the Forestry Act 1959 is also required to remove and use State-owned quarry material sourced from outside the mining lease irrespective of the proposed use or proposed location of this proposed use of the quarry material.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 1, Section 1.11 .3.9 and Chapter 3, Sections 3.3.3.1 and 3.5.4.1.

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7	7.2	Chapter 1, Section 1.10.3.9, p.1-39	State-owned forest products and quarry material can occur on tenures other than State lands. As such the first sentence (below) of the section is not accurate: ▪ "The Forestry Act 1959 (Forestry Act) provides for, among other things, the sale and disposal of quarry material and commercially valuable timber on certain State lands". The Proponent should edit the sentence as below: ▪ "The Forestry Act 1959 (Forestry Act) provides for, among other things, the sale and disposal of State-owned quarry material and commercially valuable timber".	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 1, Section 1.11.3.9
7	7.3	Chapter 5, Section 5.9, Table 5-40, p.5-94	Rehabilitation – Returning the project land so that it is suitable for grazing. It is recommended that the last commitment in the contamination part of the table stipulate that the project area is required to be returned to a carrying capacity of 2 head per hectare (as per the opportunity cost calculations in Section 19.7.2.5).	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 5, Section 5.13. Final land use will be for conservation purposes not grazing
7	7.4	Chapter 9, Section 9.2, p.9-2	No reference to Environmental Offsets Act 2014 for waterways providing for fish passage. The Proponent should include: Environmental Offsets Act 2014	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 9, Section 9.2.7
7	7.5	Chapter 9, Section 9.2.6, p.9-4	Incorrect statement: An approval is not required for waterway barrier works within waterways as mining activities are exempt from the Fisheries Act. Approvals for waterway barrier works within waterways are not required within mining lease areas as the Mineral Resources Act 1989 states that the Planning Act 2016 (through which the Fisheries Act 1994 is administered for development within a waterway) does not apply to development authorised under the Mineral Resources Act 1989.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 1, Section 1.11 and Chapter 9, Section 9.2.6

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7	7.6	Chapter 9, Section 9.3.2, p.9-5	No reference or commitment to construct infrastructure and waterway crossings to best practise standards as to not create a waterway barrier and provide for fish passage. Add: Construct infrastructure and waterway crossings using best practise design features to facilitate the passage of all fish species, on all flows as per consultation with Fisheries Queensland.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 9, Sections 9.2.10, 9.6.3.4 and 9.15 and Chapter 15, 15.8.2
7	7.7	Chapter 9, Section 9.4.2, p.9-10	No reference to the Broad Sound declared Fish Habitat Area. Include the Broad Sound declared Fish Habitat Area (management A) on the figure – link to the map https://www.npsr.qld.gov.au/managing/pdf/broadsound.pdf	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 9, Section 9.6.3, Figure 9-89 and Chapter 15, Sections 15.6.2 and 15.11
7	7.8	Chapter 9, Section 9.6.2.5, p.9-101	Discussion sates that the conveyor may be inundated on certain flood events. One sentence states the infrastructure could be dismantled and relocated prior to large events. If the conveyor can be re-located to an area at less risk of inundation from Deep Creek floods, why isn't it proposed to be located here permanently? If coal is discharged into Deep Creek during floods there is the potential risk of mortality, disease or injury to fisheries resources as well as compromising the health, productivity and marketability or suitability for human consumption of fisheries resources. Given that Deep Creek and the location of the infrastructure is 9km upstream of the Broad Sound declared Fish Habitat Area and hosts a wide range of fisheries resources please clarify: ▪ Why the conveyor cannot be permanently relocated away from Deep Creek channel, and is instead located on the banks of Deep Creek? ▪ How the Proponent will know when the infrastructure needs to be relocated? ▪ Discuss the possible impacts, mitigation and remediation plans that would be undertaken should the conveyor flood and coal be discharged to the river system.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 3, Sections 3.4.2 and 3.5.4.1 and Chapter 9, Section 9.6.2
7	7.9	Chapter 9, Section	The results section discusses how the culverts required for the Deep Creek haulage road crossing will increase velocities.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 9, Sections 9.6.3 and 9.15

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		9.6.3.4, p.9-108	Increased velocities through, and as a result of, man-made structures present a significant barrier to Australia's small bodied native fish moving upstream to complete their life cycles. A bridge is the preferred option for reducing the potential impacts for fish passage. Alternatively, constructing culverts with best practise design features will minimise the risks associated with fish passage. The EIS states that culvert roughening is not proposed as it is likely to breach manufacturers standards. All culverts that are proposed through a development approval in Queensland are subject to this standard and can comply. Roughening could be as simple as a broom finish; this acts to break up laminar flow over an otherwise large smooth concrete surface and creates turbulence, which can lower velocities allowing fish to pass the structure. The Proponent states that roughening providing for lower velocity zones of no greater than 0.3 metres/second may not be appropriate given the velocities already modelled in the natural stream channel are greater than this. Natural stream channels have vegetated banks and sandy/rocky/rough stream beds which alter the velocities at the edge and bed of stream creating areas of lower velocity zones, compared to what is measured in the main channel. Providing roughening elements within the culvert structure simulates the natural variation within a stream and provides areas of lower velocities (edge effects) which can allow smaller bodied fish species to pass through these structures, even when the main channel velocity may show a greater reading. 2.1, State Code 18: PO4- AO4.1-4.5 and AO 4.13-4.22: The proponent has made some commitment to meet some of the design specification, however other crucial design features have been omitted. The full suite of requirements is repeated below. Hydraulic conditions (depth, velocities and turbulence) from the downstream to the upstream limit of the structure allow for fish passage of all fish attempting to move through the		and Chapter 15, Section 15.8.2

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			crossing at all flows up to the drown-out of the structure. • For the life of the crossing, the relative levels of: 1. a bed level crossing or a culvert invert 2. bed erosion protection 3. apron scour protection; 4. the stream bed are maintained to avoid drops in elevation at their joins. • The crossing and associated erosion protection structures are installed at no steeper gradient than the waterway bed gradient. • The crossing and associated erosion protection structures are roughened throughout to approximately simulate natural bed conditions. • Design and maintenance measures are in place for the life of the crossing to keep crossings clear of blockages through a regular inspection program in order to retain fish passage through the crossing. • Culverts are only installed where the site conditions do not allow for a bridge. • The combined width of the culvert cell apertures are equal to 100 percent of the main channel width. • The base of the culvert incorporates a low flow channel consistent with the natural low flow channel and: 1. is buried a minimum of 300 millimetres to allow bed material to deposit and reform the natural bed on top of the culvert base; or 2. the base of the culvert is the stream bed; or 3. the base of the culvert cell and any instream scour protection is roughened throughout to approximately simulate natural bed conditions. The outermost culvert cells incorporate roughening elements such as baffles on their bankside sidewalls. • Roughening elements are installed on the upstream wing-walls on both banks to the height of the upstream obvert or the full height of the		

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			wing-wall. • Roughening elements provide a contiguous lower velocity zone (no greater than 0.3 metres/second) for at least 100 millimetres width from the wall through the length of the culvert and wing-walls. • Culvert alignment to the stream flow minimises water turbulence. • There is sufficient light at the entrance to and through the culvert so that fish are not discouraged by a sudden darkness. • The depth of cover above the culvert is as low as structurally possible, except where culverts have an average recurrence interval (ARI) greater than 50 years. • For culvert crossings designed with a flood immunity ARI greater than 50 years, fish passage is provided up to culvert capacity.		
7	7.10	Chapter 9, Figure 9-46, p.9-110	The mapping layer shows incorrect colour reference for the status of the creeks within the project area. The title of the figure is misleading. Use the current mapping layer colour coding to reduce confusion between stream order: Green = Low, Amber = Moderate, Red = High, Purple = Major. Rename Figure 9-46: Declared Fish Habitat Areas and Waterway Barrier Works.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 9, Section 9.6.3, Figure 9-89
7	7.11	Chapter 9, Section 9.10, p.9-139	There is discussion of potential impacts to waterways, and mitigation and monitoring to reduce the likelihood of impacts (S9.11), but there is no commitment or discussion on alert to action if the parameters are exceeded or a large spill/contamination is to occur. Include a section to detail an alert to action for any major impacts to surface waters, including but not limited to: excess sedimentation, direct disturbance to waterways, accidental release of pollutants, hydrology and water flows.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 9, Sections 9.9.2, 9.10.3 and 9.11.4.3.

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7	7.12	Chapter 9, Section 9.10.2, p.9-140	The EIS states that: "the access road will traverse several minor drainage features as the access road loops around the open pit locations… At these crossings, impacts may include: riparian vegetation clearing, direct deformation of the bed and banks, and alteration of hydrological flows. Consequential impacts may include: decreased habitat, increased potential for erosion and an increase in runoff velocity due to effective increase in bed slope that can result from the construction of cross-drainage structures". To mitigate direct impacts to waterways, namely alternation of hydrological flows, it is recommended that ALL waterway crossings are designed with reference to the; Accepted development requirements for operational work that is constructing or raising waterway barrier works for waterways mapped as green, amber or red as per the Queensland waterways for waterway barrier work mapping layers, or as per the SDAP state code 18 PO4 for waterways mapped as purple, as per the mapping layer. Note: certain structures such as bridges, are not considered waterway barriers when designed according to the Fisheries facts sheets: ▪ What is a waterway barrier work (http://daf.qld.gov.au/fisheries/habitats/policies-and-guidelines/fish-habitat-factsheets/what-is-a-waterway-barrier-work); and ▪ What is not a waterway barrier work (https://daf.qld.gov.au/fisheries/habitats/policies-and-guidelines/fish-habitat-factsheets/what-is-not-a-waterway-barrier-work).	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 9, Section 9.6.3.4 and Chapter 15, Section 15.8

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7	7.13	Chapter 10, Section 10.6.5, p.10-52, and Table 10-18, p.10-56	Groundwater Dependent Ecosystems (GDEs) reliant on surface expression of groundwater (Type 2 GDEs); risk of impact to these ecosystems is described as Significant with a Moderate – High threat. These Type 2 GDEs are extremely important in waterways and wetland areas that are ephemeral in nature, as they act as refuge pools for many species of fish that would otherwise desiccate during times of drought. The EIS also states that due to the groundwater drawdown, a change to the tidal regime downstream could be likely. This would have potential impacts on habitats downstream and the aquatic species that rely on these habitats. This potential impact is not acceptable. An alternative solution is to relocate the mine to an area that is not so close to sensitive receptors. If the mine does go forward in this location, please provide an alert to action plan, this should include: ▪ The possible impacts to Type 2 GDE, because of groundwater drawdown. ▪ Mitigation, monitoring and alert parameters ▪ Remediation and action plans to minimise the impacts on Type 2 GDEs, particularly impacts to fisheries habitats and productivity	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.6, 10.7 and 10.8, Chapter 15, Sections 15.6, 15.7and 15.8 and Chapter 16, Sections 16.11 and 16.12
7	7.14	Chapter 10, Section 10.7.3.2, Figures 10-23 to 10-26, p.10-64 to 10-68, and Chapter 15, Section 15.7.9, p.15-63	Type 2 GDEs - As discussed previously, Type 2 GDEs are likely to be confined to the riverine environment of Tooloombah and Deep creeks. While several small wetlands are mapped as having a high potential for groundwater connection, existing bore data suggest limited connectivity as gauged depth to the groundwater is around 10 metres in many locations where wetlands occur. However, Figure 10-19 suggests that around 15 km of the major drainages could be prone to reduced base flow (having the potential to impact on in-stream aquatic ecosystems).	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.6 and 10.7, Chapter 15, Sections 15.6 and 15.7.10.5 and Chapter 16, Section 16.11.

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7	7.15	Chapter 10, Section 10.11, Table 10-22, p.10-82	Table states – Prepare and implement a Water Management Plan that outlines the monitoring and management measures for surface water and groundwater. Include an alert to action plan. Will the proponent be able to manage impacts for the life of the impact? Tables and statements within this chapter (10) indicate that potential groundwater-surface water interactions could be altered for 100 years post mining. This is considered unacceptable.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.7 and 10.8
7	7.16	Chapter 11, Section 11.3.1.1, p.11-6	No reference to re-establishing fish passage. Add dot point: Re-establish fish passage.	See Table 1.2 for SEIS adequacy review comments.	Chapter 11, Section 11.3.1.1.
7	7.17	Chapter 11, Section 11.15, Table 11-6, p.11-50	Provide habitat for fauna and corridors for fauna movement within the final landform Edit statement to: Provide habitat for fauna and corridors for fauna movement within the final landform and waterways.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 11, Sections 11.7.1.2 and 11.20.
7	7.18	Chapter 15, Section 15.5.1.2, p.15-7	Waterways providing for fish passage not listed as MSES. Section 5(2) of the Environmental Offsets Regulation 2014 list Waterway providing for fish passage as a matter of State Environmental Significance. Removing or impounding waterways mapped on the Queensland waterways for waterway barrier works is considered waterway barrier works. Include Waterways providing for fish passage as an MSES.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 15, Sections 15.5.1.2, 15.7.2 and 15.11.
7	7.19	Chapter 15, Section 15.1, Table 15-11, p.15-83	Waterway Fish Passage: The mine haul road will cross Deep Creek and Barrack Creek. Deep Creek is likely to be used for fish passage when flows occur. Barrack Creek appears largely ephemeral. With appropriate crossing construction including culverts no impacts are anticipated. Include: Impacts to waterways as a result of the mine pits; and. Any expected significant residual impacts to waterways providing fish passage.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 15, Sections 15.7.2 and 15.11.

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7	7.20	Chapter 15, Section 15.13, Table 15-13, p.15-89	Fish passage will be maintained at haul road crossing points along Deep Creek and Barrack Creek through incorporating a bridge construction design. At shallower creek crossings culverts designed using guidelines for fish passage will be employed. The statement is supported by DAF, however does not seem to be reflected in previous chapters as detailed in comments above – Chapter 9, Section 9.6.3.4 Culvert Crossings. Bridge crossings have not been discussed in previous chapters or in the mapping.	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 15, Section 15.13. Note: no bridge structure is proposed.
7	7.21	General Comment	Environmental Offsets Act 2014 Offsets may be a requirement for Significant Residual Impacts to waterways providing for fish passage. The total offset can be calculated by using the total surface area of waterways resulting in a significant residual impact and using the Environmental offsets Calculator. The total area would also include the area of impacts to surface water caused by groundwater drawdown and areas affected outside of the mining lease area (e.g. removal of upstream habitat due to removing or diverting waterways and groundwater effects seen outside of the mining lease area).	See Table 1.2 for SEIS adequacy review comments.	Addressed in Chapter 15, Section 15.11.
8	8.1	General Comment	By the calculations of the Residents, during the peak time of the mine up to 11 coal laden trains will pass through Clairview along the NCRL each day. These 11 trains will then return from Dalyrumple Bay Coal Terminal to the proposed mine site unladen but with coal dust residue contained in the wagons.	No adequacy review comment.	Addressed in Chapter 12, Section 12.6.
8	8.2	General Comment	The EIS acknowledges that the emission of dust because of rail haulage is an issue to be considered, however, the EIS states that 'impacts from coal dust generated during rail haulage is expected to be minimal'.	No adequacy review comment.	Addressed in Chapter 12, Section 12.8.
8	8.3	General Comment	Of particular concern to the Residents is the coat dust which is likely to escape from the loaded wagons. Whilst Central Queensland Coal has indicated they will be using coal veneering to reduce dust emissions, the Residents are concerned that whilst veneering may cut down the amount of the dust emissions, it will not eliminate same entirely.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.6 and 12.8.

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8	8.4	General Comment	There is no water supply to Clairview. Every resident relies on rainwater for their water supply and, every Resident has at least one rainwater tank. Rainwater is collected in those tanks from water run-off from rooves. The Residents are concerned that coal dust which becomes air borne from the trains using the North Coast Rail Line will settle on rooves and solar panels and during a rain event that coal dust will be washed into the rainwater supplies of the Residents. The Residents rely on these rainwater supplies not only for washing by also for drinking and they are concerned that the presence of coal dust in such drinking water will impose an unacceptable health risk to the Residents.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.6 and 12.8.
8	8.5	General Comment	The Residents relay on these rainwater supplies not only for washing but also for drinking and they are concerned that the presence of coal dust in such drinking water will impose an unacceptable health risk to the Residents.	No adequacy review comment.	Noted.
8	8.6	General Comment	Further, coal dust will settle not only on roofs of houses but also on the ground including the beach area and the ocean. In a rain event that coal dust will be washed directly into the ocean thus causing environmental issues for the currently untouched beach and ocean area of Clairview. The Clairview area is a dugong and turtle sensitive area. Coal dust washing into the ocean is likely to have a major detrimental effect on their environment and therefore the health of these endangered animals.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.6 and 12.8.
8	8.7	General Comment	It is not only the laden coal vehicles which are of concern to the Residents but also the unladen vehicles which return from Dalrymple Bay Coal Terminal to the proposed mine site. Coal dust residue is likely to be present in those unladen wagons and have the potential to escape in the return process also.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.6 and 12.8.
8	8.8	General Comment	It is well known in the industry that coal dust not only becomes airborne but also settles on the ballasts and any train using the line (not just coal trains) has the potential to stir up the dust settled on the ballasts and cause same to become airborne.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.6 and 12.8.

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8	8.9		The Residents are not only concerned about their water supply but also, the effect which the additional number of trains using the NCRL will have on the ambiance of the Clairview community. The increased use of the line for the purpose of hauling coal will mean trains are a more regular occurrence which when located less than 50 metres from the Residents houses will interfere with their use and enjoyment of their properties.	No adequacy review comment.	Addressed in Chapter 6, Section 6.12.
8	8.10		The vibrations caused by these additional trains may also have an impact on the structural soundness of the houses of the Residents.	No adequacy review comment.	Addressed in Chapter 13, Section 13.7.5.1.
8	8.11		All of the above will no doubt have an effect on the property values of the houses of the Residents and, may even result in the Residents having difficulty in selling same.	No adequacy review comment.	No update to EIS is proposed.
9	9.1	General Comment – working around Powerlink infrastructure	While it is acknowledged that the mine operations are away from the transmission line, if this should change, Powerlink has standard requirements for working around its infrastructure. Please not the advice outlined in Annexure A of the Management of Co-use Guidelines. A copy can be found at: https://www.powerlink.com.au/Co-Use/Management%20of%20Easement%20Co-Use%20Requests%20Guideline.pdf	Powerlink outlined several items that are important to ensure the safe and uninterrupted supply of electricity within the transmission line corridor. The EIS response table states that these items have been addressed in Section 3.5. While I cannot find any direct comments relating to our submission, it is important that the proponent directly engage with Powerlink. All correspondence can be directed to property@powerlink.com.au.	Addressed in Chapter 3, Section 3.5.7.
9	9.2	General Comment - Access	Access to continue to be provided to Easement A on MC529. Powerlink has access rights along the easement identified as Easement A on MC529. Powerlink currently maintains the access track. This is the main access to the easement, as the access along the easement is subject to flooding in minor rain events. Powerlink would like to ensure that this access or an alternative is maintained. Powerlink welcomes the opportunity to work with the Proponent to find an alternative route to the easement should this access be affected. Ensure access is maintained along the easement.	No adequacy review comment.	Addressed in Chapter 3, Section 3.5.7.2.

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9	9.3	General comment – Blasting and vibration	Powerlink's advice for blasting around lines. It is acknowledged that there will be sufficient <sentence stops there> While the blasting and vibration will most likely not affect the transmission line corridor, it is important to note Powerlink's requirements for blasting around its infrastructure. Blasting and/or use of Explosives Approval is given provided that: ▪ Satisfactory safety procedures are observed. ▪ The safe operation of the line is not jeopardised. ▪ Blasting procedures are carried out in accordance with AS2187. ▪ Blasting mats and safety fuses are used. ▪ Generally no blasting will be allowed within 100m of a Powerlink infrastructure. ▪ Blasting in close proximity (between 100m and 500m) to Powerlink's overhead transmission lines or substations should meet the following requirements: 1. a blasting plan is submitted with the application 2. the Peak Particle Velocity (PPV) is not to exceed 10mm/sec, for power line structures and 50mm/sec (Should be as per AS 2187) for buildings. 3. a seismic control device is set up to record the readings. 4. ensure fly rock air blast control, only single shot blasting shall be allowed. ▪ Powerlink may require a monitor on site, for which it will charge the applicant appropriately for the Powerlink Queensland monitor's time on the site during blasting operations. ▪ Powerlink reserves the right to withdraw its consent it, in its opinion, the blasting process becomes hazardous and likely to result in power interruptions. The applicant must give at least seven days prior notice of the commencement of blasting. This allows time for arrangements	No adequacy review comment.	Addressed in Chapter 3, Section 3.5.7.

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			to be made for the monitoring of and/or precautionary instructions to be issued in terms of the blasting operation.		
10	10.1	Chapter 6, Section 6, p.6-1	The last sentence of 2nd paragraph advises worker accommodation / traffic will be assessed separately. This means cumulative project traffic impacts are not fully assessed nor addressed. This approach does not fulfil the requirements of the Terms of Reference (ToR). All project traffic must be included in the assessment and impacts addressed, irrespective of whether approval for worker accommodation construction will be separately applied for.	Response inadequate. It is unclear how the proponent has addressed the issue in s6.6 of the SEIS. S6.6.1 proposed an operational workforce of 250-500, yet the upper estimate of 500 is not reflected in Table 6.7 or in the amended Chapter 6. (The RIA/ Traffic Report has not been amended). The proponent is requested to reassess the workforce at 500 maximum and advise any potential impacts. The proponent's response should be more specific than simply referring to section 6.6 of the SEIS, leaving the reader to guess which sub-section is applicable. The proponent's response should: - provide a clearer reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in this Column response how the issue was addressed. For example; "no separate accommodation now, dispersed throughout community". Note: This requirement applies to most of the proponent's responses to TMR's comments.	Addressed in Chapter 6, Section 6.6.1 and A4a RIA. – To avoid any further confusion, this sentence has been omitted from page 6.1 of EIS chapter. It should also be noted that a review of the EIS document and RIA has been performed to enforce consistency between these two documents.

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10	10.2	Chapter 6, Section 6.2.1, p.6-2	This section very briefly summarises Environmental Objectives as "protecting safety, health & well-being of stakeholders. It omits protecting the transport efficiency and condition of the public road network. Expand the description of objectives and performance criteria in the following s6.2.2 to include these additional elements; a) transport efficiency is maintained (e.g. avoiding road closures of the National Highway (Bruce) during mine blasting operations) b) the condition of infrastructure is preserved (road and rail crossing infrastructure during construction & operations e.g. no subsidence of the Bruce Highway in the future).	This section states that the SEIS has been updated to reflect the TMR submission. Question: Were there no submissions received from Local Government or the public that should be reflected in revised Chapter 6? If so, this should also be recognised. Otherwise, this issue is addressed.	Addressed in Chapter 6, Section 6.2.2.
10	10.3	Chapter 6, Section 6.4.1, p.6-3 and 6-4	There is no specific mention in this section or in Table 6.1 of the need or importance of assessing and managing increased road safety risk from project traffic. Add more detailed assessment of increased road safety risk from project traffic, beyond reporting current crash rates and briefly considering impacts on school bus routes.	Response inadequate. Reason: There is little or no discernible mention of road safety risk assessment in s6.4. While road safety is mentioned later in chapter 6, it is unclear why road safety assessment s6.10.1 is included in s6.10 Mitigation Measures. This section advises the proponent proposes to delay road safety assessment (RSA) until preparation of the road-use management plan (RMP). What happens if the RSA finds minor road improvement works are required? There will be insufficient time to gain approval, obtain a contractor and complete the works if project commencement is estimated to be this year. It is not appropriate to delay the road safety assessment (RSA) until just before project construction, given it is the #1 factor to assess in TMR's Guideline for Traffic Impact Assessment" (GTIA) and also likely the community's highest priority. Sufficient time is needed for TMR to review the RSA, negotiate and agree on any minor improvements that may be necessary, add any road-use management mitigation strategies to the Road-use Management Plan and RMP	Addressed in Chapter 6, Section 6.8.7 and A4a RIA. A road safety assessment and matrix in accordance with GTIA has been prepared to satisfy this comment and is included in the RIA.

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				Commitments Table, and finally to undertake minor improvements or brief transport contractors about agreed road-use.	
10	10.4		(moved to Rail Section)	No adequacy review comment	No Update to EIS.
10	10.5	Chapter 6, Section 6.5.1.1, p.6-6	The first sentence advises there will only be a single access from the Bruce Highway, whereas elsewhere in the EIS it advises access to the east and west will be required. Clarify to ensure consistency in all sections of the EIS.	Acceptable. Proponent must continue to liaise with TMR about design of accesses and seek approvals under s62 and s33 of Transport Infrastructure Act 1994, prior to commencement of access construction. TMR is unable to recommend a suite of conditions for the project until all important previous requirements are dealt with.	Addressed in Chapter 6, Section 6.7.1. The EIS chapter has been amended to enforce the fact that two access intersections are being provided in support of the Project.
10	10.6	Chapter 6, Section 6.5, p.6-6 to 6-9	Section 6 title is "Existing transport infrastructure and Environmental Values" yet s6.5.3 narrowly interprets "environmental values" to mean "natural environmental values" such as air quality and noise. TMR interprets this whole section to describe the values or current standard or condition of the social, economic and natural environment including roads and the transport network. Table 6-2 very briefly describes the Bruce Highway, proximate to the project, but provides little detail of the current standard of the 4 elements which the RIA will assess, apart from current AADT and crash rates. It reports nothing about current intersection or road link performance or overall pavement condition. Provide some more general information of the current standard or risk levels of the other assessable elements of the transport network, apart from AADT or crash rates, such as overall pavement and intersection condition and performance of public roads.	Response inadequate. Reason: S6.10 is about 'Mitigation Measures' and does not provide the information required. The proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response i.e. what extra information was provided.	Addressed in Chapter 6, Figure 6-1 and Sections 6.5.1 and 6.8.2 (details that the baseline capacity of the existing road has been calculated with details presented in the RIA).

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	10.7A	Chapter 6, Section 6.5.1.3, p.6-8	This section mainly considers increased road safety risk in terms of accidents on the Bruce Highway at the project site, rather than in more detail on the entire affected public road network, potentially from Brisbane and Mackay ports. Nor does the EIS really commit to a more substantial road safety risk assessment at a future time. An adequate road safety risk assessment must be undertaken at this stage.	Response inadequate. Reason: S6.10 simply outlines the proponent's proposal for a future assessment and speculates about the potential increased road safety risk. It does not adequately address the issue raised. As previously requested, prepare a draft Road Safety Assessment that assesses all the roads that will carry significant project traffic (further than 5km either side of the mine accesses). The 5% trigger in TMR's GARID or GTIA is for impact assessment (namely a 5% increase in overall project traffic-AADT, especially heavy vehicles, ESAs/SARs. The trigger does not mean "increase in impacts). TMR should be consulted in regard to any existing road safety 'hotspots'. (refer esp. to 2nd paragraph, s9.2 GTIA pg 34) Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in Chapter 6, Section 6.8.7 and A4a - RIA A road safety assessment and matrix in accordance with GTIA has been prepared to satisfy this comment. The information presented in the EIS chapter is consistent with the detail also presented in the RIA.

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	10.7B	Chapter 6, Section 6.6.2 p.6-11	The EIS does not provide information concerning the volumes of goods to be transported in all phases of the project, in accordance with the DEHP EIS Information Guideline – Transport referred to in the ToR's section 8.16. The EIS should include a clear summary of the total transport task for the project including workforce, inputs and outputs, during the construction and operational phases. For each mode of transport and each phase of the project, the EIS should describe the expected volumes, weights and origins/destinations of materials, products, hazardous goods or wastes, key transport generators using a summary traffic/ freight spreadsheet (provided separately).	Response inadequate. Reason: The proponent was requested to comply with the ToRs (and DEHP Transport Guidelines) and identify for each mode of transport and project phase, the best estimates of volumes/weights/type of material, origins/destinations of materials, products, hazardous goods or wastes and key transport generators using a summary traffic/freight spreadsheet. The requested information does not appear to have been provided in Section 6.10 or elsewhere in the SEIS. It is noted that estimated annualised heavy vehicle movements and notional input origins are identified in Section 6.6, and EIS Appendix 4a which hasn't been revised, however estimations of project material volumes and types, (inputs, wastes etc).and traffic associated with each task are not evident. The proponent is requested to provide best estimates of project construction inputs in line with the initial comments provided for the EIS and the DES (previously DEHP) Guideline - Transport referred to in ToR section 8.16. For example providing information about type of loads allows TMR to be clear as to whether typical construction inputs have all been included e.g steel, concrete, quarry materials and so on.	Addressed in Chapter 6, Section 6.6.2 This section details the workforce and heavy vehicle inputs and outputs inclusive of expected origins and destinations of these movements, noting that this information is the best estimate at the time of preparing these documents. The section also highlights that a freight summary spreadsheet is to be completed when more relevant information is determined (i.e. tonnage, materials etc.), as the planning for the Project further develops.

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	10.8	Chapter 6, Section 6.7.6, p.6-17	The last dot point lists damage to poor pavements from project vehicles, whereas s6.7.3 asserts pavement impacts will be negligible. Discussion on the assumptions and rationale for asserting pavement damage will be insignificant needs to be more substantial.	Response inadequate. Reason: It is unclear how the proponent has addressed this issue. The Traffic Report (Appendix 4a) does not appear to have been updated. The proponent has not demonstrated the link between the traffic estimates, current ESAs and those generated by the amended proposal to prove less than 5% increase in equivalent standard axles (ESAs) counts (used in the GARID/ 'Fitzroy' pavement assessment method or standard axle repetitions (SARs) used in TMR's "Guideline for Traffic Impact Assessment' (GTIA). As previously requested, the proponent should provide a more substantial discussion in relation to the assumptions and rationale for asserting pavement damage will be insignificant. Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in Chapter 6, Sections 6.8.5 and 6.10.2 and A4a RIA. The "Pavement Impact Assessment" of the EIS chapter states negligible impacts are expected as a result of the Project. The RIA details the PIA and the rational used for the assessment, which is consistent with the requirements of GARID.

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	10.9A	Chapter 6, Section 6.7.6, p.6-18	Two dot points advise project traffic will delay school transport and other road users, however, there is little in earlier text to explain reasons for this. Road closure of the Bruce Highway due to proposed mine blasting is not mentioned in the EIS. However, this issue was raised at the project EIS briefing at CDM Smith on 21 Nov 2017. Given the EIS is a document also available to the local community for consideration, the omission of the possibility of public road closures for blasting is unfortunate. TMR will not permit the closure of the Bruce Highway for blasting due to the need to keep the national highway opened to all road users, particularly emergency services vehicles and for freight. Provide more information about the nature and duration and why there might be delays to road users and school bus services and include new sections in a Supplementary report. The Supplementary EIS should reflect that TMR will not permit the closure of the Bruce Highway for blasting to occur. The proponent is further requested to propose mitigation strategies/infrastructure responses to ensure project-related traffic does not create delays for other road users on the Bruce Highway.	Response inadequate. Reason: The provided cross reference (Addressed in s6.7) to the two issues raised by TMR, being disruption to school bus services and blasting impacts is unclear. While Ch 6 of the SEIS has indicated no Bruce Highway closures will be required to enable nearby mine blasting, it still foreshadows Bruce Highway lane closures for construction of the under-road conveyor. Please clarify this response to TMR submission regarding any delays to school bus services and other Bruce Highway traffic from proposed lane closures for constructing the conveyor.	Addressed in Chapter 6, Sections 6.7.4, 6.7.5, 6.8.9, 6.10.3, 6.10.7, 6.10.13 and 6.15 and A4a – RIA. Central QLD Coal has agreed to avoid undertaking blasting activities that will require the closure of the Bruce Highway. Central Queensland Coal will also continue to work with DTMR to establish appropriate blasting programs that facilitate the mining of coal in proximity of the Bruce Highway and avoid the need for road closures during blast periods. As such it is anticipated that there will be no operational impacts to vehicles on the Bruce Highway due to blasting activities associated with the Project.

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	10.9B	Chapter 6, Section 6.8.1, p.6-17 to 6-19	This section discusses the potential geotechnical impacts of the mine on the Bruce Highway and advises the proposed mine excavation will not affect stability of the highway embankment and pavement. However, this section does not consider whether the cross-section in Figure 6-5 will leave enough land to allow for the potential widening of the highway to two dual carriageways (a four lane highway) that may even need some additional separation for protection from light from oncoming traffic and general carriageway separation? Geotechnical matters are expanded on in EIS Appendix 4b Geotechnical Assessment. Further TMR comments on Appendix 4b are found at the end of this table. As for the adequacy of the proposed Bruce Highway cross-section, the EIS should be expanded to evaluate and confirm there is sufficient space and structural integrity to allow for the possibility of future widening of the Bruce Highway.	Response inadequate. Reason: The reference to s6.8 is irrelevant, as the Traffic Report Appendix 4a does not appear to be revised. It is noted that QTRIP only projects 4 years into the future, and any longer term planning for the widening of the Bruce Highway should be checked by the proponent with TMR's Fitzroy District officers. The proponent is requested to address the initial issue raised about checking with the district about the adequacy of the highway embankment, both in terms of width and geotechnical stability. Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in Chapter 6, Sections 6.9, 6.10 and 6.15 and A4a RIA. Central Queensland Coal has committed to undertaken further geotechnical investigations within six months of the Project being approved.

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	10.10	Chapter 6, Section 6.8.1, p.6-19	The last paragraph discusses mine blasting near the Bruce Highway. However, this section makes no reference to the possibility of mine blasting affecting users of the National Highway (the Bruce Highway). Include new sections in a Supplementary EIS report on blasting near public roads and how impacts will be managed to ensure ongoing road safety, freight efficiency and access for emergency vehicles.	Response uncommitted Reason: In s6.7.5 Blast Management it states: "avoid undertaking blasting requiring closure of the Bruce Highway.". This commitment should be strengthened to "No blasting will be undertaken that will require closure of the Bruce Highway".	Addressed in Chapter 6, Sections 6.7.5, 6.10.9 and 6.15. Central QLD Coal has agreed to avoid undertaking blasting activities that will require the closure of the Bruce Highway. Central Queensland Coal will also continue to work with DTMR to establish appropriate blasting programs that facilitate the mining of coal in proximity of the Bruce Highway and avoid the need for road closures during blast periods. As such it is anticipated that there will be no impacts to road users on the Bruce Highway due to blasting activities associated with the Project.
	10.11	Chapter 6, Section 6.8.2, p.6-20	This section advises 6m bunds will "…screen off mine operations from the Bruce Highway…" without advising what part they will play in controlling future mine blasting. As required above, provide further detailed information about required measures to manage all potential impacts of mine blasting on public road infrastructure.	Response "see s6.7" is too vague, however, s6.7.5 commits to No blasting requiring closure of Bruce Highway. This commitment must be further extended to demonstrate there will be no potential for flyrock or other dangers to users of public roads.	Addressed in Chapter 6, Sections 6.7.5, 6.10.9.2 and 6.15. Central QLD Coal has agreed to avoid undertaking blasting activities that will require the closure of the Bruce Highway. Central Queensland Coal will also continue to work with DTMR to

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					establish appropriate blasting programs that facilitate the mining of coal in proximity of the Bruce Highway and avoid the need for road closures during blast periods. As such it is anticipated that there will be no impacts to road users on the Bruce Highway due to blasting activities associated with the Project. Safety bunds are required to prevent access to pits, screen off mining operations from the Bruce Highway and control run off water, including any sedimentation. The proposed safety bunds are 6 m high with crest widths of 10 m. Batters are 1.5 (horizontal) on 1 (vertical) which is at the angle of repose. To reduce the potential for erosion, batters will be topsoiled and seeded to prevent scour and erosion. Crests will be formed to a slope at 1% towards the lease.

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					Bunds will be constructed from track compacted, fresh spoil.
	10.12	Chapter 6, Section 6.9.1, p.6-21	The 3rd sentence advises the road-use management plan (RMP) will **consider** addressing a number of road impacts. This is one of a few "lukewarm" commitments in the EIS. TMR is looking for firmer commitments all potential road impacts of project traffic will be adequately investigated and fully addressed. Suggest review the entire document for "consider" statements and consider replacing them with "will" commitments.	Response inadequate. Reason: Whilst some further detail has been provided, there should be further clear commitment to timely action on providing more up to date/detailed traffic estimates, preparing a draft Road Safety Assessment (RSA), draft Road-use Management Plan (RMP) and Commitments Table so these can be quickly finalised before commencement of project construction. Current unrevised impact assessment Appendix 4a and updated mitigation proposals in Ch 6 do not really comply with ToR requirements. State, for example, "RSA and RMP will be finalised (not commenced) 6 months before commencement of project construction".	Addressed in Chapter 6, Section 6.10.1 and Appendix A4c – Draft Road-Use Management Plan.
	10.13	Chapter 6, Section 6.9.1, p.6-21	The first two dot points consider one aspect of public safety (around worksites) and public amenity (obstruction of road users) and elsewhere in the list of dot points, other elements of road safety (reduce traffic generation, safe driver behaviour and fatigue management) but doesn't really consider increased road safety risk at a network level, of project traffic the proponent doesn't directly control, given construction inputs may be hauled from Mackay or Brisbane ports. As previously mentioned, a more comprehensive assessment of increased road safety risk from project traffic on a network level is required. Expand the second dot point to read: *Increased road safety risk on a network level and obstruction to road users;*	Response inadequate. Reason: the cross reference to s6.8 is unclear. More detail are provided in s6.10.1 p6.28 but still only focuses on road safety 5km either side of the mine accesses, not the wider potentially affected road network used for haulage. This section generally asserts road safety risk will be low without much substantiation. The road safety assessment is a key part of the Traffic Impact Assessment, which is required under the project's Terms of Reference. The proponent is requested to address the initial issue raised.	Addressed in Chapter 6, Section 6.8.7 and A4a RIA. A road safety assessment and matrix in accordance with GTIA has been prepared to satisfy this comment. The information presented in the EIS chapter is consistent with the detail also presented in the RIA.

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	10.14A	Chapter 6, Table 6-17, p.6-25	The first row predicts negligible impacts on school transport activities as there are no known bus stops along the Bruce Highway near the project. This seems a very limited range to consider risks, given some project traffic ranges from Mackay and Brisbane ports. Review assumptions and assessment of all potential impacts more widely on the road network than those in the vicinity of the project site.	Response inadequate. Reason: It is unclear how s6.8 addresses the issue raised, as per above. The proponent is requested to address the initial issue raised.	Addressed in Chapter 6, Sections 6.8.2, 6.8.7, 6.8.9 and 6.13 and A4a – RIA. This section highlights that impacts beyond Mackay and Rockhampton have not been considered on the following basis: Although there are state and port trips associated with heavy vehicles which will result in vehicle trips outside of the Mackay to Rockhampton cordon, these trips account to a relatively small percentage (in the order of about 5 vehicle movements per day) of the overall project generated traffic. Furthermore, these trips are expected to diminish beyond Mackay and Rockhampton, in turn lessening the Project generated traffic impacts on the SCR network. Background traffic (AADT) along Bruce Highway is also expected to increase

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					closer to larger regional areas such as Brisbane. This increase in background traffic coupled with low diminishing amounts of project generated traffic outside of Mackay and Rockhampton will further lessen the impact on SCR network beyond these regions. The workforce is not expected to be located in areas beyond Mackay to Rockhampton. It should also be highlighted that the Proponent's workforce fatigue management policy would eliminate the likelihood that members of the workforce would travel from areas beyond Mackay or Rockhampton for typical weekday commuting travel purposes. As such, traffic generated by the workforce is not expected to extend to the SCR north of Mackay or south of Rockhampton.

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	10.14B	Chapter 6, Table 6-17, p.6-25	The proponent is requested to provide further information on the nature and duration of delays for road users resulting from the project. The proponent is further requested to proposed mitigation strategies/infrastructure responses to ensure project related traffic does not create delays for other road users on the Bruce Highway.	Response inadequate. Reason: It is unclear how s6.8 addresses the issue raised. Re-numbered Table 6.16 pgs 6-37 to 39 have not been updated in any way. The proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in Chapter 6, Sections 6.7.4, 6.8.2, 6.8.3 and 6.10.
	10.15	Chapter 6, Table 6-17, p.6-25	The second row again anticipates only short-term delays will result from construction of the project and road upgrades, without mention of delays due to blasting. The mitigation measure: "operators will be licensed and trained appropriately" is unclear. (Does this mean blasting, vehicle or other operators?). Expand this section to more fully consider and document potential traffic delays.	Given this comment is similar to the previous one (14B) and blasting near the Bruce Hwy requiring its temporary closure is not proposed, this comment can be considered closed out.	Addressed in Chapter 6, Sections 6.7.5, 6.10.9 and 6.15. Central QLD Coal has agreed to avoid undertaking blasting activities that will require the closure of the Bruce Highway. Central Queensland Coal will also continue to work with DTMR to establish appropriate blasting programs that facilitate the mining of coal in proximity of the Bruce Highway and avoid the need for road closures during blast periods. As such it is anticipated that there will be no impacts to road users on the Bruce Highway due to blasting

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					activities associated with the Project.
	10.16	Chapter 6, Table 6-17, p.6-26	The 4th row about coal dust does not mention the significant impact of coal dust on rail ballast, namely reducing its effectiveness and life, effectively "lubricating" the intended friction between ballast pieces. Expand this row to include this impact and how it will be managed.	CQCP response covered in a number of sub-sections. (Coal dust management is also raised in Section 12.9.1.1, pg 12-26). Please note that new issues are located in Table 2 (see Table 1.2) below.	Addressed in Chapter 6, Sections 6.12.2 and 6.13.
	10.17	Chapter 6, Section 6.12, p.6-27	The 2nd and 3rd dot point advises the Terra Nova Drive- Vass Road section of the Bruce Highway is likely to drop to Level of Service (LOS) E due to project traffic. It goes on to advise two factors may improve LOS yet does not indicate to what level these factors will improve LOS to a satisfactory level. In addition, the presence of any overtaking lanes along the transport routes will only improve the LOS over the very short length where these lanes are provided. These overtaking lanes will not improve LOS along the vast majority of the transport route and not satisfactorily address the project's traffic impacts. Revise the assessment based on best traffic estimates and likely management strategies to come up with an actual estimated LOS. Provide additional advice as to how the LOS on the transport route will be managed, particularly along the Bruce Highway between Terra Nova Drive and Vass Road.	Response appears adequate, however ongoing liaison with TMR district officers about ensuring proposed road-use management strategies effectively maintain an adequate LOS is required.	Addressed in Chapter 6, Section 6.8.3 and Appendix A4a – RIA. It is expected that the 150m North Terra Nova Dr road link will operate within capacity for the design horizons in both directions, given the increased capacity as a result of overtaking lanes within this road link. Impact mitigation strategies are identified in Section Section 5.5 of Appendix A4A and Section 6.10 of Chapter 6 identifies mitigation strategies to offset potential operational impacts associated with this link by reducing Project generated traffic. Examples of these are strategies are:

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					Staggering shift start / end times such that traffic does not coincide with network peak periods; Scheduling deliveries and heavy vehicle movements such that they do not occur during network peak periods; and Investigating shuttle bus services and car sharing systems to reduce Project traffic.
	10.18	Chapter 6, Table 6-18, p.27 and 28	The Table of Commitments briefly summarises some of the commitments made in this chapter of the EIS. Include further commitments to: - undertake a more comprehensive review of the potential for increased road safety risk from project traffic along a wider range of road network used by project traffic - more information, assessment and proposed mitigation strategies` for any proposed blasting near public roads.	Response inadequate. Reason: proponent proposes to leave road safety assessment too late to allow time for steps required to address any significant findings. (see TMR comments 3, 7A, 12 and 13 above). The proponent is requested to address the initial issue raised.	Addressed in Chapter 6, Sections 6.7.5, 6.8.7, 6.10.9 and 6.15. A road safety assessment and matrix in accordance with GTIA has been prepared to satisfy this comment. The information presented in the EIS chapter is consistent with the detail also presented in the RIA. Central QLD Coal has agreed to avoid undertaking blasting activities that will require the closure of the Bruce Highway.

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					Central Queensland Coal will also continue to work with DTMR to establish appropriate blasting programs that facilitate the mining of coal in proximity of the Bruce Highway and avoid the need for road closures during blast periods. As such it is anticipated that there will be no impacts to road users on the Bruce Highway due to blasting activities associated with the Project.
	10.19	Appendix 4a, Section 1.3, p.3	As in Section 6 of the EIS, this section, Table 1.1 or elsewhere does not specifically mention that a specific road safety assessment of any sort was or will be undertaken. It largely considers road safety near the project site, rather than more widely the potential impacts on the road network used by project traffic. As with comments on the EIS, the RIA requires much more assessment of the potential increase in road safety risk on the whole road network which will be significantly used by project traffic and propose mitigation strategies to manage these. If road-use management strategies are proposed over minor improvements, these need to be detailed now, demonstrating how they will be effective and how the proponent will ensure compliance with the strategies.	TMR notes no updates were made to Appendix 4a Traffic Report Response inadequate. Reason: proponent proposes to leave road safety assessment too late to allow time for steps required to address any significant findings. (see TMR comments 3, 7A, 12 and 13 above). Undertake the road safety assessment and prepare draft report as early as possible to allow sufficient time for its review by TMR, to take a further assessment action required, negotiate about required mitigation strategies, included strategies in the RMP / Commitments Table, gain approval for any minor works and finalise the works prior to commencement of project construction.	Addressed in Chapter 6, Section 6.8.7, A4a - RIA Sections 8 and 9.4 and A4c – Draft Road-Use Management Plan. A road safety assessment and matrix in accordance with GTIA has been prepared to satisfy this comment. The information presented in the RIA chapter is consistent with the detail also presented in the EIS. The RIA also highlights that an RMP will be prepared and will

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					incorporate various strategies to offset road impacts. Examples of these strategies are: Operation of a shuttle bus for the Project workforce, to reduce Project traffic Implementation of a ridesharing scheme to reduce Project traffic Adjusting shift times and heavy vehicle movement scheduling such that Project traffic peaks do not coincide with the network peak period.
	10.20	Appendix 4a, Section 2.4, p.8	While some general information and assumptions about how vehicle numbers were derived is provided in paragraphs above Table 2.2, further detail would help explain the rationale for the data estimates. Provide evidence on how Table 2.2 was derived with regards to the number of heavy vehicles for the project, including a simple road network map or diagram depicting likely traffic flows.	Response inadequate. Reason: It is unclear how s6.8 addresses the issue raised. It appears that incorrect cross references are provided. Even a basic map or network diagram has not been provided, to assist non-local readers unfamiliar with the road names/ sections. The proponent is requested to address the initial issue raised.	Addressed in Chapter 6, Section 6.6.2 and A4a RIA Section 4. Various sections of the RIA highlight that numbers of heavy vehicles and associated movements are based on best knowledge of the Project (at the time of undertaking this assessment) with S4.3 showing a figure of origins and destinations.

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	10.21	Appendix 4a, Section 2.4, p. 8	Similarly for Footnote 1, details about origin/destination movements are limited and should be expanded in this Traffic Impact Assessment. Detail what local, state, regional means in this context. What are the boundaries for local/regional, which ports and so on?	Response in s6.8.1.2, pg 6-20 is minimal but acceptable.	Refer to S4 "Project Traffic Generation" of GTA's RIA report. Figures 4.1 and 4.2 in this section visually illustration and defines Local, Regional and State movement locations and boundaries. Furthermore, as detailed in S6.8.2 analysis has not been extended beyond Mackay and Rockhampton as Project generated impacts are expected to diminish beyond these locations given that workforce traffic will most likely be limited to Mackay and Rockhampton and only a small proportion of heavy vehicle movements will originate or be destined to ports.

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	10.22	Appendix 4a, Section 2.5, p.8	There is only a single reference to the proposed conveyor under the Bruce Highway, without any consideration of what traffic impacts might be generated in its surveying or construction. Assess the potential traffic impacts of surveying and constructing the proposed conveyor and propose road-use management strategies which will be included in the Road-use Management Plan.	Response acceptable. Reason: Given the conveyor is not required until Year 11, sufficient time is available to provide design details, assess potential impacts and manage them. Include commitments to undertake these tasks in an Infrastructure Agreement or other record of committed future tasks and traffic impact management requirements by the proponent.	Addressed in Chapter 6, Sections 6.7.4 and 6.15 and A4a RIA Section 2.5. Section 6.7.4 "Open Cut 1 Conveyor" of the EIS chapter highlights that a Traffic Management Plan (TMP) and Traffic Guidance Scheme (TGS) is proposed to accompany the construction of the proposed conveyor arrangement to pass under the Bruce Highway.
	10.23	Appendix 4a, Section 2.6, p.9	This section advises realignment of Mt Bisson Road and a new intersection will support a number of factors including an onsite workers accommodation, but suggests potential traffic generated by this doesn't need to be assessed, given the accommodation would be subject to a development application under the Planning Act 2017. The Terms of Reference (ToR) require all traffic associated with the project to be assessed and addressed. While this RIA appears to consider some workforce traffic in its calculations, it is not clear whether this includes traffic from the Mt Bisson Road site. In accordance with the ToR, TMR requires all project traffic impacts to be assessed and addressed as part of the EIS, to ensure cumulative impacts are adequately considered.	Response inadequate. Reason: s6.6.1 advises workforce traffic may be as high as 500. However, this chapter does not reflect this assessment. While s6.7.2 advises the Marlborough Caravan Park will now be used, further information must be provided to clarify final workforce numbers, their estimated/likely domicile and demonstration that their traffic impacts have been adequately assessed and addressed. The proponent is requested to update the relevant report/s accordingly.	Addressed in A4a RIA Section 2.6 "Mount-Bisson Road Realignment" of GTA's RIA report, which states that although it was initially intended to provide access to a potential onsite accommodation camp, this accommodation camp will now not proceed and hence, has not been considered within this RIA. All traffic associated with the Project is assumed to access the Project site via the two proposed

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					access intersections on the Bruce Highway.
	10.24	Appendix 4a, Section 3.1, Table 3.2, p.11	This section and table simply lists 3 elements from TMR's Queensland Transport and Roads Investment Program (QTRIP) with very little discussion about its effect, support or relevance to project traffic use or impacts. Expand this section to further evaluate whether/ what QTRIP proposals will do to support project traffic.	Response inadequate. Reason: Issue has not been addressed in s6.8.2, simply "expecting these QTRIP works to increase capacity". The proponent is requested to adequately address the issue/s raised. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; - demonstrate how timing of proposed QTRIP works will help maintain LOS at peak project traffic times; and - clearly summarise in the response how the issue was addressed.	Addressed in A4a RIA Section 3.1 "Road Network", which states that these projects will generally improve capacity along the Bruce Highway and is therefore expected to have a net benefit to the Project. It also states that these benefits have not been considered in the RIA to allow for a worst-case assessment.
	10.25	Appendix 4a, Section 3.2 p.11	The 2nd paragraph states "For the purpose of converting AADT volumes to peak hour volumes, a peak to daily ratio of 15% has been assumed", value is not reflected within the Peak hour flow diagrams, rather, lower background traffic volumes appeared to been used. Confirm and amend subsequent assessment using the 15% value and revise proposed mitigation strategies, as appropriate.	Response inadequate. Reason: The response is unclear.	Addressed in A4a RIA Section 3.2 "Baseline Traffic Volumes" which as mentioned in the report this peak to daily ratio of 15% has been applied.
	10.26	Appendix 4a, Section 3.3, p.12, 13	This section briefly reports crash statistics near the site, without further analysis of the potential increase in road safety risk. Chapter 7 of the GARID requires a much more detailed analysis and discussion. Fatigue crashes have not been considered more widely than adjacent to the proposed mine site. As stated earlier, much more road safety assessment and any required mitigation should be included in this RIA/ EIS. Please discuss this with district contact officers in Fitzroy District. Assess crash history incidents at least 5km either side of site/development frontage, to ensure fatigue crashes accounted for.	Response inadequate. Reason: As previously stated in Comments 3, 7A, 12 and 13, a road safety assessment is required as part of the Traffic Impact Assessment. The response in s6.10.1 generally asserts there will be few impacts, based on crash history. This assertion is not adequately substantiated. Undertake a more detailed road safety assessment earlier rather than later and prepare a draft report which can be quickly revised and	Addressed in A4a RIA Section 8 "Road Safety Risk Assessment. A road safety assessment and matrix in accordance with GTIA has been prepared to satisfy this comment. The information presented in the RIA chapter is consistent

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				finalised if necessary, 6 months before project commencement.	with the detail also presented in the EIS.
	10.27	Appendix 4a, Section 3.4.2, p.13	This section very briefly considers the impacts of project traffic on level crossings and advises given rail services aren't frequent, safety is unlikely to be impacted. However, the section provides insufficient support behind this assertion e.g. consideration of cumulative traffic numbers in Rockhampton and Sarina. Ensure train duration, frequency, clearance times etc. are known before any assertions are made about increased road safety risk from adding project to existing traffic at the busier crossings.	Whilst a reasonable response has been provided, the proponent still proposes to delay detailed investigations. For example, proposing further consultation with QR "until after lodgement of EIS" is unclear, given the project is at the S/EIS stage. Commit to undertaking consultation, further requirements for assessment and agreed mitigation strategies sufficiently early, before project commencement.	Addressed in Chapter 6, Section 6.5.2.2 and A4a RIA Section 3.3.2 "Level Crossings", which states that QR will confirm impacts post lodgement of the EIS. S6.5.2.2 of the EIS states that access proposals have been submitted to both QR and Aurizon.
	10.28	Appendix 4a, Section 4.2, p.14	This section lists some workforce traffic generation information. However, it is not clear whether they have been included in the traffic assessment, given statements elsewhere that traffic generation associated with the Mt Bisson camp were not included in the analysis. See comment 23 regarding TMR's view that all project traffic, irrespective of whether project elements are subject to later approval, should be included in accordance with the ToR.	Response inadequate. Reason: Workforce estimate ranged from 250-500. TMR cannot find where the traffic impacts of the upper limit of 500 workers has been assessed and mitigation strategies proposed. Revise the Traffic Report Appendix 4a, which is the correct place to document traffic impact assessment. Chapter 6 should just be the reader's summary of that Appendix.	Addressed in A4a RIA Section 2.6 "Mount-Bisson Road Realignment", which states that although it was initially intended to provide access to a potential onsite accommodation camp, this accommodation camp will now not proceed and hence, has not been considered within this RIA. As such, all Project generated traffic has been included in the traffic assessment.
	10.29	Appendix 4a, Sections 4.2, 4.2.1 and	The first paragraph in s4.2 and subsequent subsections provide some general information about workforce split assumptions. However, these are based on the outdated, 2011 Census. Census data from 2016 indicates the combined	Response inadequate. Reason: There does not appear to be an analysis of the traffic impacts during the operational stage for a workforce of 250-500.	Addressed in Chapter 6, Section 6.8.1.2. This section details that the census data was

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		Table 4.2, p.14 and 15	population of these areas is 634 (including children and elderly). Total peak workforce of 500 individuals, where 50% would be 250 people; therefore the value appears overly optimistic. Please revise/clarify.	As above.	used only to gain an improved understanding of the proportional size of local towns and not if they have sufficient existing population for the Project workforce.
	10.30	Appendix 4a, Section 4.2.2, p.15	The last paragraph suggests a road-use management strategy that might be considered, namely staggering workforce start time, to reduce network peaks. As part of preparing a draft RMP, the proponent should prepare an RMP Commitments Table, listing these suggested strategies. The sooner firm commitments can be made, the sooner TMR can approve the RIA and RMP in support of the project approval.	Response inadequate. Reason: There is no evidence that the requested Road Use Management Plan (RMP) or its summary Commitments Table has been drafted or provided by the proponent. (It is recognised that brief lists of possible actions are contained in Table 6.17, p6.40). Prepare a timely draft RMP in accordance with TMR's "Guideline for preparing a Road-use Management Plan". (not the GTIA), allowing sufficient time for its review by TMR and any required actions to be completed before project commencement this year.	Addressed in Chapter 6, Section 6.15, A4a – TIA, and Appendix A4c draft RMP. Commitments outlined in section 6.15 will be added as relevant to the RMP, along with any additional conditions required as part of the Project approval. The complete list of conditions relevant to the RMP will be forward to DTMR as part of finalised the draft RMP attached to the SEIS at Appendix A4c.
	10.31	Appendix 4a, Section 4.2.4, p.16	Figure 2.3, pg 6 depicts a rehabilitation schedule 2020 to 2037. However, Table 4.4 pg 16 only considers project traffic at mine accesses in the final (decommissioning stage). Rehabilitation traffic generation should be accounted as a distribution for each design year in Table 4.4.	Response inadequate. Reason: It is unclear how s6.8 addresses the issue raised. The proponent is requested to address the issue/s raised. Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should:	Addressed in A4a RIA Section 4.2 "Workforce Traffic Generation", states that during the rehabilitation phase, the workforce is expected to be substantially reduced when compared to peak periods (i.e. ~ 5% of peak workforce of other design years). As such

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				- provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	analysis of the decommission/rehabilitation years (2036 – 2038) has been excluded from this RIA as significant impacts are not expected during this phase.
	10.32	Appendix 4a, Section 4.3, Table 4.6, p.17	This section provides insufficient detail about assumptions for allocating heavy vehicle movements across the wider road network. Provide a summary of how the total project heavy vehicle movements were estimated in Table 4.6. Looking at the construction phase, it averages out to be 1.1 heavy vehicle movements per day (over 7 years, 320 working days). Looking at the operation period, it averages out to be 8 vehicle movements per day (over 21 years, 320 working days), which appears to be more reasonable.	Response inadequate. Reason: It is unclear how/where s6.8 specifically addresses the issue raised. The proponent is requested to address the issue/s raised. Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in A4a RIA Section 4.3 "Heavy Vehicle Traffic Generation" of GTA's RIA report which states the following rational has been adopted to estimate annual heavy vehicle movements for the Project: Heavy vehicle generation associated with construction has been separated into two distinct time horizons as discussed in Section 2.4. The first construction phase will occur from 2019 to 2020. The second construction phase will occur over a three-year period between 2027 and 2029. Approximately one third of the construction effort will be required during the first construction phase, and

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					the remaining two thirds will be required during the second construction phase. The annualised heavy vehicle operations profile has been approximated based on the workforce projections for the operations phase. It has been assumed that the heavy vehicle generation for each year is directly proportional to the employee requirements for that same year.
	10.33	Appendix 4a, Section 5.1, p.20	Table 5.1 lists some detailed road sections and intersections. However, there is no map to show the details. As required in the ToR, a map will assist readers understand which sections of the Bruce Highway are being referred to.	Response inadequate. Reason: This chapter 6 is not simply for TMR district readers familiar with the local road network. A map is required to help all readers understand the road links being assessed. The proponent is requested to address the issue/s raised. Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in A4a RIA Section 5, Figure 5.1. This figure shows which sections of the Bruce Highway are impacted, namely: • 150m North Terra Nova Dr • 200m North 14 Mile Ck Rd • 40m Sth Mountain Ck (Kunwarara) • 1km south of Montrose Creek • South of Waverley Creek

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					• North of Clairview.
	10.34	Appendix 4a, Section 5.2, p.21	Information about how link capacity calculations were made is insufficient. Provide further information about how Levels Of Service (LOS) have been derived with respects to the equivalent Passenger Car Units (PCUs). Clarify if the PCU represent bi-directional values or single direction values. Determine total delay generated due to the impact of the additional development traffic.	Response inadequate. Reason: It is unclear where/how s6.8 specifically addresses the issue raised. The proponent is requested to address the issue/s raised. Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in A4a RIA Section 5.2 "Link Capacity Assessment", which details that the assessment has been undertaken in accordance with Austroads GTM: Part 3 for a single-lane flow of traffic. This section steps through the methodology and various factors applied in line with Austroads GTM: Part 3 to determine the theoretical capacity of affected road links (identified above).
	10.35	Appendix 4a, Section 5.2, p.22	The extent of road link assessments is insufficient. Link assessment must include all sections of road which are significantly impacted by the development. It is noted that about half of the construction heavy vehicles and the majority of the operations heavy vehicles are not from the local areas. Therefore, additional sections of state-controlled roads which are impacted will need to be assessed and impacts addressed.	Response inadequate. Reason: It is unclear where/how s6.8 specifically addresses the issue raised. The proponent is requested to address the issue/s raised. Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in A4a RIA Section 5 "Road Link Assessment" which highlights that impacts beyond Mackay and Rockhampton have not been considered on the following basis: • Although there are state and port trips associated with heavy vehicles which will result in vehicle trips outside of the Mackay to Rockhampton cordon,

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					these trips account to a relatively small percentage (in the order of about 5 vehicle movements per day) of the overall project generated traffic. Furthermore, these trips are expected to diminish beyond Mackay and Rockhampton, in turn lessening the Project generated traffic impacts on the SCR network. Background traffic (AADT) along Bruce Highway is also expected to increase closer to larger regional areas such as Brisbane. This increase in background traffic coupled with low diminishing amounts of project generated traffic outside of Mackay and Rockhampton will further lessen the impact on SCR network beyond these regions. • The workforce is not expected to be located in areas beyond Mackay to Rockhampton. It should also be highlighted that

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					the Proponent's workforce fatigue management policy would eliminate the likelihood that members of the workforce would travel from areas beyond Mackay or Rockhampton for typical weekday commuting travel purposes. As such, traffic generated by the workforce is not expected to extend to the SCR north of Mackay or south of Rockhampton.

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	10.36	Appendix 4a, Section 5.4, p.22	This section recommends a few useful road-use management strategies be considered. These should be firmed and also listed in the RMP Commitments Table.	Response inadequate. Reason: No draft RMP Commitments Table has yet been provided. Given the EIS advises project commencement in 2018, the proponent is requested to commence drafting the RMP and Commitments Table, to allow sufficient time to provide it for TMR review, receive comments, negotiate mitigation strategies and finalise them. Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in Chapter 6, Section 6.15 and Appendix A4c - the draft RMP lists the following strategies: • Provision of shuttle bus services for transport of personnel between workforce locations and the site • Provision of a ride sharing scheme for transport of personnel between workforce locations and the site • Scheduling of shift times and heavy vehicle movements such that Project traffic does not coincide with network peak periods • Staggering of shift times and heavy vehicle movements to minimise impacts on the SCR network.

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	10.37	Appendix 4a, Section 5.2, Table 5.2, p.21	The assumptions stated on this table are taken directly from the Highway Capacity Manual (2010) with regards to lane widths (3.6m) and clear shoulder widths (1.8m). Some sections of the Bruce Highway will not meet these standards. Review the TIA to ensure lane widths <3.6 meters on the Bruce Highway are considered in the road safety and other assessment.	Response inadequate. Reason: It is unclear how s6.8 specifically addresses the issue raised, given it was raised in unamended GTA-prepared Appendix 4a. The proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in A4a RIA, Section 5.2 "Link Capacity Assessment", which details that the assessment has been undertaken in accordance with Austroads GTM: Part 3 for a single-lane flow of traffic. This methodology provides capacity reduction factors with regards to lane and shoulder widths. As such sections with reduced lane and shoulder widths have been accommodated for.
	10.38	Appendix 4a, Section 6, p.23	TMR has concerns about the proposed four way intersection. TMR's preference is for a staggered T-intersection. In accordance to the Austroads' Guide to Road Design – Part 4A Clause 4.11, "unsignalised cross intersections with one road have priority, record high crash rates for the through movements from the minor road, particularly if the minor legs are aligned. Staggered T-intersections are used as a safer alternative to four-way unsignalised intersections either by: - Setting out the alignment of the minor roads on new major roads to for a staggered T-intersections - Realigning one or both minor legs of an intersection." It should also be noted that TMR prefers a left-right staggered T treatment due to the additional safety benefits.	Response: Adequate at this stage, subject to further negotiation.	Addressed in Chapter 6, Section 6.7.1 and A4a RIA, Section 6 No longer applicable given that the previously proposed four-way intersection is not being considered further.

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	10.39	Appendix 4a, Figure 6.2, p.24	This figure incorrectly references the diverge/ deceleration distance and the taper length. Correct the diagrams in accordance with Austroads Guide to Road Design – Part 4A and TMR's "Road Planning and Design Manual".	Response inadequate. Reason: It is unclear how s6.7 specifically addresses the issue raised, given it was raised in unamended GTA-prepared Appendix 4a. (It is likely superseded, given new, staggered access arrangements are proposed for the mine).	Addressed in Chapter 6, Section 6.5.1. Figures 6.1 and 6.2 have been amended to reference the correct diverge and deceleration distance and taper length.
	10.40	Appendix 4a, Section 8.3, p.26	This section advises an RMP is likely to be required. TMR is concerned about the "lukewarm tone" of commitment in some of the EIS and RIA. Given this RIA has already recommended a few useful road-use management strategies may be considered, TMR requires these and all necessary road-use management strategies to be negotiated in consultation with district officers, documented in an RMP and implemented.	Response inadequate. Reason: a) Whilst some useful detail has been provided, the proponent has not committed to a deadline for drafting or completing the RMP. b) It is noted that minor lane closures of the Bruce Highway are still proposed for works for the tunnel for the conveyor. TMR is concerned about any proposed closure of sections of the Bruce Highway, and notes that no geotechnical discussion on this issue has been provided. c) Table 6.15 The preliminary RMP Framework is poorly drafted. For example, the first three items in Mitigation Strategies are Project Details / Assessment summary. d) There is no identifiable link between the strategies / commitments on p6.30 and Table 6.17, p6.40.	Addressed in Chapter 6, Sections 6.7.4 and 6.10.1 and RIA Sections 2.5 and 9.4, and A4c draft RMP The following strategies have been outlined in the RIA and Draft RMP: • Provision of shuttle bus services for transport of personnel between workforce locations and the site • Provision of a ride sharing scheme for transport of personnel between workforce locations and the site • Scheduling of shift times and heavy vehicle movements such that Project traffic does not coincide with network peak periods • Staggering of shift times and heavy vehicle movements to minimise impacts on the SCR network.

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	10.41	Appendix 4a, Section 9, p.27	As stated in comment 17, discussion on LOS on the Terra Nova Drive section of the Bruce Highway is not clear. Consider the ameliorating factors listed and re-estimate and report the LOS for this road section.	Response inadequate. Reason: Refer to previous TMR comments 17, 24, 34 above. Clearly state relevant Chapter 6 sub-sections rather than leaving readers guessing where explanations are to be found.	Addressed in Chapter 6, Section 6.10.1 and A4a RIA, Section 5.5 "Operational Impact Mitigation" which identifies mitigation strategies to offset potential operational impacts associated with this link. Examples of these are strategies are: • Staggering shift start / end times such that traffic does not coincide with network peak periods; • Scheduling deliveries and heavy vehicle movements such that they do not occur during network peak periods; and • Investigating shuttle bus services and car sharing systems to reduce Project traffic.
	10.42	Appendix C	Not all required sections of road link are included in the Link Capacity Assessments. The table in Appendix C will need to include additional sections of roads referred to in the comment on Section 5.2, p. 21: Link capacity calculations (above). (The calculated PCUs appear to be adequate).	Response inadequate. Reason: It is unclear how s6.8 specifically addresses the issue raised. Clearly state relevant Chapter 6 sub-sections rather than leaving readers guessing where explanations are to be found.	Addressed in A4a RIA, Section 5.2. Link capacity assessment is only undertaken for impacted sections which are as follows: • 150m North Terra Nova Dr • 200m North 14 Mile Ck Rd

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					• 40m Sth Mountain Ck (Kunwarara) • 1km south of Montrose Creek • South of Waverley Creek • North of Clairview This is consistent with the requirements of GTIA. Furthermore, as discussed in S5 "Road Link Assessment" of GTA's RIA report impacts beyond Mackay and Rockhampton have not been considered on the following basis: • Although there are state and port trips associated with heavy vehicles which will result in vehicle trips outside of the Mackay to Rockhampton cordon, these trips account to a relatively small percentage (in the order of about 5 vehicle movements per day) of the overall project generated traffic. Furthermore, these trips are expected to diminish beyond Mackay and

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					Rockhampton, in turn lessening the Project generated traffic impacts on the SCR network. Background traffic (AADT) along Bruce Highway is also expected to increase closer to larger regional areas such as Brisbane. This increase in background traffic coupled with low diminishing amounts of project generated traffic outside of Mackay and Rockhampton will further lessen the impact on SCR network beyond these regions. • The workforce is not expected to be located in areas beyond Mackay to Rockhampton in the. It should also be highlighted that the Proponent's workforce fatigue management policy would also eliminate the likelihood that members of the workforce would travel from areas beyond Mackay or Rockhampton for typical weekday commuting travel

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					purposes. As such, traffic generated by the workforce is not expected to extend to the SCR north of Mackay or south of Rockhampton.
	10.43	Appendix E	The TIA and appendices are not sufficiently clear about how ESAs were calculated and reported. Provide further information on how the development-generated Equivalent Standard Axles (ESAs) (number and percentage) were determined, in particular the percentage of development generated ESAs to background ESAs.	Response inadequate. Reason: It is unclear how s6.8 specifically addresses the issue raised. Clearly state relevant Chapter 6 sub-sections rather than leaving readers guessing where explanations are to be found.	Addressed in A4a RIA, Section 7 "Pavement Impact Assessment", which details that the PIA has been undertaken in accordance with the Northern Region 'Assessment of Road Impacts of Development Proposals - Notes for Contribution Calculations'. These guidelines were adopted for the RIA given that liaison with Mackay / Whitsunday District and Fitzroy District indicated that similar methodologies were not available for these districts.

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	10.44	Final General Comments	No commitment has been given when the draft Road-use Management Plan (RMP) will be submitted for review. Submit the draft Road-use Management Plan (RMP) in conjunction with the Traffic Impact Assessment for TMR to assess.	Response inadequate. Reason: As advised in comment 40(a) above, the first sentence in s6.10.2 p6.29 does not commit to a time frame for the submission of either a draft or final RMP. The proponent is requested to provide an estimate date for the submission of the draft RMP, noting that it is expected to be submitted during the EIS process.	Addressed in Chapter 6, Section 6.10.1 and A4c draft RMP
	10.45	Final General Comments	Once the access location/configuration has been determined, a design and associated drawings, safety assessment and application will be required to be submitted to TMR for assessment and approval.	Response: Adequate at this stage, subject to further negotiation.	Addressed in Chapter 6, Section 6.7.1 and S6.2.2 of the RIA report refers to Appendix E which contains the concept intersection design for both access intersections. The necessary applications for approvals for the design and construction of the accesses are to be undertaken by CDM Smith /Proponent.

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	10.46	Final General Comments	Provide detail on the impact on the State-controlled Road (SCR) with regards to proposed blasting (safety, visibility from dust, frequency, possible road closure, impact to the road infrastructure due to vibration and so on).	Response currently inadequate: Reason: Given the commitment to no blasting that would require temporary closure of the Bruce Highway, TMR needs demonstration there will be no other dangers to users of public roads from any mine blasting activity.	Addressed in Chapter 6, Sections 6.7.5, 6.9, 6.10.9 and 6.10.10. Vibration is discussed in Chapter 13 – Noise and Vibration. Central QLD Coal has agreed to avoid undertaking blasting activities that will require the closure of the Bruce Highway. Central Queensland Coal will also continue to work with DTMR to establish appropriate blasting programs that facilitate the mining of coal in proximity of the Bruce Highway and avoid the need for road closures during blast periods. As such it is anticipated that there will be no impacts to road users on the Bruce Highway due to blasting activities associated with the Project.

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	10.47	Final General Comments	List any impacts to the road environment due to mining activities including possible road closures due to movement of mining equipment, impact of debris and construction material upon the safety of the road surface, impact of site lighting (at night) and so on.	Response inadequate. Reason: It is unclear how s6.10 specifically addresses the issue raised. The proponent is requested to adequately address the issue/s raised. Further, the proponent's response should be more specific than simply referring to a section of the SEIS. The proponent's response should: - provide a reference to the relevant sub-section of the SEIS including page number; and - clearly summarise in the response how the issue was addressed.	Addressed in Chapter 6, Sections 6.8, 6.9, 6.10.9, 6.11 and 6.12. Central QLD Coal has agreed to avoid undertaking blasting activities that will require the closure of the Bruce Highway. Central Queensland Coal will also continue to work with DTMR to establish appropriate blasting programs that facilitate the mining of coal in proximity of the Bruce Highway and avoid the need for road closures during blast periods. As such it is anticipated that there will be no impacts to road users on the Bruce Highway due to blasting activities associated with the Project.
	10.48	Final General Comments	Note if there is sufficient on-site parking to accommodate all works to ensure no vehicles are parked on the SCR corridor.	Response: adequate. Reason: One sentence in s6.7.3, pg 6-16 commits to ensuring adequate parking on-site to avoid parking on state roads.	Addressed in Chapter 6, Section 6.7.3

	10.49	Final General Comments	Assess the impact of development traffic upon major SCR intersections	Response inadequate. Reason: It is unclear how s6.10 specifically addresses the issue raised.	Addressed in Chapter 6, Section 6.8.6 and A4a – RIA Section 6. Project traffic is typically adding to the through movements along these intersections, it is expected the Road Link Assessment captures any project impact on SCR intersections. Furthermore, turning movements from local areas will be dispersed onto multiple intersections based on workforce and heavy vehicle origins, further minimising impacts to each intersection. As such, minimal project generated impacts are expected to occur at SCR intersections. Notwithstanding S5.5 "Operational Impact Mitigation" identifies mitigation strategies to offset any potential operational impacts as a result of the Project. Examples of these are strategies are: • Staggering shift start / end times such that traffic does not coincide with network peak periods; • Scheduling deliveries and heavy

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					vehicle movements such that they do not occur during network peak periods; and • Investigating shuttle bus services and car sharing systems to reduce Project traffic.
	10.50	Chapter 6, Section 6.4.2, p.6-5	The EIS does not provide information concerning the number of rail services anticipated to be required to transport product to port in accordance with the DEHP EIS Information Guideline – Transport referred to in the ToR's section 8.16. The proponent is requested to provide a breakdown of the estimated number and frequency of rail services required to transport coal to port. The proponent is further requested to identify any impact that may have on existing rail services using the North Coast Line.	Refer to Table 2 (see Table 1.2) Comments on new issues about the amended Ch 6 of S/EIS below.	Addressed in Chapter 6, Section 6.12.1.
	10.51	Chapter 6, Section 6.4.2, p.6-5	The last paragraph advises coal dust impacts and mitigation strategies are canvassed in Sect 6.7 and 6.8. However, it appears there are no references to coal dust impacts or mitigation in those sections. Add information about assessment of coal dust impacts and effective mitigation strategies in those sections.	Refer to Table 2 (see Table 1.2) Comments on new issues about the amended Ch 6 of S/EIS below.	Addressed in Chapter 6, Section 6.12 and Chapter 12, Sections 12.8.4 and 12.9.2.
	10.52	Chapter 12, Section 12.5.6, p.12-14	The list of the main air emissions in the 1st paragraph does not include a well-known source of air pollution: rail transport of coal to port. The list of the main emission sources needs to include Rail transport of coal to port.	Refer to Table 2 (see Table 1.2) Comments on new issues about the amended Ch 6 of S/EIS below.	Addressed in Chapter 12, Section 12.6.1.

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	10.53	Chapter 12, Section 12.7.1.1, p.12-18	The measures contained in this sub-section are inadequate to effectively minimise coal dust emissions during rail transport to port. The dust suppression measures listed do not contain measures to minimise coal dust emissions generated during rail transport to port. The additional dust suppression measures required to be added is the installation at the Project's rail load-out of coal-load veneering system infrastructure and other processes consistent with Aurizon's Coal Dust Management Plan (2000). The control measures outlined in the EIS as currently drafted mean the Central Queensland Coal Project will be the only coal project in Queensland that is proposing NOT TO USE veneering or other systems consistent with the Aurizon Coal Dust Management Plan (2010).	Refer to Table 2 (see Table 1.2) Comments on new issues about the amended Ch 6 of S/EIS below.	Addressed in Chapter 6, Section 6.12 and Chapter 12, Section 12.9.2
	10.54	Chapter 12, Section 12.7.1.2	The dust suppression measures listed do not contain measures to minimise coal dust emissions generated during rail transport to port. The additional dust suppression measures required to be added is the installation at the Project's rail load-out of coal-load veneering system infrastructure and other processes consistent with Aurizon's Coal Dust Management Plan (2000).	Refer to Table 2 (see Table 1.2) Comments on new issues about the amended Ch 6 of S/EIS below.	Addressed in Chapter 12, Section 12.9.2
	10.55	Appendix 4b	While the geotechnical provides some useful information, it is not sufficient to fully understand potential impacts on the Bruce Highway. The proponent is required to submit a more detailed geotechnical report signed by an experienced RPEQ geotechnical engineer from TMR's prequalified list of geotechnical consultants at GE3 level. The report should address at least the following: • Detailed geological and geotechnical model with borehole information • Justification of the engineering properties used for each layer identified • Total depth of excavation • The effect of stress release due to deep excavation on the Bruce Highway	Response: Inadequate Reason: The section on 'Limitations of the Geotechnical Assessment' report states, "The report is a desktop study based on information primarily obtained for the purpose of resource extraction, not from part of a certified pit design." Therefore, an adequate geotechnical assessment has not carried out. As advised, the Geotechnical Assessment submitted is only a desktop study, based on exploration boreholes which were drilled primarily to provide information on the quality and distribution of the coal seams in the pits, not	Addressed in Chapter 6, Sections 6.9, 6.10.10 and 6.15, Table 6-17 Central Queensland Coal is committed to undertaking additional geotechnical investigation within the first 6 months after the commencement of operations and further ongoing geotechnical assessments of the mining pit as it develops

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			• Detailed stability analysis including kinematic stability checks • Details of the proposed instrumentation (types & locations).	the geotechnical boreholes required to assess the potential impacts on the Bruce Highway. The submission did not provide the requested details on the proposed instrumentation. or the safety of the road users and road assets, a detailed geotechnical assessment is to be carried out as soon as possible, and be completed at least 3 months or as otherwise agreed with TMR, based on sufficient number of geotechnical boreholes and testings, including the following (as outlined in our previous geotechnical comment): - Signed by an experienced RPEQ geotechnical Engineer from a GE3 level geotechnical consultant. - Detailed geological and geotechnical model(s), identifying all potential failure mechanisms. - Justification for the engineering properties used for each geological layer identified. - Detailed stability analyses, including kinematic stability checks. - Impact of the excavations on Bruce Highway. - Details on instrumentation (types, locations & the monitoring review procedure) and on the geological mapping procedure during the excavation of pits in order to validate the geological model(s) assumed in the stability assessment. For further information, contact: siva.t.sivakumar@tmr.qld.gov.au	and approaches the 500 m blasting buffer zone.

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11	11.1		The report might be considered to comprehensively review relevant legislation. It does not, however, review relevant research results in any way that could be considered to be comprehensive. Historical research is largely limited to citing material included in a general text on Australian archaeology by Mulvaney and Kamminga. This is a useful starting point for an appreciation of Aboriginal culture across Australia. It does not provide, nor does it purport to provide, a comprehensive picture for the region in question. The data tendered that is relevant to the region has to be considered as slight. While it is true that research relating to the Project Area may be considered as limited, there are a range of studies from surrounding areas that would provide useful contextual data on a wide range of Aboriginal cultural heritage issues. Very limited use has been made of those data. A considerable body of these data are held by relevant Aboriginal Parties. Speaking on behalf of one of these Aboriginal Parties, we can state categorically that at no time have we been approached by the Project Proponent or its agents to assist them in developing the EIS by providing access to relevant data.	No adequacy review comment.	Addressed in Chapter 18, Sections 18.2 and 18.4 No additional information has been provided by the Darumbal Group.

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	11.2		This failure to engage with us in relation to accessing data for the EIS raises a larger issue, and one that is of particular concern for us. The Project Proponent claims in the EIS that it will develop a Cultural Heritage Management Agreement (CHMA) under which surveys and management of Aboriginal cultural heritage will be undertaken. We presume that this CHMA will constitute the Cultural Heritage Management Plan (CHMP) that is mandated under Part 7 of the Aboriginal Cultural Heritage Act (ACHA) in view of the fact that the Project Proponent is preparing an EIS. Despite claims that they are negotiating the settlement of the CHMA and are committed to settling the CHMA, at no time has the Project Proponent met with ourselves to advance the development of this document. We cannot speak to the question of whether the Project Proponent may have met with any other Aboriginal Parties, or has issued notices required under Part 7 of the ACHA to any other Aboriginal Parties. However, we note that the EIS is silent on whether notices have been issued, when (if any) meetings have taken place, and at what stage negotiations have reached.	No adequacy review comment.	Addressed in Chapter 18, Sections 18.2 and 18.4
	11.3		We observe that while it is often the case (although undesirable) that negotiations for a CHMP may not have concluded or that surveys have not been completed. It is usual, however, to provide a clear indication in the EIS of the stage that each of these elements has reached. The fact that the EIS has freely advised that no surveys have been undertaken, is silent about any details of engagement with Aboriginal Parties (in our own case we can categorically state that no meetings have been held), and is based on limited (one might suggest inadequate) research is of considerable concern to us, and we would expect to the Depart of Environment and Heritage Protection as well. It is troubling that the Project Proponent is seeking approval of the Project in the absence of a satisfacory answer to any one of these three issues.	No adequacy review comment.	Addressed in Chapter 18, Sections 18.2 and 18.4 No additional information has been provided by the Darumbal Group.

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12	12.1		Impacts on the Great Barrier Reef Marine Park From what can be ascertained there is no content provided in the EIS on the potential impacts of the mine proposal on the Great Barrier Reef Marine Park. Council is a member of the Reef Guardian Council's programme administered by the Great Barrier Reef Marine Park Authority and works with its community to reduce the impacts on the marine park, including within its own operations. Provide some statements in the EIS which address the potential impacts of the proposed development on the Great Barrier Reef Marine Park.	No adequacy review comment.	Addressed in Chapter 16, Section 16.13.1. This section provides a stand-alone assessment of the Outstanding Universal Values (OUV) of the Great Barrier Reef World Heritage Area and how they relate to the extant values of the waters downstream of the Project in the Broad Sound area. Assessment of impacts to Matters of National Environmental Significance are discussed at Section 6.14.
	12.2	Chapter 11, Section 11.9.5, p.11-28 & 11-30	Revegetation/Rehabilitation with endemic species Council encourages the proponent to utilise as much as possible native endemic species in revegetation and rehabilitation activities. Council operates a community nursery which specialises in local provenance species and is happy to provide advice to the project proponent. Council also has the capabilities to provide a service for the translocation process of protected plants.	No adequacy review comment.	Addressed in Chapter 11, Section 11.11.5

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	12.3	Biosecurity	Pest and Vector Management No specific reference has been made to the current local pest and vector management instruments in the Biosecurity Chapter. This includes: • Local Law No.3 (Community and Environmental Management) 2011; • Schedule 1 of Subordinate Local Law 3 (Community and Environmental Management) 2011. • Rockhampton Regional Council Pest Management Plan 2012-2016 • Rockhampton Regional Council Vector Management Plan 2010-2014 Relevant sections of the identified documents should be included into the Biosecurity chapter. Furthermore Council is currently preparing both its shire-wide Pest Management Plan and Vector Management Plan and is expected to finalise both plans in the first half of 2018. This will provide the proponent with further guidance on pest and vector management applicable to the proposed development.	No adequacy review comment.	Addressed in Chapter 17, Sections 17.3 and 17.4.
	12.4		Access to Council Controlled Roads Council is interested in access to the mine site from roads that it currently controls. Council's Infrastructure Department are currently in discussions with the project's proponents regarding access to Council controlled roads, as well as potential new pieces of road which will come under Council's control. A suitable engineering solution will be sought by Council.	No adequacy review comment.	Addressed in Chapter 6, Section 6.7.

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13	13.1	Chapter 9, Section 9.7, p.9-117 and Chapter 20, Section 20.5.3.3, p.20-8	The EIS has not detailed if the Proponent is a Drinking Water Service Provider (DWSP) as regulated by the Water Supply (Safety and Reliability) Act 2008 and the Public Health Act 2005. The EIS has stated that potable water will comply with the Australian Drinking Water Guideline (ADWG) however does not describe a management system that will be used to ensure that all potable water consumed on site complies with the ADWG. Update the EIS to detail if the Proponent is a DWSP. If the Proponent is not a DWSP, update the EIS to describe a management system that will be used to ensure that all potable water consumed on site complies with the ADWG.	No adequacy review comment.	Addressed in Chapter 3, Section 3.5.6.2.
	13.2	Chapter 9, Section 9.7, p.9-116	The EIS has not detailed if activities related to the supply of potable water from the Raw Water Dam or activities related to the reuse of water captured on site is regulated by the Water Supply (Safety and Reliability) Act 2008 and the Public Health Act 2005. Update the EIS to detail if the Proponent has determined if these activities are regulated by the Water Supply (Safety and Reliability) Act 2008 and the Public Health Act 2005.	No adequacy review comment.	Addressed in Chapter 3, Section 3.5.6.2.
	13.3		The EIS has not detailed if food will be provided on site in accordance with the Food Act 2006. Update the EIS to detail if food will be provided on site in accordance with the Food Act 2006.	No adequacy review comment.	Addressed in Chapter 1, Section 1.11.3.10.
	13.4	Chapter 20, Section 20.7.4, p.20-14	The EIS has stated that a first aid centre will be located on site and provisions will be made for a Queensland Ambulance Service paramedic to service the site. If a commercial paramedic is engaged in place of the Queensland Ambulance Service, it suggested the proponent ensure the commercial paramedic has obtained a Section 18 Approval from the Chief Executive Queensland Health under the Health (Drugs and Poisons) Regulation 1996.	No adequacy review comment.	Addressed in Chapter 1, Section 1.11.3.12 and Chapter 20, Section 20.7.4

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	13.5	Chapter 20, Section 20.7.4, p.20-14	The EIS has not stated whether the Proponent will be required to complete an Infection Control Management Plan under the new provisions of the Public Health Act 2005. Update the EIS to state whether the Proponent will be required to complete an Infection Control Management Plan. If an Infection Control Management Plan is required, update the EIS to reflect how this plan will be managed.	No adequacy review comment.	Addressed in Chapter 20, Section 20.7.4
	13.6	Chapter 20, Section 21.6.5, p.21-27	The EIS does not detail whether the hazardous substances on site will be a S7 poison under the Health (Drugs and Poisons) Regulation 1996. Update the EIS to detail whether the hazardous substances on site will be a S7 poison under the Health (Drugs and Poisons) Regulation 1996. If S7 poisons will be on site, update the EIS to reflect how these S7 poisons will be obtained, stored, transported and disposed of in accordance with the Health (Drugs and Poisons) Regulation 1996.	No adequacy review comment.	Addressed in Chapter 1, Section 1.11
	13.7	Chapter 17, Section 17.6.4.1, p.17-16	The EIS does not detail how invertebrate pests (wild dogs, cats, foxes and feral pigs) will be controlled. Update the EIS to detail how the invertebrate pests will be controlled. If invertebrate pests are to be controlled using a poison (fluoroacetic acid, strychnine, or PAPP) the proponent will be required to comply with the provisions in the Health (Drugs and Poisons) Regulation 1996.	No adequacy review comment.	Addressed in Chapter 1, Section 1.11.3.12 and Chapter 17, Section 17.8.4.

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	13.8	Chapter 21, Section 21.3.1, p.21-4	Radiation hazards and safety is not specifically mentioned in the EIS. Update the EIS to detail whether the Project requires a: • licence under the Radiation Safety Act 1999 if prescribed radiation sources (such as radiation gauges, industrial radiography equipment) are proposed to be used for testing or measurement purposes • radiation management plan and radioactive waste management plan for: o mining (including exploration) and processing of ores containing naturally occurring radioactive material (NORM) o industries where radiation protection issues may arise due to NORM.	No adequacy review comment.	Addressed in Chapter 1, Section 1.11.3.11.
14	14.1	Health Impact Assessment (HIA)	The impacts of a development must be seen in the context of national and international health. These important links are explained in "The health factor: Ignored by industry and overlooked by government", Appendix 1: The need to protect public health.2 DEA maintains that the prevention of harm is the basis of public health. Prevention is based on careful scientific assessment of possible hazards, their risks and methods of prevention. Clean air, clean water and nutritious, uncontaminated food are all crucial contributors to public health. Healthy ecosystems are the life support systems for humanity. Both land and marine ecosystems are being progressively compromised by global environmental changes and human activity, which pose major and increasing threats to sustainability, population health and ultimately, survival. Development can have many benefits for society, but it may also have measured and unmeasured adverse effects. An EIA is intended to be a comprehensive review of all possible effects on the environment. The assessment of risk to human health by a development is intimately linked to the EIA. It identifies problems of air, water and noise pollution, risks of injury to workers and communities and the effects on the physical and social aspects of community life. The process of a	No adequacy review comment.	No update to the EIS is proposed

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			HIA is complex and is conducted by the states under optional guidelines issued by the Commonwealth. The decision about whether a HIA is required for a project is usually made by the same department that is dealing[3]with the EIA. The opinions of health officials or health experts are not necessarily sought before making this decision. Thereafter, there is great variability on which health issues are assessed and how, and in the degree of public consultation and reporting. In the case of the CQCP EIS, it appears that government thought a HIA unnecessary despite the expected impacts of the Project on state, national, and international health. In this Project, a HIA would bring together the likely health impacts under public health review to identify possible human harms now and for many decades to come.		
	14.2	General comment	We are aware that it is not within the remit of the EIS to question the prudence of the Queensland Government in considering an open cut coal mine so near to coastal waters, when scientific evidence indicates the Reef is already damaged by a range of environmental events including climate change and run-off. However, it is within the remit of the EIS to consider in detail, the scientific evidence that the mine will harm the reef and recommend appropriate precautionary principles. Furthermore, the EIS identifies that that the Project will require adaptation measures for climate change (Section 4.7.2), the necessity for which will be partly caused by its own contribution of greenhouse emissions.	No adequacy review comment.	No update to the EIS is proposed
	14.3	General comment	The potential health issues should be predominant in the EIS because the consequences of loss of the reef are huge. The Deloitte Access Economics report indicates that the reef underpins 64,000 jobs in tourism-related industry and fishing, and these contribute A$56bn to the economy each year. Unemployment from loss of the Reef is a health hazard for the unemployed and their families. Therefore, the important issues of water runoff and climate change will be considered first.	No adequacy review comment.	No update to the EIS is proposed

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	14.4	Chapters 9 & 10, TOR section 2.53	We note from the TOR section 2.53 that water quality is considered a critical matter given the proximity of the Great Barrier Reef World Heritage Area. We do not consider that the risks detailed in section 2.7 of the TOR are adequately addressed in the EIS.	No adequacy review comment.	Addressed in Chapter 9, Sections 9.5 and 9.10, Chapter 15, Sections 15.7 and 15.8, Chapter 16, Sections 16.13.1, 16.14.3 and 16.15.3
	14.5	Chapters 9 & 10	We recognise that the national expertise of the Independent Expert Scientific Committee requires referral from the state or federal government, but we would have hoped that the Queensland Government would have sought this expertise at an early stage, in order to reassure the public that all possible measures were available to investigate possible impacts on the Reef should this unfortunate Project proceed.	No adequacy review comment.	Outside of the EIS Scope.
	14.6	Chapters 9 & 10	We believe that the water sections are inadequate, for they fail to identify likely run off into the Styx river from water and pollutants. The conclusions reached in Table 9.57 fail to recognise the toxic nature of run off from many sources in open cut mines, which will not be removed by sediment control and which reach the estuary in an on-going basis and certainly in flood conditions -this is a cyclone region. This situation is summarised as “accidental release of pollutants”. In fact, bioactive pollutants from coal are inherent in the process of coal mining and are a constant feature of the operation during mining and indeed after many rehabilitations.	No adequacy review comment.	The Chapter 9 – Surface Water has been updated to provide more detail about the management of water on site including drainage design, flooding, erosion and sediment control, regulated structures assessment and also the inclusion of draft Trigger Action Response Plans which outline actions and responses necessary should monitoring identify exceedances in the Project’s water quality criteria.

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	14.7	Chapter 9, Section 9.2	This summary paragraph in Cumulative Impacts 9.2 is worthy of comment. "The Project resides within the middle region of Styx Basin in which there are numerous proposed mines and developments. Many of the exploration permits within the Basin are dominated by mineral and coal exploration permits. The Styx River is currently undeveloped which effectively minimizes surface water cumulative impacts associated with the Project as there are no developments which are likely to increase the impacts of the central Queensland coal mine." (note; we have added a missing word and punctuation to this quote). Presumably an "undeveloped" river means it is not yet polluted, or that there are no human developments around it. This is a particularly anthropocentric view of the natural environment. The view expressed in this paragraph appears to support and use Peter Cullen's concept of "assimilation capacity". This concept is now widely discredited, for there is no safe level of most industrial pollutions.	No adequacy review comment.	Noted
	14.8	Chapters 9 & 10	There is one important positive in the Surface Water study - the base line water assessment from February to June. We are conscious of the statement made by proponents of many projects when contaminants are found in groundwater - that they may have been present before the mine. On this occasion, the baseline data will be important in future assessments if the mine proceeds.	No adequacy review comment.	Noted. Chapter 9 – Surface Water has been updated with additional water quality data.

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	14.9	Chapters 9 & 10	We note that 245mm of precipitation was recorded on March 30, 2017 in response to Cyclone Debbie. This highlights that this mine will be subject to cyclones more frequently as climate change brings them further southward along the Queensland coast. Furthermore, they are likely to be more severe. The EIS estimate of cyclones is 0.2-0.4 per year (BOM data) but recent climate change projection data suggests this will be an underestimate. Since the Project is only 14km from a tidal estuary, it is likely that any contaminants harmful to the Reef will be rapidly transported to the Coral Sea when flooding overwhelms the water management systems. It is rare for any mine to remain free from flooding despite assurances of safety. The EIS claims that mine waste washed offsite during flooding will be highly diluted, but this does not alter the fact that large amounts of mine waste will be transported by floods. Nor does it alter the fact that hydrocarbons and other toxics which are active in extremely low concentrations are likely to harm the Reef.	No adequacy review comment.	Noted. Addressed in Chapter 9, Sections 9.3, 9.6, 9.9, 9.10 and 9.11.
	14.10	Chapters 9 & 10	The fact that successive Queensland governments have been prepared to accept these risks from mining in the face of scientific evidence of progressive damage to the Reef does not absolve the EIS from providing a balanced view on this risk.	No adequacy review comment.	Outside of the EIS Scope
	14.11	Chapters 9 & 10	Coal dust (particulates) in the air, and possibly also in water, are extremely toxic substance to living cells. The scientific evidence of its toxicity in humans is extensive, and Queenslanders have become aware of these impacts from the recurrence of black lung disease in miners, coal dust harms from trains and loaders, water contaminations, and harm to workers from ill-advised coal gasification projects, all of which are attributable poor regulation and monitoring.	No adequacy review comment.	Outside of the EIS Scope
	14.12	Chapters 9 & 10	The EIS needs to include in its risk assessment the direct impact on corals of coal particulates4 and the likely exposure to these harms over the 20 year life of a mine. We need to remind ourselves that the purpose of an EIS is to present impartially to government the scientific risks, health and	No adequacy review comment.	Mapping for the GBRMP area indicates small fringing reefs occur within Broad Sound on Turtle Island and Charon

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			environmental impacts, for them to make judgement in the interests of the public. The increasing understanding of nano-particles as carriers of toxins from coal combustion5 and presumable mining also needs to be considered within the precautionary principle.		Point approximately 35 km north-northeast of the Project boundary. A larger reef area occurs on the southwest edge of Long Island (52 km northeast), a continental island adjacent to the west of the Torilla Peninsula (refer Figure 15-4 in Chapter 15 – Aquatic Ecology). Several small reefs also occur in the Clairview area to the north of Broad Sound (approximately 55 km north). The structure of coral reefs in the area surrounding Broad Sound (including offshore islands such as Peak Island) has been surveyed in the past in order to examine the impact of the naturally turbid conditions and tidal range on reef development. Coral richness in the area is lower than in adjacent regions (De'ath and Fabricius 2008). Chronic exposure to high and localised

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					concentrations of fine coal particles (as associated with bulk coal marine transport spills) have been found to have lethal effects on coral and impact the growth rates of tropical fish and seagrass (Berry et al. 2016). Coal contains contaminants such as metals and polycyclic aromatic hydrocarbons which may pose a risk to aquatic organisms including marine species. However, recent research indicates the risk of these contaminants leaching into seawater is low (Jaffrennou et al. 2007; Lucas and Planner 2012, Berry et al. 2016). The risks of fine coal particles in water are likely to be physical processes (i.e. smothering) where there is a concentrated point source or plume of particles (refer Section 16.14.5 of Chapter 16 – MNES).

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					There will be no point source of coal fines emanating from the project area and no marine transport of bulk coal in the Broad Sound area (coal will be transported to Dalrymple Bay coal terminal in Mackay). Modelling of potential dust particle deposition resulting from both Project construction and operation activities showed the areas most likely to be impacted were receptor points located to the direct west of the Project (Tooloombah Creek service station) and in the Ogmore area to the north of the Project. However, these impacts were minimal in comparison to the modelled natural background dust concentration and all concentrations were below air quality criteria set by the State under the Environmental Protection (Air) Policy 2008 (refer Chapter 4 –

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					Climate of the SEIS for more information). Dust suppression measures specific to the haulage of coal are detailed in Chapter 12 – Air Quality (refer Section 12.9.2). Given there are no substantial coral reefs in the vicinity of the Project and no point source of coal fines to the Styx River or Broad Sound is predicted or likely from the Project, impacts from marine deposition of coal fines on coral communities are considered to be extremely unlikely.
	14.13	Chapters 9 & 10	We note that Table 9-27 lists "Petroleum hydrocarbons" measured in samples and refers to "Model water conditions for mines in the Fitzroy". This is not mentioned further. It needs to state which hydrocarbons are being sought, which other hydrocarbons and toxics should be measured once the project begins, and where and when should they be monitored.	No adequacy review comment.	Addressed in Chapter 9, Sections 9.5.5 and 9.7 and Chapter 23, Sections 23.1.7 and 23.1.8.

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	14.14	General Comment - Climate change and the project	Greenhouse emissions arise from the project (2,329,125 tonnes CO2-e) and most importantly, as Scope 3 emissions which the federal government has ignored in its deliberations, but which impose harms on the community because of the increasing impact of the change of climate in Queensland. The EIS acknowledges these by the inclusion of climate change adaptation measures to ensure that the mine can continue even as conditions deteriorate (Executive Summary and 4-15). The EIS must acknowledge these harms particularly because climate science suggests that the Queensland climate will suffer change more severely than many. Therefore the paragraph "the project has proactively considered climate change adaptation…" is inadequate and we recommend climate science is studied further.	No adequacy review comment.	Scope three emissions were not included in the EIS Terms of Reference as they are measured at the location in which the coal is used. The concern that the discussion on climate change adaption is inadequate is not supported by any examples to explain this assertion. No update to the EIS is proposed.
	14.15	General Comment - Climate change and the project	The EIS does list the expected greenhouse emissions from the project, but it is vital that these Scope 3 emissions for the 20 year life of the project be listed, for this figure is essential in estimated costs that will return to Queensland from warming of the world climate. This figure will become increasingly important when other countries soon move to curtail their emissions.	No adequacy review comment.	Scope three emissions were not included in the EIS Terms of Reference as they are measured at the location in which the coal is used. No update to the EIS is proposed.
	14.16	General Comment - Climate change and the project	Indeed the EIS displays a worrying lack of understanding of the role of climate change. For example, Table 12.1 Description of legislated air pollutants; - Air pollutant- "Carbon dioxide (CO2) - combustion by-product, tobacco smoke, metabolism and expired air from lungs"! Is the word '-product' using a John Cleese strategy (Don't mention the war)? It is combustion by coal - the main cause of climate change. Expired air might become important when 2 billion extra persons arrive on the planet but even then their consumption will be the problem and not their breathing!	No adequacy review comment.	Updated SEIS to remove confusion that Table 12.1 is in regard to legislative human health criteria, not climate change.

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	14.17	General Comment – Air quality and related matters	The air quality section of the EIS has been completed in a sloppy and superficial manner. • The air quality standards referenced are out of date as they do not include the 2015 revisions, for example the annual average standard for PM10. • The modelling is based on assumptions of the background air quality without any measurements at the site having been done. • We are even told that an important source of carbon dioxide is from burning tobacco! • Table 12.9 reports the 70th centile of 24-hour PM10. This is novel. No standard is set for the 70th centile, and with the 70th centile of 20µg/m3 there could be a large number of days over 50µg/m3.	No adequacy review comment.	Noted. Chapter 12 – Air Quality has been updated and is in accordance with the ToR requirements.
	14.18	Chapter 12	Chapter 12 of the EIS should be rejected as a poor quality piece of work as it omits the two important health and safety issues of blast plumes and spontaneous combustion of coal as described below.	No adequacy review comment.	Addressed in Chapter 6, Section 6.10.9.1, Appendix A7 – Air Quality Assessment, Section 6.3 and Chapter 12, Section 12.6.5 and Chapter 21, Section 21.6.2

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	14.19	General Comment – Blast plumes	The mine is planned to straddle the Bruce Highway, with open cut pits on both sides of the road. Open cut mining will include blasting, presumably with ANFO explosives, with the attendant risk of production of blast plumes containing highly toxic nitrogen dioxide when combustion is incomplete. Perfect blast management results in no nitrogen dioxide, but in practice only one third of blast plumes achieve this, and many blasts result in high levels of toxic gas. Exposure to this gas for even a few minutes can cause severe respiratory irritation, pulmonary oedema, and death. There have been multiple occasions when mine workers have been hospitalised after exposure to these plumes, with exposure up to 6km from the blast site. There is a high risk to people travelling on the Bruce Highway during mining operations, and a lower risk to the 30 residents of Ogmore 6.8km away, which is at the limit of previously observed risk from blast plumes. In the Hunter Valley people have suffered toxicity after driving through blast plumes so this is a real risk to the public from the proposed Styx mine and is not addressed in the EIS. This alone is a sufficient public risk to reject the proposal.	No adequacy review comment.	Addressed in Chapter 6, Section 6.10.9.1, Appendix A7 – Air Quality Assessment, Section 6.3, Chapter 12, Section 12.6.5 and Chapter 21, Section 21.6.2

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	14.20	General Comment – Spontaneous combustion of coal	Spontaneous combustion of coal has the potential to create substantial health risks from release of air pollution in the form of fine particles and sulphur dioxide. The EIS includes brief mention of this risk for coal stockpiles, but completely ignores the risk from spontaneous combustion of coal rejects in the overburden. This occurs when uneconomic coal, that either contains too much rock or is in seams too thin to be worth recovering, is included in overburden piles. The exposed coal oxidises when exposed to air and can ignite. This releases large amounts of PM2.5 and sulphur dioxide that have not been modelled in the air quality chapter of the EIS. These pollutants travel long distances, up to 1,000 km, and contribute to the health burden from ambient air pollution at the regional and national scale. Spontaneous combustion also releases large amounts of carbon dioxide that have to be included in the greenhouse gas assessment. The extent of SO2 pollution from spontaneous combustion depends on the sulphur content of the coal, but this critical detail is missing from the EIS. The risk of spontaneous combustion in overburden can be predicted, but this important work is missing from the EIS.	No adequacy review comment.	Addressed in Chapter 21, Section 21.6
	14.21	General Comment – The accommodation camp	The accommodation camp that may be built for staff is in close proximity to the mine. It is claimed that this is not a sensitive receptor, but it is a residential area and people will be exposed so this is an unreasonable claim. The appropriate air quality standards for the camp are the ambient air quality standards, not the occupational exposure standards which are based on an 8 hour shift length. Details of the camp are entirely lacking, for instance the camp residents may include children who are more sensitive to harm from respiratory toxins. There is likely to be respiratory harm to people living at the camp.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.7 and Chapter 12, Section 12.8.

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	14.22	General Comment – The accommodation camp	The EIS fails to answer its Terms of Reference as shown in the following table: Terms of Reference. Assess the risk of spontaneous combustion for the proposed coal mine and provide the following information: • describe the quality and quantity of carbonaceous waste material including coarse rejects and fine tailings stockpile at the mine site Risks from coal stockpile is covered, but from overburden is not addressed. FAIL. Chapters 3 – Project Description and 21 – Hazard and Risk • discuss the potential risk of spontaneous combustion from the coal and waste stockpile areas Waste stockpile ignored. FAIL • discuss the prevention and control measures adopted for spontaneous combustion Superficial coverage for stockpiles only. FAIL • describe likely impacts of spontaneous combustion incidents on the receiving environment FAIL • develop and implement "spontaneous combustion management plan" by considering NSW spontaneous combustion management guidelines The intention to develop a plan is there for stockpiles, but there is no plan. FAIL.	No adequacy review comment.	Addressed in Chapter 21, Section 21.6.2.

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	14.23	Chapter 19, Section 19.2 4.3	A regional input-output economic approach was used. This is inappropriate and details possible income from coal while ignoring externalities and fails to consider proportionality. A properly conducted study might find there is no overall value from the project. This would be vital information for governments and peoples. The implication of this principle is that some issues are of minor importance and can be discounted in the submission process. However, who is to decide the importance of the issue at hand? Is the most important issue related to the profitability of a project or to the environmental impact? Are the concerns of five or ten local residents and their cattle grazing enterprise considered a minor detail, or do these carry some weight against importance of multi- million dollar profits? One way of dealing with this is a cost benefit analysis.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.4.1.
	14.24	Chapter 19, Section 19.2 4.4	Cost-benefit analysis is a method used to make decisions about alternative courses of action based on the net welfare gain to the community as measured by criteria such as net present economic value (NPEV) and benefit cost ratio (BCR). Benefits and costs are social in that they are measured irrespective of how they are distributed, and they are not limited to actual market transactions. Cost-benefit analysis is particularly relevant to public sector decision making where the costs and benefits of a project are often not reflected in market transactions. These economic values of costs and benefits are forecast over the life of the project, costs are subtracted from benefits, and the sum of the resulting net benefits are discounted to give the net present economic value (NPEV) of the project. The NPEV allows project options to be compared on the same basis and hence allows the determination of the greatest net benefit to the community or the most economic use of resources.6	No adequacy review comment.	Addressed in Chapter 19A, Section 19.4.1.1

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	14.25	Chapter 19, Section 19.2 4.5	The economics profession shows rare unanimity on this point that project assessment should relay firmly on cost benefit analysis. Commonwealth and other state treasuries make similar statements, as do academic economists7, private consultants8 and the Business Council of Australia.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.4.1.1
	14.26	Chapter 19, Section 19.2 4.6	Over many years, the Business Council of Australia has promoted the importance of using cost-benefit analysis (CBA) to evaluate major public expenditure and regulatory decisions.9 To put it simply, the value of a project is usually stated without the externality costs. Without taking into account the health and social costs of the project, it is not possible to be sure of the economic desirability of the project. Examples include coal projects which incur health costs sufficient to outweigh the benefits of the project, as out lined by publications such as Muller, Mendelsohn & Nordhaus, 2011.10	No adequacy review comment.	Addressed in Chapter 19A, Section 19.4.1.1
	14.27	Chapter 19, Section 19.2 4.7	DEA notes the reference to the paper by Jones and Morrison-Saunders11, “Making sense of significance in environmental impact assessment”, which outlines a framework for making a decision regarding significance, however there remains uncertainties regarding the final decision-making process.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.4
	14.28	Chapter 19, Section 19.2 4.8	Cost-benefit analysis of the project should also include an assessment of greenhouse gas emissions that will arise from the project (see Climate Change and the project).	No adequacy review comment.	Addressed in Chapter 19A, Section 19.4.1.1
	14.29	General Comment – Conclusion	There are many errors and omissions in the EIS and these should be remedied. There is a strong case for rejecting the Project because of potential damage to the Reef and its contribution to warming of the world’s and Queensland’s climate and the health impacts including deaths which will result. Evidence is not provided that the project will be of economic value to Queensland.	No adequacy review comment.	No update to the EIS proposed

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15	15.1	General Comment	For the reasons set out below, the application for mining lease should be refused taking into account all the matters in section 294(4) of the Mineral Resources Act 1989 and the application for environmental authority should be refused considering the standard criteria and all the matters listed in section 191 of the Environmental Protection Act 1994.	No adequacy review comment.	No update to the EIS proposed
	15.2	Appendix 10a	For the reasons set out below, the application for mining lease should be refused taking into account all the matters in section 294(4) of the Mineral Resources Act 1989 and the application for environmental authority should be refused considering the standard criteria and all the matters listed in section 191 of the Environmental Protection Act 1994. Under the heading "Project Justification," the EIS states that the Project would be economically viable. However, the Proponent's own data contradicts this statement. Appendix 10a, the Economic Technical Report, states that, over its lifetime, the Project is expected to: ● generate $4,408,990,000 in export value (although this value may be overstated due to fluctuations in coal price); ● have a capital expenditure of $242,680,000; ● have operating costs of $4,082,500,000; and ● pay out $525,260,000 in royalties. Hence, the capital expenditures, operating costs, and royalties exceed the export value by $441,450,000 (1).	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4
	15.3	General Comment	In the EIS it is stated that the assessment was restricted to the Styx River and impacts are unlikely to extend beyond the Styx River. Further, it is stated that assessments are primarily focussed on mine lease 80187 and mine lease 700022 (2). This demonstrates that the assessment has not considered the wider impacts on the Great Barrier Reef World Heritage Area and the cumulative impacts of the mine construction and operation.	No adequacy review comment.	Addressed in Chapter 16, Sections 16.13.1, 16.14 and 16.15. No adverse impacts to the OUV of the GBRWHA are predicted.

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	15.4	General Comment	Appendix 3 of the Terms of Reference requires the EIS to provide a detailed assessment of potential and likely direct, indirect, and consequential impacts of the Project on the Great Barrier Reef World Heritage Area and its outstanding universal value ("OUV") and integrity. The EIS must also "address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities," as well as the "potential cumulative impact of the proposal on ecosystem resilience. The cumulative effects of climate change impacts on the environment must also be considered in the assessment of ecosystem resilience."	No adequacy review comment.	Addressed in Chapter 16, Sections 16.13.1, 16.14 and 16.15. Cumulative impacts are discussed in Section 16.18. No adverse impacts to the OUV of the GBRWHA are predicted.
	15.5	General Comment	Appendix 3 instructs the Proponent to refer to the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance ("Guidelines"). The Guidelines state that an action is likely to have a significant impact on the OUV of a World Heritage area if there is a real chance or possibility that it will cause one of more of the OUVs to be lost, degraded, damaged, notably altered, modified, obscured, or diminished. The Guidelines state that "whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.". In addition, the Guidelines state that indirect impacts include "'facilitated impacts' which result from further actions which are made possible or facilitated by the action, and that consideration should be given "to all adverse impacts that could reasonably be predicted to follow from the action, whether these impacts are within the control of the person proposing to take the action or not. Indirect impacts will be relevant where they are sufficiently close to the proposed action to be said to be a consequence of the action, and they can reasonably be imputed to be within the contemplation of the person proposing to take the action" (3).	No adequacy review comment.	Addressed in Chapter 16, Sections 16.13.1, 16.14 and 16.15. No adverse impacts to the OUV of the GBRWHA are predicted.
	15.6	General Comment	For the reasons that follow, the EIS has failed to comply with the requirements of the Terms of Reference. The Great Barrier Reef World Heritage Area includes the waters of Broad Sound	No adequacy review comment.	Addressed in Chapter 16.17, Sections 16.17.1 to 16.17.6.

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			and the Styx River mouth. The Project is located only 8 km from the boundary of the World Heritage Area (4). Broad Sound is an important habitat for shore birds (5); and an important habitat for juvenile marine species as well as encompassing habitat for vulnerable species including the Dugong (D*ugong dugon*), Flatback turtle (*Natator depressus*), Australian humpback dolphin (*Sousa sahulensis*) and Australian snubfin dolphin (*Orcaella heinsohni*). In addition, the critically endangered Yellow chat (*Epthianura crocea macgregori*) is known to inhabit the marine fringes of Broad Sound. Habitat occupied by the Yellow Chat is threatened by modifications to the hydrological regimes, through flow reductions and construction of barriers (by dams, levee banks or ponded pastures) within tidal areas where the subspecies occurs (6).		No adverse impacts to the OUV of the GBRWHA are predicted. The Yellow Chat is known from the Torilla Plains approximately 40 km east of the Project area (Jaensch et al. 2004) and has been recorded in the St Lawrence area in 2006 - 2007 (DotEE 2018) (also refer Table 16-115). The species requires beds of dense rushes or sedges on marine plains for shelter and breeding habitat. The species prefers areas where there is seasonal inundation by both fresh and tidal waters and comprise a variety of saline habitats – salt couch, samphire, rushes and / or sedges, and bare mud. It is noted that the Styx River area is already subject to substantial modification due to construction of ponded pasture for cattle grazing. The Project's impacts on

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					hydrological regimes are described in detail in Section 16.10 (summarised in Section 16.10.6.4) and will be minimal at worst and only during 'peak flow' events. There is no suitable habitat on or near the Project area. The nearest habitat that may have some potential as habitat for the species is at least 11 km directly north of the Project boundary, however the species has never been reported in the Styx River area. As such, the species is not considered to occur and will not be subject to impacts from the Project.

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	15.7	General Comment	EIS acknowledges it may impact the World Heritage Area and its OUV through "the potential release of polluted and / or sediment laden waters released into Tooloombah Creek or Deep Creek and thereby into the Styx River," which drains into Broad Sound, part of the World Heritage Area (7). Specifically, the construction and operation of the Project will mobilise sediment, which can be "transported by surface water during rainfall events ultimately discharging into Deep Creek drainage lines which can result in negative impacts on water quality and aquatic habitats," such as reducing light penetration, decreasing photosynthesis, and decreasing dissolved oxygen (8). Sediment run-off is also likely to contain elevated levels of nitrogen and phosphorous due to local agricultural activities, which promote algal growth and may result in algal blooms and surface water deoxygenation (9). In addition, "contaminated runoff has the potential to enter the Styx River and Broad Sound, temporarily impacting localised [World Heritage Area] OUVs such as coastal mangroves and saltmarsh communities and migratory shorebirds" (10). Contaminants such as hydrocarbons and heavy metals may enter water resources from the "haul road, spoil dump areas, coal stockpiles, coal conveyor, and other infrastructure elements such as environmental dams" (11).	No adequacy review comment.	Addressed in Chapter 16.17, Sections 16.17.1 to 16.17.6. No adverse impacts to the OUV of the GBRWHA are predicted.
	15.8	General Comment	However, the EIS concludes that there will be no significant impact to the World Heritage Area or its OUV because any water quality impacts will be "transient and diluted by the strong tidal actions" in Broad Sound, and the Project will implement the mitigation measures outlined in Chapter 16 (12). This conclusion is not supported by the evidence for the following reasons.	No adequacy review comment.	Noted.

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	15.9	General Comment	First, in relation to the release of sediment- and/or nutrient-laden waters, the EIS assumes that, "given the background occurrence of high turbidity in Broad Sound waters, it is considered very unlikely that the accidental and temporary release of suspended sediments from Project activities will possibly be of a magnitude that may impact" the World Heritage Area or its OUV (13). However, the EIS provides no data to support this assumption. For example, the EIS fails to model the potential volume of suspended sediments reaching Broad Sound over the Project's lifetime or assess the impact of that volume on the World Heritage Area or its OUV. This is especially concerning because the EIS recognises that elevated turbidity has negative impacts on seagrass beds and coral growth (14). The EIS also fails to assess the impact of suspended sediment from releases that are not "accidental and temporary," but rather are ongoing consequences of the Project, as well as the impacts of nutrients in the released water.	No adequacy review comment.	The creeks adjacent to the Project have highly intermittent flows. Sediment releases from the Project are not planned. The monitoring, management and modelling of the potential release of suspended sediments will be considered within the Project REMP where such an event is detected. The REMP will include the installation of flow gauges within Deep and Tooloombah Creek.

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	15.10	General Comment	In relation to the release of contaminated waters, the EIS assumes that, "given the transient nature of such an event (should it occur) and the large tidal regime in Broad Sound, it is considered that any contaminated runoff will be diluted by tidal waters and unlikely to cause any significant or lasting impact to these values" (15). However, not only does the EIS recognise that it is possible that contaminated waters may be accidentally released, (16) its conclusion is again based on an assumption for which it provides no supporting data, such as modeling of the tidal regime to demonstrate dilution of contaminants to an insignificant level, an assessment of the likely type and volume of contaminants, or an assessment of the likelihood and length of a contamination event. There is a real possibility that contaminated water will become "trapped" in the Sound, moving back and forth with the tide. No treatment of contaminated water is contemplated other that a period of settlement to reduce sediment. The contamination of the water from the Coal Handling Preparation Plant is of particular concern. Without the information on the type of contaminants, volumes, dilution and the exchange of water in the sound, the EIS cannot adequately assess the impact of contaminated runoff on the World Heritage Area or its OUV.	No adequacy review comment.	The creeks adjacent to the Project have highly intermittent flows. Contaminant releases from the Project are not planned. The monitoring, management and modelling of the potential release of contaminants and tidal regime of Broad Sound will be considered within the Project REMP where such an event is detected. It should be noted there is no available tidal data from the Broad Sound area.
	15.11	General Comment	Second, the EIS notes that it is "uncertain to what extent the Project area currently contributes to sediment or nutrient loads entering" Tooloombah or Deep Creeks, (17) and does not assess the impacts "from existing (or baseline) water quality observed in the tributaries discharging to Broad Sound because it is "difficult to make this assessment without a suitable baseline data set for Broad Sound" (18). Without this information, the EIS cannot assess the significance of the Project's impacts on water quality in the World Heritage Area. The difficulty of making the necessary assessment is irrelevant.	No adequacy review comment.	Addressed in Chapter 5, Section 5.6 and Chapter 9, Section 9.5 and 9.6.

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	15.12	General Comment	Third, the EIA bases its assessment of the Project's impact on the World Heritage Area and its OUV on the assumption that there are "few habitats supporting the World Heritage Area's OUVs directly downstream of the Project (such as coral reefs, seagrass meadows and large marine fauna) (19). However, this assumption is inconsistent with other information provided in the EIS that "Broad Sound (with Shoalwater Bay) is considered one of the five main centres within the World Heritage Area for mangrove and saltmarsh communities. These are critical habitats for important juvenile marine species such as Barramundi (Lates calcarifer), mullet and peneid prawns (20). The EIS also recognises that there are small fringing reefs around 35 km north-northeast of the Project boundary, that seagrass beds – which are impacted by high turbidity – in the northwest of Broad Sound support dugong populations, and that Broad Sound comprises significant wetland habitat for waterbirds, including migratory shorebirds (for which Broad Sound is noted as a site of international importance), and seabirds (21). Broad sound is also habitat for Flat-backed turtles and 2 species of dolphins. The EIS fails to assess how the Project's impact on water quality may impact these aspects of the World Heritage Area.	No adequacy review comment.	Addressed in Chapter 16, Sections 16.17.1 to 16.17.6. No adverse impacts to the OUV of the GBRWHA are predicted.
	15.13	General Comment	On the information presently available, the Project is non-compliant in that the cumulative impacts have not been considered. The EIS contains internal inconsistencies in the discussion of Broad Sound and the potential impacts of the project. In addition, the risks of impacts to the Great Barrier Reef World Heritage Area and its Outstanding Universal Value have not been considered. Together these factors alone are sufficient to warrant refusal.	No adequacy review comment.	No update to the EIS proposed

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16	16.1	General Comment	My name is Samuel Eamon Palm. I am the son of Jacqueline McCamley-Woods and Andrew Palm. My mother is the owner of ''Tooloombah Station'' which is situated about 35km north of Marlborough, Queensland. ''Mamelon", which is owned by the well-known Australian entrepreneur Clive Palmer, adjoins a considerable portion of Tooloombah. Mamelon and Tooloombah have for almost two centuries been very productive grazing lands, which have supported many people (including the owners, staff and local rural services) even during times of drought, low cattle prices and the Global Financial Crisis. To me as someone who has been out of school for almost two years it is worrying to see many of my friends leaving the land because of their families' properties being purchased by mines. It is also worrying the number who have gone on to apprenticeships, working in the mines and other occupations rather than on to the land, with promises of great careers and possible early retirement compared to the physically demanding and challenging life on the land.	No adequacy review comment.	No update to the EIS proposed
	16.2	General Comment	A projected life span of twenty years for the Central Queensland Coal Project (CQCP) mine on Mamelon compared to a past record of almost 200 years feeding our nation, makes it only a very short-term operation.	No adequacy review comment.	No update to the EIS proposed
	16.3	General Comment	Although creating a couple of hundred jobs seems like a good thing, as seen to date all over Australia, mining has caused many negative consequences to the environment and the rural industry. It is difficult finding staff willing to work on a cattle property because of the lure of mining wages. My generation is losing the skills and resilience of former generations of country people, and how will they be recovered when only my generation and subsequent generations remain?	No adequacy review comment.	No update to the EIS proposed

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	16.4	General Comment	I must ask why such a short-sighted thing like CQCP can be intentionally done ruining country and surrounding area forever? Short term affects are devastating for surrounding farmers and people in the community with hidden killers of coal dust not just affecting the health of so many people but our financial options. Coming from a family of well-known organic industry leaders it has always been my goal to diversify into the organic market on our independent family property so as to reduce, if not avoid, the financial difficulties as seen in the past from a volatile cattle market.	No adequacy review comment.	No update to the EIS proposed
	16.5	General Comment	In a world filled with such pollution and contamination from things we are still using, and mistakes of the past, I struggle justifying to myself how such a thing can be done in this day and age with what we have already learnt.	No adequacy review comment.	No update to the EIS proposed
	16.6	General Comment	Mamelon has consistently put out high numbers of cattle each year in country that has been cared for with such respect for so many years it is dishonourable to take away so much money and food from Australia and the beef industry only furthermore supporting the aggressive asset and market domination from foreign interests.	No adequacy review comment.	No update to the EIS proposed
	16.7	General Comment	If the open cut mine on Mamelon is to go ahead there will be many immediate devastating effects. First of all is the effect it will have on day to day living from the noise and air pollution. In the first few weeks the coal dust begins to settle on roofs. It is from those roofs that we get our only drinking water. We have no other options for drinking water as dam water is unpalatable and would soon be too contaminated to drink anyway. Bore water will become too salty after being over-pumped through the loopholes mines are granted.	No adequacy review comment.	Addressed in Chapter 12 – Air Quality and Chapter 13 - Noise. Tooloombah Homestead has been included as a sensitive receptor
	16.8	General Comment	Our sleep would be interrupted from the moment mining infrastructure works commence from noise coming from Mamelon, and outgoing and incoming traffic along Anglewood Road and Mt Bison Road.	No adequacy review comment.	Addressed Chapter 13 - Noise. Tooloombah Homestead has been included as a sensitive receptor

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	16.9	General Comment	In addition to being unable to sleep because of the above-mentioned noises, sleep will also be lost from constantly having to check that vehicles are not trespassing onto 'Tooloombah', a problem which will be difficult to police, not just legally but remaining safe when doing so as it has been seen at every mine that the rules of not permitting firearms are regularly disregarded. Miners away from their family, and in isolated mining camps, are known to fill in their downtime shooting recreationally. The miners recreational shooting will no doubt result in us discovering dead beasts shot either by accident, or intentionally. There are instances of when miners have been sacked, of them retaliating putting surrounding lands at risk. Instances include bush fires and destroying equipment. Other impacts we would be likely to suffer before long include fences cut, gates left open, machinery vandalised and theft. The safety of family, staff and visitors would be at risk.	No adequacy review comment.	No update to the EIS proposed
	16.10	General Comment	Who is responsible for the actions of the miners once they are off shift? Does it remain the responsibility and liability of CQCP?	No adequacy review comment.	No update to the EIS proposed
	16.11	General Comment	How can mining employees' negative actions realistically and effectively be proven?	No adequacy review comment.	No update to the EIS proposed
	16.12	General Comment	It is well known that it will be a difficult, exhausting and disheartening process battling these issues, which will not only cause a loss of income because of reduced pasture production (because of traffic and coal dust) and impacts to water quantity and quality, but also loss of income because my time will be wasted trying to sort out issues with CQCP and the government rather than being out in the paddock working productively.	No adequacy review comment.	No update to the EIS proposed
	16.13	General Comment	I have read online and in newspapers about the long term stress endured by land owners suffering from dealing with the impacts of coal mining, and that it is known to cause mental illness which those people would otherwise never have experienced.	No adequacy review comment.	No update to the EIS proposed

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	16.14	General Comment	Regarding water quality and quantity, it will never recover. As stated in CQCP's EIS, the bores will drop 100 metres, and within 100 years they may recover by only half of that drop.	No adequacy review comment.	Addressed in Chapter 10 - Groundwater
	16.15	General Comment	It disgusts me, my colleagues, friends and family how CQCP could be granted a mining lease in the year we live in, with the advances we make each day, and knowledge we have acquired since Australia was first settled.	No adequacy review comment.	No update to the EIS proposed
	16.16	General Comment	Would the world use products known to contain radium in the general household knowing what we know now? Of course not. Would you mine coal devastating the land and environment killing one of the seven wonders of the world? I would most certainly hope not.	No adequacy review comment.	No update to the EIS proposed
17			No Comment	No adequacy review comment.	No Update to EIS
18	18.1	Chapter 15, Section 15.6.2.5, p.15-24 & 15-25	The Broad Sound area's internal waters (e.g. tidal rivers and creeks) are part of the state's Great Barrier Reef Coast Marine Park, under the Marine Parks Act 2004. This marine park is managed by Queensland Parks and Wildlife Service in complementarity with the Great Barrier Reef Marine Park Authority. Section 15.6.2.5 does not mention the Great Barrier Reef Coast Marine Park, however Figure 15-8 on page 15-57 correctly shows the Great Barrier Reef Coast Marine Park. Update section 15.6.2.5 to explain that Broad Sound's internal waters are within Queensland's Great Barrier Reef Coast Marine Park (under the Marine Parks Act 2004), and the offshore waters are within the Commonwealth's Great Barrier Reef Marine Park (under the Great Barrier Reef Marine Park Act 1975).	No adequacy review comment.	Addressed in Chapter 15, Sections 15.6.2 and 15.7.

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	18.2	Chapter 15, Section 15.11, p.15-83	The internal waters of the Broad Sound are within the Great Barrier Reef Coast Marine Park, whereas offshore areas are within the Great Barrier Reef Marine Park. Table 15-11 describes the MSES that apply to the project. The row for the category "Marine parks" identifies the state marine park zones, however refers only to the Great Barrier Reef Marine Park (the Commonwealth marine park), but not the Great Barrier Reef Coast Marine Park (the state marine park). Update table 15-11, row on Marine Parks, to refer to the "Great Barrier Reef Coast Marine Park" instead of "Great Barrier Reef Marine Park".	No adequacy review comment.	Addressed in Chapter 15, Section 15.11
	18.3	Chapter 15, Section 15.12, p.15-88	The conclusion refers only to the Great Barrier Reef Marine Park and does not mention the Great Barrier Reef Coast Marine Park. Update the second paragraph to state that Broad Sound is also part of the Great Barrier Reef Coast Marine Park.	No adequacy review comment.	Addressed in Chapter 15, Section 15.12
19	19.1	Section 7.1 of the Term of Reference	I. The EIS fails to demonstrate that the Project is economically viable Section 7.1 of the Terms of Reference requires the Proponent to describe the "rationale for the project."1 The Proponent has purported to meet this Term of Reference by providing an economic rationale in Chapter 2.2 ("Project Justification") of the EIS. However, for the reasons that follow, the Proponent's purported economic rationale fails to demonstrate that the Project is economically viable and relies on inaccurate information about coal demand and pricing.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4

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	19.2		Unless the Proponent submits further information demonstrating a financial rationale, the government cannot be satisfied there will be economic utilisation of the resource or that it is the most appropriate use of the land and the application must be refused. A. The EIS indicates that the Project would operate at a loss Under the heading "Project Justification," the EIS states that the Project would be economically viable.2 However, the Proponent's own data contradicts this statement. Appendix 10a, the Economic Technical Report, states that, over its lifetime, the Project is expected to: • generate $4,408,990,000 in export value (although, as noted in the sections below, this value is likely to be overstated);3 • have a capital expenditure of $242,680,000;4 • have operating costs of $4,082,500,000;5 and • pay out $525,260,000 in royalties.6 As the table below demonstrates, the capital expenditures, operating costs, and royalties exceed the export value by $441,450,000:	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.
	19.3		Accordingly, even if coal export prices maintain their current highs (which, as discussed below, is unlikely), the Project is not economically viable according to the Proponent's own budget. As such, the Proponent has failed to provide a rationale for the Project, as required by the Terms of Reference. Request for further action: The Proponent must provide a legitimate and accurate rationale for the Project, including by demonstrating that the Project's capital expenditures, operating costs, royalties, and any other expenditures, will exceed the export value.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4

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	19.4	Chapter 2, Section 2.2	B. The EIS incorrectly states that global price and demand for thermal coal is growing As noted above, the stated export value of the Project is likely to be overstated, because the assumptions that underlie the value are not supported by the evidence. For example, in Chapter 2.2 of the EIS, the Proponent refers to recent price gains for thermal coal, and states that the "demand for thermal … coal, and subsequent coal spot prices makes this Project economically viable."7 However, in relation to the price of thermal coal, in both the March and September 2017 Energy and Resource Quarterly, the Office of the Chief Economist stated that thermal coal prices will drop over the medium term8 and "global benchmark spot prices are also expected to decline over the outlook period."9 KPMG, an international network of firms providing audit, tax, and advisory services that provides quarterly coal price forecasts, has reached similar conclusions about coal price in its forecast to 2021, showing an average Newcastle benchmark thermal coal price declining from $US79.8 per tonne in 2017 to US$61.2 per tonne in 2021.10	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4
	19.5	General Comment	The recent price increases for thermal coal were partly driven by "supply-side reform in the coal sector in China," such as mandated reductions in the number of days that coal mines could produce, weather-related supply disruptions, and a spike in demand over a hot Chinese summer.11 These factors resulted in supply shortfalls in China and upward pressure on global prices.12 However, the "current and expected continued easing of Beijing's reform policies are expected to drive thermal coal prices down" because China's demand for imports will decline and it is moving to a more diversified energy mix.13	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6

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	19.6	General Comment	Furthermore, the Australian seaborne market – which is a smaller subset of the global coal market – is very much driven by demand, in particular Chinese and Indian demand.14 As a consequence, when demand drops, coal prices are driven down. Because, as discussed below, both Chinese and Indian coal demand is projected to decrease, this indicates that coal prices on the seaborne market may also decrease.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6
	19.7	General Comment	In relation to the global demand for thermal coal, the Proponent cites to the International Energy Agency's ("IEA") World Energy Outlook 2014 to argue that "increases in demand are predicted to continue for approximately the next ten years."15 However, the IEA's most recent World Energy Outlook 2017 contains very different projections from those in 2014, under the main scenario modeled in the Outlook, which is based on existing energy policies and an assessment of the results likely to stem from the implementation of officially-announced policy intentions. The Outlook states that "[c]oal demand growth is projected to remain subdued in the coming ten years"16 and that there will be a "dampening of growth prospects for global coal consumption over the next 25 years."17 In fact, in the absence of large-scale carbon capture and storage, "global coal consumption flatlines" towards 2040.18 The U.S. Energy Information Administration makes similar projections, stating in September 2017 that worldwide coal consumption will remain roughly the same between 2015 to 2040 and, although China will remain the largest single consumer, its consumption will steadily decline due to its changing energy mix.19 Although the EIA suggests that India's demand for coal will continue to grow through to 2040,20 India's imports are in decline, partly because it is aiming to meet its demand with domestic coal,21 and recent studies indicate that market expectations of India's thermal coal needs are excessive.22	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4

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	19.8	General Comment	In addition, the EIS fails to take into account the potential disruption to Australian coal exports that is likely to result in the future, whether from the decreasing costs of renewable energy or stricter regulatory constraints on emissions. For example, recent policy changes in Taiwan and South Korea, which are key markets for Australian thermal coal, as well as a growth in renewable energy in Japan, another key market, are likely to reduce those countries' demand for Australian coal by up to 2% each year.23 The 2017 Outlook also models a second scenario, the "sustainable development" scenario, in which countries take action on climate change in line with the Paris Agreement.24 Under this scenario, global coal demand falls by around 3% per year to 2040.25	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4
	19.9	General Comment	Request for further action: The Proponent must provide current information that demonstrates conclusively how the global demand and price projections for thermal coal justify the Project. Recommendation: Unless further information demonstrates an economic demand for the Project, the application should be rejected.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4

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	19.10	General Comment	C. The EIS relies on outdated and inconclusive projections for Southeast Asian thermal coal demand The assumptions underlying the export value in relation to Southeast Asian thermal coal demand are also not supported by the evidence. The EIS attempts to provide a rationale for the Project by stating that "Southeast Asian thermal coal demand is expected to triple in the next 25 years," citing the IEA's Southeast Asia Energy Outlook 2015.26 However, this report is out of date, and the IEA's most recent Southeast Asia Energy Outlook, dated 2017,27 has revised Southeast Asia's demand for coal in 2040 to 390 million tonnes of coal equivalent,28 down from its forecast in 2015 of 440 million tonnes of coal equivalent,29 and notes that "[r]eflecting recent policy developments that favour renewables and the multiple challenges in building coal-fired plants, the contribution of coal in the power generation mix in 2040 is lower by almost ten percentage points at 40%" than was identified in the 2015 report.30 As such, the 2015 forecasts for Southeast Asian coal demand on which the Proponent relies to justify the Project are out of date, no longer accurate, and, in just two years, have been significantly reduced.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4
	19.11	General Comment	The 2017 Outlook also models a sustainable development scenario similar to the one described in section I.B above, in which countries take action on climate change in line with the Paris Agreement.31 Under this scenario, the use of coal is "vastly diminished, falling by around 30% in the period to 2040, as renewables eat into coal's share of the power mix. As a result, by 2040, 70% less coal is used" in this scenario than the central scenario modeled in the Outlook32 (which is based on existing energy policies and an assessment of the results likely to stem from the implementation of officially-announced policy intentions).33 To accurately assess the economic viability of Project, the EIS should consider this scenario, particularly given the global trend towards stronger emissions regulation and increased uptake of renewables.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4

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	19.12	General Comment	Request for further action: The Proponent must provide current information that demonstrates conclusively how demand for thermal coal in Southeast Asia justifies the Project, taking into account the possibility of a significant reduction in demand for coal in Southeast Asia based on countries acting in line with the Paris Agreement. Recommendation: Unless further information demonstrates adequate reliable demand for the Project, the application should be rejected.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4
	19.13	General Comment	D. The EIS fails to demonstrate how the Project will be economically viable in light of falling prices for coking coal. The EIS also attempts to provide a rationale for the Project by stating that "non-OECD countries are … predicted to drive global growth in coking coal consumption and production over the medium term as steel is required to support growing infrastructure needs. …The current increases in global demand for coal and forecast increases in production support the justification for the Project."34 However, this statement is not supported by the evidence, which indicates that the price of coking coal will fall well below the assumption made in the EIS of a price decrease from US$160 to US$125 per tonne.35 For example, KPMG's most recent coal price forecast to 2021 indicates a consistent fall in the price of semi-soft coking coal, with an average price dropping from US$137.9 per tonne in 2017 to US$89.8 per tonne in 2021.36 In the March 2017 Resource and Energy Quarterly, on which the Proponent relies in the EIS, as well as the September 2017 Quarterly, the Office of the Chief Economist indicates that coking coal prices will decline throughout the two year outlook period of the Quarterly.37 In relation to China, to which Australia exports a significant portion of its metallurgical coal, the March 2017 Quarterly states that higher coking coal prices "are not expected to last. Production of steel in China is expected to decline over the next five years, as construction activity slows."38 In addition, a 2016 report by the Coal Strategy Planning Research Institute in	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4

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			Beijing indicates that recent higher prices for coking coal were largely caused by a shrinking domestic supply driven by Chinese government policies designed to tackle the industry's overcapacity crisis: "A supply gap created by specific policies, rather than an increase in demand, is the reason for the recent price increase."39 Furthermore, some of the recent price spikes for coking coal were due to reduced Australian supply caused by Cyclone Debbie, and, accordingly, prices "are likely to weaken in 2018 due to a production recovery in Australia."40		
	19.14	General Comment	Request for further action: The Proponent must demonstrate how the Project would be economically viable if the price for coking coal falls below US$125 per tonne. Recommendation: Unless further information demonstrates an economically viable project, the application should be rejected.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6.4
	19.15	General Comment	E. The EIS does not demonstrate how the Proponent will pay for rehabilitation Section 8.2.1 of the Terms of Reference for the EIS requires the Proponent to propose a comprehensive rehabilitation strategy and provide sufficient evidence to demonstrate that the predicted outcomes can be achieved. However, the EIS does not contain any information about the cost of implementing the rehabilitation strategy set out in Chapter 11 of the EIS, and fails to demonstrate that the Proponent will have sufficient financing available to carry out the rehabilitation strategy. Instead, as described above, the Proponent's own financial information indicates that the Project will operate at a loss, which suggests there will be no money available for rehabilitation. Furthermore, although the EIS indicates that a financial assurance must be lodged prior to carry out activities on the mining lease, the EIS fails to demonstrate whether this financial assurance would be sufficient to cover the unidentified cost of rehabilitation.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6, Table 19-15 – see Year 2036 to 2038 expenditure which is predominantly mine rehabilitation and closure activities.

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	19.16	General Comment	Request for further action: The Proponent must calculate the cost of implementing the rehabilitation strategy, and demonstrate that it will have sufficient financing available to implement it. Recommendation: Unless further information demonstrates the financial resources of the Proponent are sufficient to meet the likely rehabilitation liabilities, the application should be rejected.	No adequacy review comment.	Noted. Financial Assurances will be required to be paid to the Queensland Government prior to the commencement of mining operations. No update to the EIS proposed.
	19.17	General Comment	F. Conclusion As described above, the Proponent has failed to provide a rationale for the Project, as required by the Terms of Reference, because it has failed to demonstrate that the Project is economically viable, especially in light of the downward trends in coal price and demand. The Proponent has also attempted to rely on inaccurate and outdated information about coal price and demand. The Proponent must submit additional information to demonstrate the rationale for the Project.	No adequacy review comment.	Addressed in Chapter 19, Sections 19.4 and 19.6
	19.18	General Comment	II. The EIS does not adequately or accurately assess direct or indirect greenhouse gas emissions A. The EIS fails to demonstrate the basis for calculations of greenhouse gas emissions. The Proponent must demonstrate the basis for the cal+C7:H7 calculation of the emissions in Year 12 and over the total lifetime of the Project, including by itemizing the greenhouse gas emissions for each year of operation. It must also demonstrate why Year 12 is considered the “maximum operational phase” of the Project.	No adequacy review comment.	Addressed in Chapter 12, Section 12.6.8 and 12.10

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	19.19	General Comment	B. The EIS fails to calculate the Project's downstream greenhouse emissions. The Proponent must revise the EIS to include a calculation of the downstream emissions that will result from the Project. The Proponent must also demonstrate it has considered the cumulative impacts of the Project's downstream emissions in the context of Queensland, Australian and global commitments to reduce greenhouse gas emissions.	No adequacy review comment.	Scope 3 Emissions were excluded from the EIS Term of Reference as Scope 3 Emissions are measured at the location coal is used. No update to the EIS proposed.
	19.20	General Comment	III. The EIS fails to adequately address the impacts on the Great Barrier Reef World Heritage Area A. The EIS fails to consider the impacts of greenhouse gas emissions on the World Heritage Area facilitated by the Project The Proponent must provide a detailed assessment of the impacts of the emissions from, and facilitated by, the Project on the World Heritage Area, its OUV, and the resilience of its ecosystem to adapt to climate change, in the context of the current and projected rapid deterioration of the OUV from the impacts of climate change and the urgent need to reduce greenhouse gas emissions to ensure the World Heritage Area's survival.	No adequacy review comment.	Greenhouse Gas Emissions are addressed in Chapter 16, Section 16.16. Scope 3 Emissions were excluded from the EIS Term of Reference as Scope 3 Emissions are measured at the location coal is used. No update to the EIS proposed.
	19.21	General Comment	B. The EIS fails to consider the impacts of industrial shipping through the World Heritage Area facilitated by the Project The Proponent must provide a detailed assessment of the cumulative impacts of industrial shipping on the World Heritage Area's OUV that may be facilitated by the Project.	No adequacy review comment.	Addressed in Chapter 6, Sections 6.4.4 and 6.12.4.

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	19.22	General Comment	C. The EIS fails to adequately assess the Project's impacts on water quality in the World Heritage Area The Proponent must undertake a detailed assessment of the impacts of sediment-laden, nutrient-laden, and contaminated waters released from the Project on the World Heritage Area and its OUV. It must provide modelling of the volume and contaminant concentration of the waters reaching the World Heritage Area, including from ongoing releases of sediment-laden waters, and provide evidence to support its unsubstantiated claims that the background turbidity and tidal regimes of Broad Sound will result in insignificant impacts on the World Heritage Area and its OUV.	No adequacy review comment.	Addressed in Chapter 16, Sections 16.9, 16.10, 16.14, 16.15 and 16.17.
	19.23	General Comment	D. The EIS fails to demonstrate that the Project will provide a net benefit for water quality in the World Heritage Area The Proponent must provide sufficient evidence to demonstrate that the Project will provide a net benefit for water quality in the World Heritage Area.	No adequacy review comment.	Addressed in Chapter 5, Sections 5.6, and 5.7 and Chapter 16, Section 16.17.1.3
	19.24	General comment	IV. The EIS fails to adequately assess the Project's vulnerability to climate change A. The EIS fails to adequately assess the Project's vulnerability to changed flood conditions resulting climate change The Proponent must include detailed projections of any changed flood conditions resulting from climate change, and must then assess the Project's vulnerability to future flood risk based on this information. The Proponent must also present detailed flood modelling, hydraulic design, and flood immunity design, to enable the Project's vulnerability to changed flood conditions resulting from climate change to be assessed.	No adequacy review comment.	Addressed in Chapter 4, Sections 4.7 and 4.8
	19.25	General comment	B. The EIS fails to adequately assess the Project's vulnerability to changed drought conditions resulting from climate change The Proponent must provide a detailed assessment of the cumulative impacts of industrial shipping on the World Heritage Area's OUV that may be facilitated by the Project.	No adequacy review comment.	Addressed in Chapter 4, Sections 4.7 and 4.8 and Chapter 6, Section 6.12.4

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	19.26	Groundwater	Attachment 2. - 10.5.11 Groundwater Chemistry The EIS fails to adequately assess impacts on Groundwater Chemistry A deep well should be drilled, and screened so that coal measures can be pump tested to determine their hydraulic and water chemical properties.	No adequacy review comment.	Addressed in Chapter 10, Section 10.5
	19.27	Groundwater	Attachment 2. - 10.6.4 Predicted Groundwater Quality Changes The EIS fails to adequately assess impacts on Groundwater Quality Changes The kinetic tests should be rerun: (1) until the both the pH and sulfate production have stabilized; (2) with more test cells to both better represent the large amount of waste rock to be backfilled and stored on the surface; and, (3) with some stratigraphies selected for their problematic potential.	No adequacy review comment.	Addressed in Chapter 10, Sections 10.5 and 10.7.
	19.28	Groundwater	Attachment 2. - 10.6.6 Aquifer Disruption The EIS fails to adequately assess impacts on Aquifer Disruption Modeling of complete backfill of Open Cut Pit 1 and Open Cut 4 should be performed to see if this would alleviate groundwater loss and/or saltwater influx impacts on the Styx River north of the mine, and dewatering in the Tooloombah Creek and Deep Creek catchments.	No adequacy review comment.	Addressed in Chapter 10, Sections 10.5, 10.7 and 10.8 and Appendix A6.
	19.29	Groundwater	Attachment 2. - 10.8.2 Groundwater Depressurisation and Drawdown of Water Table Mitigation and Management Measures Backfilling of the remaining voids in Open Cut Pit 1 and Open Cut 4 should be considered as a closure alternative.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.1.3 and Chapter 10, Sections 10.7 and 10.8 and Appendix A6.
	19.30	Groundwater	Attachment 2. - 10.8.3 Change in Groundwater Quality The EIS fails to adequately assess impacts on Change in Groundwater Quality A re-analysis of the collection strategy for potential contaminants from the surface waste storage piles is needed. Slurry walls, liners, and collections wells should be evaluated for collection efficiency and cost.	No adequacy review comment.	Addressed in Chapter 10, Sections 10.7 and 10.8.

Submitter No.	Submission Reference No.	Relevant EIS Section	EIS Review Issue Detail	SEIS Adequacy Review Comments	Central Queensland Coal Response/SEIS Cross-reference Location
20	20.1	Introduction	Unable to review the EIS within the 30 day review period. Request for 90 day review period.	No adequacy review comment.	Outside of the EIS response process. No update to the EIS proposed.
	20.2	Introduction	Claims regarding lack of due process and misinformation in the EIS process.	No adequacy review comment.	Outside of the EIS response process. No update to the EIS proposed.
	20.3	Introduction	Application for the mining lease should be refused due to its extensive conflict with all of the criteria that have to be considered under the Mineral Resources Act.	No adequacy review comment.	Outside of the EIS response process. No update to the EIS proposed.
	20.4	Water	CQCP state the project water supply requirements will be 3.76 megalitres of water per day/1,373 megalitres per year. Quantity is unrealistic compared to the actual sustainable water resources in the region. Flood harvesting of Tooloombah Creek is unacceptable for “Tooloombah Station”. The EIS fails to provide the design of the water management system and has not demonstrated an availability of the quantity of water required. Question the availability of groundwater to support the Project's operation. CQCP’s application should be rejected unless they can provide proper data to verify sufficient water for the lifespan of the mine.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.5.1 and Chapter 9, Section 9.7.
	20.5	Water	Concern regarding statement that a make good agreement will be entered into by the proponent should there be a loss of water supply. Provision of make good agreement prior to approval of the Mining Lease.	No adequacy review comment.	Outside of the EIS response process. No update to the EIS proposed
	20.6	Water	Concern regarding the location of the mine in a high environmental risk coastal zone.	No adequacy review comment.	Noted
	20.7		Not noticed as an affected person. EIS process should be suspended under s67 of the EP Act. Director-General fixes a new comment period for the TOR to recommence the EIS process requirements under EP Act division 2, subdivision 2, to remedy this noncompliance.	No adequacy review comment.	Outside of the EIS response process. No update to the EIS proposed.

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	20.8	Air and Noise	Concerns with the Mt Bison Road alignment and the noise and dust impacts on Tooloombah.	No adequacy review comment.	Addressed in Chapter 12 – Air Quality. Tooloombah Homestead has been included as a sensitive receptor
	20.9		Potential impacts to neigbouring cattle properties such as dust, noise, traffic flow, local accidents because of driver fatigue, degradation of water quality and quantity, social impacts to the community, crime, decreased property values, closure of rural services in the region and purity of beef they produce.	No adequacy review comment.	No recommendation but issued raised in statement are addressed variously throughout the SEIS.
	20.10	Social and Economic	Concerns regarding the financial resources of Clive Palmer and the ability of Clive to provide a bond.	No adequacy review comment.	Noted. Financial Assurances will be required to be paid to the Queensland Government prior to the commencement of mining operations. No update to the EIS proposed.
	20.11	Land	No information in the EIS showing the actual cost of rehabilitation and the ability for the proponent to have financial assurance.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6, Table 19-15 – see Year 2036 to 2038 expenditure which is predominantly mine rehabilitation and closure activities.
	20.12	Water	Unreasonable impact on surface water and groundwater users and on the environmental values of those waters.	No adequacy review comment.	Addressed in Chapter 9 – Surface Water and Chapter 10 - Groundwater
	20.13	Health and Safety	Concerns with coal dust on roof and the health implication of this entering the rainwater tank and consumed.	No adequacy review comment.	Addressed in Chapter 12, Section 12.6 and Chapter 20, Section 20.8

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	20.14	Water	Not enough water supply in the area to support a mine. EIS fails to provide the design of the water management system and has not demonstrated an availability of the quantity of water required. Provide data to verify sufficient water for the lifespan of the mine.	No adequacy review comment.	Addressed in Chapter 9, Section 9.7
	20.15	Land	Concerns with peace, privacy and introduction of weeds associated with water trucks visiting the property as a result of the 'Make Good' agreement. CQCP to provide an agreement regarding their obligation to spray introduced or spread of weeds; and whether the onus will fall to me to prove CQCP are responsible for introduction or spread of weeds; and whether I would be expected to provide witnesses; and whether those witnesses would be discredited because of not being considered expert witnesses? If this process necessitates I engage the services of a lawyer (of my choice), CQCP are to include in the agreement to fully reimburse my legal costs without a ceiling.	No adequacy review comment.	No recommendation
	20.16	Water	Concerns with Tooloombah Creek possibly being pumped dry as a result of CQC potentially taking full advantage once they have legal approval to pump from Tooloombah Creek.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.5
	20.17		At common law, a landowner has certain rights in relation to a watercourse that flows through your property. These rights will be taken away from me by CQCP's unnatural water use management of Tooloombah Creek downstream affecting availability of water upstream on Tooloombah.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.5
	20.18	Water	Can Tooloombah Creek's watercourse be altered?	No adequacy review comment.	Noted

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	20.19	Water	Tooloombah Creek has a catchment area of 369.68 km^2. The creek channel is generally well defined, with little evidence of floodplain discharges during flood events. The creek's main channel is significantly deeper than Deep Creek, with steep side slopes that are fully vegetated with minimal erosion evident. The Tooloombah Creek channel is approximately 20 m wide with defined smooth curves in the channel path as it flows into Styx River. Will the above remain the same during and after operation of the mine.	No adequacy review comment.	Addressed in Chapter 5, Sections 5.3, 5.9 and 5.13 and Chapter 9, Section 9.6.
	20.20	Water	Query regarding the design of haul roads, bridges and culverts to be constructed under an RPP.	No adequacy review comment.	Addressed in Chapter 1, Section 1.11.2.7.
	20.21	Water	CQCP Mining Lease application should be rejected because of interfering with highly complex watercourses, and thus an unacceptable risk of impacts to the Great Barrier Reef.	No adequacy review comment.	Noted
	20.22	Aquatic Ecology	Activities will affect barramundi breeding upstream and fish habitat upstream and downstream of the Project area.	No adequacy review comment.	Addressed in Chapter 15, Sections 15.7 and 15.8.
	20.23	Aquatic Ecology	Unacceptable risk to the Great Barrier Reef, aquatic life, fish habitats etc as a result of controlled releases.	No adequacy review comment.	Addressed in Chapter 15, Sections 15.7 and 15.8 and Chapter 9, Section 9.9.
	20.24	Land	Query over the actual disturbance footprint. 1,160 ha is misleading as it will disturb the broader area.	No adequacy review comment.	Noted. Updated disturbance discussion throughout the SEIS
	20.25	Land	Concerns with the change in landscape and elevation.	No adequacy review comment.	Addressed in Chapter 5, Sections 5.4.8, 5.5.7 and 5.9 and Chapter 11, Section 11.3.2

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	20.26	Land	The proposed CQCP site has an elevation from 4.5 metres above Australian Height Datum (AHD). The Styx River has a 7 metre tidal range, and storm surges can exceed 5 metres. This creates an unacceptable probability of even greater spread of mining waste contamination. CQCP to provide elevations to demonstrate their site elevation from 4.5 metres will not permit salt water tidal flow to seep or flow into the large empty voids via the complex branches of tidal creeks.	No adequacy review comment.	Addressed in Chapter 5, Section 5.5.1 and Chapter 10, Section 10.5.3.
	20.27	Rehabilitation	Concerned about the level of rehabilitation that will actually occur.	No adequacy review comment.	Addressed in Chapter 11 – Rehabilitation and Decommissioning. Financial Assurances will be required to be paid to the Queensland Government prior to the commencement of mining operations. No update to the EIS proposed.
	20.28	Waste Rock	Waste rock and spoil dams are not only a hazard during the lifespan operating a mine, but also for many decades after closure.	No adequacy review comment.	Noted. Chapter 8 – Waste Rock and Rejects and Chapter 11 – Rehabilitation and Decommissioning.
	20.29	Air and Noise	Air and noise amenity of property. Government conducted monitoring.	No adequacy review comment.	Outside of the EIS Scope
	20.30	Noise	Vibration from construction and blasting has the potential to affect services such as electrical and telecommunications cables. Who is responsible for rectifying the damage? What is the process I would have to go through for repairs and what time frame of impacted services is considered unacceptable?	No adequacy review comment.	Addressed in Chapter 13, Section 13.7.5. Comments regarding compensation outside of the EIS Scope
	20.31	Air	Will the government measure fumes?	No adequacy review comment.	Outside of the EIS Scope
	20.32	Noise	Damage to the Bruce Highway from blasting.	No adequacy review comment.	Addressed in Chapter 6, Sections 6.7.5, 6.9, 6.10.9 and 6.10.10

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	20.33	Social and Economic	People falsely lead to believe that the townships (Marlborough Ogmore, St Lawrence and Claireview) will benefit from accommodating CQCP staff. If CQCP does proceed, I would ask for their planned onsite miners camp to be located in Ogmore rather than on Mamelon (1km from Tooloombah), which would bring back to life a dying township that was once thriving with a primary school and pub, and is just 4 kilometres away from one end of their site.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.7
	20.34	Land	Disturbances as a result of vehicle use, plant and equipment introducing and spreading pest and weed species and plant diseases.	No adequacy review comment.	Addressed in Chapter 17 - Biosecurity
	20.35	Land	Grazing pastures are lost from fires caused by cigarette butts being thrown out windows.	No adequacy review comment.	Noted
	20.36	Social and Economic	Fences are cut, mixing up carefully drafted breeder groups.	No adequacy review comment.	Noted
	20.37	Social and Economic	There are livestock losses from their recreational shooting even though guns are supposedly banned from mine sites.	No adequacy review comment.	Noted
	20.38	Waste Management	An additional 250 to 500 men in the vicinity will increase the amount of litter blowing around and on to Tooloombah.	No adequacy review comment.	Addressed in Chapter 7 – Waste management
	20.39	Social and Economic	Drug use by miners increases the impact they have.	No adequacy review comment.	Noted
	20.40	Social and Economic	Poaching of native fauna is a known problem.	No adequacy review comment.	Noted
	20.41	Social and Economic	I will be concerned for my personal safety if I hear cars driving about Tooloombah throughout the night. My home will not be a ‘safe refuge’.	No adequacy review comment.	Noted

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	20.42	Hazard and Risk	My exposure to Public Liability claims will increase immeasurably with unauthorised cars driving throughout Tooloombah paddocks, even more so in the dark where fences, wash-outs and roads aren't clearly visible. I expect that the cost of Public Liability insurance for Tooloombah would increase significantly. CQCP to provide in a Make Good agreement assurance they will pay any increase in my Public Liability insurance (and the increased cost for theft cover) for Tooloombah Station from the cost at renewal of current policy on 30 June 2017.	No adequacy review comment.	Noted
	20.43	Social and Economic	I will be concerned leaving Tooloombah unattended for any period of time because of open sheds, and the substantially increased risk of theft.	No adequacy review comment.	Noted
	20.44	Land	The new bio-security laws once they commence will be difficult to comply with, partly because of the public roads, Anglewood Road and Mt Bison Road, traversing throughout Tooloombah. Please refer to the Livestock Production Assurance (LPA) Farm Bio Security Program recommended practices, as per the following website: https://www.mla.com.au/globalassets/mla-corporate/meat-safety-and-traceability/documents/livestock-production-assurance/22447-lpa-on-farm-biosecurity-plan-template_web.pdf	No adequacy review comment.	Addressed in Chapter 17 - Biosecurity
	20.45	Terrestrial Ecology	No confidence can be placed in species impact mitigation measures for koalas. Coal dust will cause lung diseases in koalas. Increase in traffic will cause an additional threat to koala numbers.	No adequacy review comment.	Addressed in Chapter 14, Sections 14.7 and 14.8
	20.46	Aquatic Ecology	Water being pumped from Tooloombah Creek as planned by CQCP will have a direct effect on Barramundi breeding, and in some places barramundi will become stranded, prevented from getting further upstream. The watercourses which CQCP will contaminate are identified nursery areas for barramundi, so it is important to keep pollutants out of this area.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.5

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	20.47	Aquatic Ecology	As well as affecting the tourism industry, less spawning of barramundi because of CQCP would also affect the local fishing industry.	No adequacy review comment.	Addressed in Chapter 15, Sections 15.7 and 15.8.
	20.48	Aquatic Ecology	In the EIS, it states "A conveyor is proposed to transfer product coal from Open Cut 1, under the Bruce Highway at an existing bridge crossing to the product stockpiles on the northern side of the Bruce Highway". The bridge crosses over a creek which ends up in the ocean, therefore coal contaminants will pass directly via the water course pathway to the Coral Sea.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.2
	20.49	Terrestrial Ecology	The project site is about 8kms from an internationally important area for migratory shorebirds. During CQCP's field surveys, one of the EVNT listed species they found was the Eastern Curlew which is listed as critically Endangered and Migratory under the EPBC Act.	No adequacy review comment.	Eastern Curlew was observed as individuals foraging 14 km north of the Project. The Project site is located over 30 km from important habitat (roost sites) for migratory shorebirds. Addressed in detail in Chapter 16, Sections 16.13.6 and 16.17.6
	20.50	Terrestrial Ecology	CQCP would have an adverse effect on the Tooloombah Creek Conservation Park due to its close proximity, which in the EIS is stated as being "1 km to the east.". CQCP need to report how this can be protected, otherwise their application should be rejected.	No adequacy review comment.	Addressed in Chapter 14, Sections 14.7.4 and 14.8.4
	20.51	Terrestrial Ecology	As stated in the EIS, "there are two wetlands of high ecological significance, one of which (Ref 688644) is located in the west of the site and subject to clearing for the mine pit dewatering dam".	No adequacy review comment.	Addressed in Chapter 15, Section 15.6
	20.52	Land	A Mining Lease will entitle CQCP to use any sand, gravel and rock located on the land, so there is no limit to the potential devastation.	No adequacy review comment.	No update to EIS

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	20.53	Water	Some scientific research attributes mining in Northern Queensland as the cause of bleaching of the Barrier Reef up north, and it is vitally important for that to not happen to the reef off the Central Queensland coastline.	No adequacy review comment.	Noted
	20.54	Social and Economic	Highway Number 1, the Bruce Highway, is Queensland's major tourist scenic highway. If CQCP proceeds, there would be open cut mines right up to the edge of both sides of the highway. In the EIS, it is stated that "The topography and existing vegetation in the area is unlikely to provide a natural screen, and as such mining operations will be visible from the road".	No adequacy review comment.	Addressed in Chapter 5, Section 5.5.7
	20.55	Traffic and Transport	Although CQCP have proposed a redesign of the intersection for entry and exit from the Bruce Highway, the location of CQCP will have a negative impact on traffic flow along our major tourist highway. The State Government will end up having to build additional lanes on the highway between Rockhampton and Mackay, the cost of which would exceed any mining royalties received.	No adequacy review comment.	Addressed in Chapter 6, Sections 6.7.1, 6.8 and 6.10.1
	20.56	Traffic and Transport	The shifts which miners work increase driver fatigue and the risk of accidents, which is not ideal on our major tourist highway.	No adequacy review comment.	Addressed in Chapter 6, Sections 6.10.1, 6.10.3 and 6.13 and A4c RMP
	20.57	Traffic and Transport	Livingstone Shire Council maintain Anglewood Road, a dirt road. The drastic increase in traffic along Anglewood Road will cause increased degradation of Anglewood Road, especially when cut up during wet weather. Funding which has been allocated for other works will have to be redirected for increased maintenance of Anglewood Road. Anglewood Road to be closed from where the existing concrete causeway is on Tooloombah Creek out to the Bruce Highway so that all the additional traffic only follows Mt Bison Road, and disturbs less of Tooloombah's paddocks.	No adequacy review comment.	Outside of the EIS scope
	20.58	Traffic and Transport	Concerns regarding blasting near the Bruce Highway and the potential associated structural damage	No adequacy review comment.	Addressed in Chapter 6, Sections 6.7.5, 6.10.9 and 6.10.10

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	20.59	Social and Economic	If the coal mine is approved I will immediately need to have a valuation of Tooloombah completed to verify its value prior to adjoining an open cut coal mine, the value of which will consequentially fall drastically. I will also need to engage people to carry out base-line testing of PM 2.5 and PM 10 fine particulates and noise levels and bore and surface water tests. At a guess, this could cost me up to $100,000 which would be just the first immediate negative impact on me by CQCP, with many more disadvantages and losses to follow. The Make Good agreement with CQCP to include directly paying my costs for this, with providers of my choice.	No adequacy review comment.	Outside of the EIS scope
	20.60	Social and Economic	Complexity and potential legal costs associated with the complaint resolution process	No adequacy review comment.	Outside of the EIS scope
	20.61	Health and Safety	Concerns regarding health of the people in close proximity to the mine.	No adequacy review comment.	No update to the EIS proposed.
	20.62	Social and Economic	Concerns regarding the sustainability of the mining industry and associated employment vs cattle grazing	No adequacy review comment.	No update to the EIS proposed.
	20.63	Social and Economic	Mamelon is located within a community of graziers, with land now mostly held by the second generation. The proposed project will cause fragmentation of the community.	No adequacy review comment.	Addressed in Appendix A17 – Social Impact Assessment.
	20.64	Water	50 m drawdown of the water table will not only affect current grazing use during the 20 year lifespan, but future land use which CQCP state will return to grazing lands.	No adequacy review comment.	Addressed in updated Chapter 10 - Groundwater
	20.65	Social and Economic	Unlikely to obtain organic certification as ACO have indicated that cattle raised in such close proximity to an open cut coal mine which covers the grass in coal dust, and water contaminated by mining activities, is unlikely to comply with the strict requirements of organic certification.	No adequacy review comment.	No update to the EIS proposed.
	20.66	Social and Economic	The capital expenditure, operating costs and royalties exceed the export value, even if export prices maintain their current highs, whereas Chinese and Indian coal demand is projected to decrease in line with global demands falling as countries take action on climate change in line with the Paris Agreement, of which Australia is a party.	No adequacy review comment.	No update to the EIS proposed.

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21	21.1	Appendix 10a - Economic Technical Report	Even the most basic consideration of the economics of the Styx Project shows that it is unviable. Based only on figures presented in Appendix 10a - Economical Technical Report by consultants 'Economic Associates', the project would lose $441 million, as shown in Table 1 (of the Report). The numbers in Table 1 are optimistic. They include no financing costs and no cost overruns, and assume that production starts immediately, taking advantage of higher initial coal prices. There are many other problems with this Economic Associates analysis, some of which are explored in the following sections. The conclusion, however, is unmistakeable. The project is not viable without government subsidy. It will not produce economic benefit for the proponents or the Queensland community unless major royalty holidays and subsidies are provided, subsidies that would come with a major opportunity cost for other Queenslanders. A question that is often asked when proposals appear unviable is why would proponents propose a mine that isn't viable? Many observers assume that if a company is prepared to commission an EIS and go through various regulatory processes, it must see value in the proposal. However, there are many reasons why a company would pursue approval for an unviable project. Approval brings the option of proceeding with the project, but not an obligation. This option value increases the value of the project and the company without providing any benefit to the public. In this case, it seems clear that the proponent is pursuing approval not with the intention of developing the mine, but to either increase its potential sale value, or to increase the value of the project on its balance sheet (or to prevent it being written off the balance sheet).	No adequacy review comment.	Addressed in Chapter 19A, Sections 19.4 and 19.6

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	21.2	Production levels and costs.	The data used in the Economic Technical Report is problematic. It is unusual for production to jump dramatically in just one year, half way through the life of the coal mine. More unusual still is that operating costs would then jump dramatically two years after the peak of production, as shown in Figure 1 below. It is highly unusual and likely to be very inefficient for a coal mine to produce 8.9 million tonnes of coal in one year and then 3.1 million the next, as Economic Associates assessment suggests. They do not explain this unusual approach to production. Stranger still, in most years of the project's operations, operating costs track production levels closely (as would be expected), yet Figure 1 shows that costs peak two years after the peak in production. No explanation is given for this. This mismatch between peak production and peak operating costs serves to overstate the value of the project if discounted cash flow analysis was undertaken, as would normally be the case in cost benefit analysis or any form of financial analysis. Benefits are brought forward, while costs are pushed further back in the project life.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6
	21.3	Royalties	The royalty calculations in the Economic Technical Report are incorrect and overstate the royalties that would be paid by the project. Table 2 below shows the Revenue and Royalty figures from Table 3.19 of Economic Associates' analysis and expresses royalties as a percentage of revenue. Table 2 shows in most years Economic Associates appear to apply a royalty rate of over 12%, although this varies from as little as 5% to as much as 26.7%. In Queensland the royalty rate varies and depends on the coal price per tonne: - Up to and including $100 - 7% of value - Over $100 and up to and including $150 o First $100 - 7% of value o Balance - 12.5% of value - More than $150 o First $100 - 7% of value o Next $50 - 12.5% of value	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6

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			o Balance - 15% of value2 Applying the official royalty rates to the production and price figures in Economic Associates' Table 3.19 gives a total royalty value of $350 million for the project, as shown in Table 3 below. Royalty payments calculated correctly in Table 3 above will be $350.5 million, not the $525 million estimated by Economic Associates and repeated in various places through the EIS. This error overstates royalty revenue to the Queensland Government by $175 million. The results in Table 3 above can be compared to the total revenue reported in Economic Associates Table 3.19 to ensure royalties have been calculated correctly. This is done in Table 4 below. Table 4 shows that the royalty rates applied in Table 3 averages between 7% and 9.22%. This would be expected as the discount rate of 7% applies up to a coal price of $100 per tonne, with the higher 12.5% rate applying to the final $25 of the semi-soft coking coal price in most years. Average royalty rates in the earlier years are higher still as the SSCC price is higher. Year one attracts the top rate of 15% to the final $10 of the $160 coal price. Economic Associates' error makes the project appear less financially viable for the proponent, but overstates the potential benefit of the project for Queensland. Regardless, the EIS revenue, cost and royalty figures make it clear the project as proposed is not financially viable.		
	21.4	Input Output Analysis	The economic impact analysis is based on input output modelling. There are major issues with using input output modelling. The Queensland Government,3 Federal Government and the Australian Coal Association Research Program4 prefer cost benefit analysis over input output modelling because input output modelling: - does not weigh the costs and benefits of a project; - assumes the project will go ahead which is a problem with a financially unviable project such as the Styx project; and	No adequacy review comment.	Addressed in Chapter 19A, Section 19.4.1.1

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			- makes the flawed assumption that there are unlimited resources in the economy. Cost benefit analysis is preferred because input output modelling does not weigh the costs and benefits of the project and does not assess if a project is in the best interests of the community. Instead it provides (usually overstated) estimates of the project's impacts on output and employment. Cost benefit analysis is more useful because it helps decision makers understand what conditions are required for the project to actually proceed and deliver benefits – e.g. what coal prices, exchange rates and cost levels are needed for the project to proceed as planned. In contrast input output models assume that projects are financially viable. This is a major problem if the project is financially weak, as the Styx project is. The project may not proceed or could shut down prematurely, thus limiting whatever benefits it may have. The likelihood of the Styx coal project not starting, or halting some time in its life, is increased because the project proponent has financial difficulties. Two liquidators are pursuing Mr Palmer and several of his companies to get money back for creditors.5 The unreliability of Economic Associates' approach, based on input output modelling, can be seen in their assessment of the Kevin's Corner coal project in 2011. That study estimated Kevin's Corner would be producing coal by 2014 and by 2017 would spend $662 million on operations, resulting in $1.4 billion in increased state output, $400 million in increased household income and 5,267 direct and indirect jobs.6 None of these effects have been realised as the Kevin's Corner project is hopelessly unviable without government subsidies and is a stranded asset in a world looking toact on climate change. The proponent is in serious financial difficulty, partly due to the Kevin's Corner investment.7 Economic Associates' study never gave any indication that this was a possibility. Another example of the failure of input output modelling is Bandanna Energy, which went into liquidation and was wound		

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			up.8 Its two major projects were the South Galilee Basin Coal Project and the Springsure Creek Coal Project. Both projects were assessed with input output modelling. The South Galilee Basin Project's economic assessment concluded in 2012 that it would employ 1,909 people and increase annual output by $1.2 billion from 2019 to 2047. In fact, the project has not proceeded and has employed zero people, produced zero output and lost money for shareholders.9 The economic assessment of the Springsure Creek Project forecast an increase in annual output of $1.9 billion and 3,236 jobs, but also has not proceeded. Input output analysis suffers from the assumption that there are unlimited resources in the economy. This is not realistic. The Styx project will compete with other mining projects and other industries for resources. In fact, the Styx analysis lists 20 other major developments in the regional area that will compete for resources with the Styx project.10 Because the impact of these other projects has been ignored, the analysis overstates the impacts of the project in general and ignores its negative impacts on other industries. Overstating positive impacts and ignoring negative impacts means an unrealistic impression of the project is presented. For this reason the Productivity Commission has remarked that these models are often "abused". *Abuse primarily relates to overstating the economic importance of specific sectoral or regional activities. It is likely that if all such analyses were to be aggregated, they would sum to much more than the total for the Australian economy. Claims that jobs 'gained' directly from the cause being promoted will lead to cascading gains in the wider economy often fail to give any consideration to the restrictive nature of the assumptions required for input-output multiplier exercises to be valid. In particular, these applications fail to consider the opportunity cost of both spending measures and alternate uses of resources, and may misinform policy-makers.*11		

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	21.5	Chapter 2, Section 2.2.1	"Recent demand for both thermal and coking coal has increased significantly with spot prices reaching US$100 and US$300 free on board (FOB), respectively. Quarterly contract sale prices have also significantly increased with the next quarter contracts for thermal and coking coal reaching US$100 and US$200/tonne, FOB respectively. As an indication of the extent to which global demand has changed, coking coal spot price (daily market price), was $US73.40/tonne in November 2015 and in November 2016 prices reached $US289.30/tonne; a four year high (~400% increase) (Office of the Chief Economist 2016; Kerr 2016). The demand for thermal and coking coal, and subsequent coal spot prices makes this Project economically viable." This is not correct. While some daily spot prices may have reached these levels, thermal coal monthly average spot prices have exceeded USD$100 per tonne just once since May 2012, in November 2016. While prices are higher now than the average for the last few years, analysts are largely united in attributing this to Chinese government policy restricting its own coal supply. Coal prices will remain highly contingent on government, particularly Chinese government, policy for the foreseeable future.12 Metallurgical coal monthly spot prices have also not reached USD$300 per tonne since 2011. More importantly, the relevant grade of coal is semi-soft coking coal, which has traded at around USD$135 per tonne this year and is forecast to decline to under USD$100 per tonne out to 2021.13 Note that the two publications referenced – Office of Chief Economist 2016 and Kerr 2016 – do not appear in the EIS references chapter (Chapter 24) 2017.pdf	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6

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	21.6		"With respect to thermal coal, the United States (US) International Energy Agency (IEA) predicts global energy consumption to grow by 37 per cent (%) by 2040 (US IEA 2014). This is taking into account existing and planned government policies regarding climate change. In 2040, natural gas, oil and coal will each account for roughly one-quarter of the world's energy needs (US IEA 2014)". It is unclear what publication is "US IEA 2014". It is listed in the references as "United States International Energy Agency (US IEA) 2014, World Energy Outlook 2014, OECD/IEA, ISBN: 978-92-64-20804-9". The United States Energy Information Agency publishes the International Energy Outlook, while the World Energy Outlook is published by the International Energy Agency, related to the OECD. Regardless, the 2016 World Energy Outlook by the International Energy Agency shows coal declining in its share of energy demand from 29% of world energy to 23% in the central scenario and to 13% in 2040 under the "450 scenario" where countries act in line with the Paris Agreement.14	No adequacy review comment.	Addressed in Chapter 2, Section 2.2
	21.7		"Australia exported 201.3 million tonnes (Mt) of thermal coal during the 2015 – 2016 financial year … Australia's thermal coal exports are expected to increase by 11% per annum between 2013 and 2017, from approximately 162 Mtpa to approximately 271 Mtpa (Australian Coal Association 2012)." As Australia has been exporting around 200 Mt of thermal coal for several years, clearly the Australian Coal Association's forecast was wildly inaccurate, out by around 70 million tonnes. Astonishingly, the 11% growth in thermal coal exports prediction is repeated in the Introduction Chapter, section 1.2, despite being contradicted within the paragraph it is referenced in. It is unclear why a 2012 publication by the now-defunct Australian Coal Association is being referenced, another reference which does not appear in Chapter 24. The Office of the Chief Economist's latest forecasts are for a small decline from 202 million tonnes exported in 2016 to 201 million tonnes in 2019.	No adequacy review comment.	Addressed in Chapter 2, Section 2.2.1

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	21.8	Section 2.2.3	In the 2015/2016 financial year coal contributed to the Queensland economy by employing 183,554 full time employees (equating to 8% of Queensland total employment). This statement is demonstrably false. Australian Bureau of Statistics (ABS) Census data shows that only 24,960 Queenslanders worked in coal mining in 2016. This is just 1.2% of the Queensland workforce. Coal is not a large employer in Queensland.15 This estimate comes from a Queensland Resource Council report based on input output multipliers that have been described by the ABS as "biased" and by the Productivity Commission as "abused".16 It is difficult to understand why the proponents would present modelled estimates by a lobby group when official statistics are easily obtainable.	No adequacy review comment.	Addressed in Chapter 2, Section 2.2.3.
	21.9	Styx Project in context of major project assessment	The over-estimation of the viability of the Styx Project is not unusual. Regardless of the method of economic assessment used, assessments of major projects almost always over-estimate benefits and under-estimate costs. This is well documented, particularly by megaproject expert, Bent Flyvbjerg, and in the work of Nobel Prize Winner for Economics Daniel Kahneman and his colleague Amos Tversky. Their work identifies systemic flaws in major project assessment including: - Optimism bias – where analysts underestimate the costs, completion times and risk of planned actions, whereas they overestimate the benefits of the same actions.17 - Planning fallacy – the tendency for people involved to base their forecasts of the future on the best case rather than the likely case. - Strategic misrepresentation – where proponents have an incentive to present the best case to investors and regulators. - Principal agent theory – where an agent or consultant has an incentive to deliver work that furthers the interests of their principal or client. The Australia Institute has participated in many major project submission processes in Australia, including mining projects in	No adequacy review comment.	Addressed in Chapter 19A, Sections 19.4.2.4 and 19.6

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			Queensland, and these flaws exist in virtually all projects we have assessed. Kahneman and Tversky say those involved with a project take the inside view. People who take the inside view: - make forecasts by focusing tightly on the project at hand, considering its objective, the resources they brought to it, and the obstacles to its completion; and - construct in their minds scenarios of their coming progress and extrapolate current trends into the future. This results in overly optimistic forecasts.18 Kahneman and Tversky contrast the inside view with the outside view. The outside view examines the experiences of a class of similar projects, lays out a rough distribution of outcomes for this reference class, and then positions the current project in that distribution.19 By focusing on Styx Project-specific information, mostly provided by the proponent, Economic Associates have taken an inside view and misrepresented the project. If the Styx project is considered in the context of other greenfields coal projects in Queensland, such as all Galilee Basin projects and most in the Surat Basin, it is clear that there is little likelihood of success. Flyvbjerg highlights strategic misrepresentation and the principal agent theory.20 These theories suggest there are strong incentives for project proponents to deliberately overstate the benefits and underestimate the costs and risks of projects. Government approval to mine would add to the value of the Styx project. It not only allows the proponents to start mining but also makes the project more valuable and easier to sell. While the approval process has costs (perhaps hundreds of thousands of dollars to compose and lodge an Environmental Impact Statement), approval can add tens or hundreds of millions of dollars of value to an asset. Managers face incentives to get projects built because there are tangible and intangible rewards for getting them underway and for running a bigger company than a smaller company. Mining executives are often remunerated		

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			depending on the approved resources projects the company has. If senior managers are keen on a project, junior employees know they will meet with more approval if they work positively on the project rather than being a negative, though more realistic, critic. Employees' ownership of a company (for example, company shares) is often small compared to their salary and potential bonus. Consequently, their losses if a project fails are small but their rewards for success are much greater. Managers and employees may also rightly reason that they will have another job elsewhere by the time a project fails and that the blame for the failure will be diffused.		
	21.10	Flybjerg and the dangers of project analysis	Bengt Flyvbjerg is the world's most cited scholar on megaprojects. He has advised the UK Government on the "Green Book" it uses to evaluate projects, the US Government and several corporations.21 Flyvbjerg has collected statistics on megaprojects from around the world. His work on megaprojects is also applicable to other projects. In summarising his work, Flyvbjerg writes: "Success in megaproject management is typically defined as projects being delivered on budget, on time, and with the promised benefits. If, as the evidence indicates, approximately one out of ten megaprojects is on budget, one out of ten is on schedule, and one out of ten delivers the promised benefits, then approximately one in one thousand projects is a success, defined as "on target" for all three. Even if the numbers were wrong by a factor of two—so that two, instead of one out of ten projects were on target for cost, schedule, and benefits, respectively—the success rate would still be dismal, now eight in one thousand. This serves to illustrate what may be called the "iron law of megaprojects": Over budget, over time, over and over again. Best practice is an outlier, average practice a disaster in this interesting and very costly area of management.22 More often than not the information that promoters and planners use to decide whether to invest in new projects is highly inaccurate and biased making plans and	No adequacy review comment.	Addressed in Chapter 19A, Section 19.4.1.1

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			projects very risky.23" This economic assessment does not feature cost benefit analysis but instead uses the lesser-regarded input output analysis. Nevertheless, the biases that affect cost benefit analysis are equally likely to affect input output analysis.		
	21.11	Overestimation in the mining industry	Research has found that the resources industry suffers from the same over-optimism that affects other industries. In 2014, mining analyst Christopher Haubrich gave a paper titled “Why Building a Mine on Budget is Rare: A Statistical Analysis”.24 Haubrich constructed a database of 50 mining projects and found that capital cost overruns are significant and persistent, with average cost overruns of 20%–60% recorded since 1965. Recall that Economic Associates’ cost estimates in their Table 3.19 included no consideration of cost overruns. Haubrich also found that marginal projects, such as the Styx project, are likely to have larger cost overruns. Haubrich stated that this was because when projects are marginal, the incentive is to “sharpen your pencils” and reduce cost estimates in order to make the project numbers viable. Haubrich found no relationship between the cost of the project and cost overruns. Global consulting firm EY found that mining projects run over-budget by an average of 62%, and that 50% of projects were reporting delays. Only 31% of projects came in on budget. EY quoted media coverage of some projects with cost overruns: "A major copper and gold operation in Central Asia: The National Finance Minister had been quoted as saying: “No one understands why the project has gone US$2b over budget.” A major iron ore project in Brazil: To date, the project has experienced an overrun from the initial estimate of approximately 690%. The chief executive officer of the company has gone on record to say that “they are working very hard” to ensure no more delays or cost overruns on the project. A Brazilian megaproject: This project saw capital costs escalate from US$3.6b in 2007 to US$8.8b in 2013. Media sources have	No adequacy review comment.	Addressed in Chapter 19A, Section 19.4.2.4

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			described this investment as one of this organization's "most significant failures of recent years."25 Queensland legislation and guidelines largely ignore the systemic biases that cause mining project proponents to overestimate project benefits and underestimate project costs. These systemic biases have caused Flyvbjerg to propose the iron law of megaprojects: "over cost, over time, over and over again". However, as Haubrich indicates, the systemic biases apply to all projects regardless of size.		
22			No response	No adequacy review comment.	No update to EIS
23	23.1	1.4	EIS states "Consultation Central Queensland Coal has and continues to undertake consultation with neighbouring landholders, local, state and federal governments, community groups and other interested parties as part of the EIS process.". No consultation has occurred with Capricorn Conservation Council or to the best of our knowledge other interested parties and specialists with which/whom CCC is associated, nor with the broader local community. This includes the GBRMPA (Capricorn Coast) Local Marine Advisory Committee* which cover the coastal catchment and Marine Park directly affected by the proposed mine. * (The writer is Chair of CC LMAC). Community and/or technical reference groups must be established and required to be integral to any decision to further proceed with project development and in the event the project commences must continue through the life of mine and the extended rehabilitation period.	No adequacy review comment.	Addressed in Appendix A14 - Stakeholder Engagement Plan and A17 – Social Impact Assessment.

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	23.2	3.1	Central Queensland Coal Project being a relatively small scale coal mine with a high exposure to the global thermal coal market, is remote from existing large coal fields and the related infrastructure and other resources means the financial risk assessment/assurance needs greater scrutiny. Independent economic assessment of the financial risks, especially the viability of thermal coal, is required to assess the risk that within the proposed 20 life-of-mine any decline or collapse of the global coal market or factors such as escalating costs of diesel for smaller the 'truck & shovel' mines and similarly for diesel rail transport costs. A declining world market could result in project failure, early closure and leave a stranded asset and harmful environmental legacy.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6
	23.3	Chapter 3, Section 3.1.1	Open cut mining within or immediately adjacent to the Great Barrier Reef World Heritage Area (Queensland Coastal Zone) which would disturb stable geologic structures, streams and aquifers and involve potentially unstable and contaminated rock waste dumps, final voids and waste water dams, based on the experience of Bowen Basin coal fields much further and relatively safely upstream of the GBR and threatened coastal wetlands. A referral to the UNESCO World Heritage Committee which has a watching brief on the management of the GBR WHA 'outstanding universal values' since Australia's failure regarding approval of industrial projects on Curtis Island, is required before any EIS approvals and Environmental Authorities are approved.	No adequacy review comment.	Noted, this is a decision for Government outside of the EIS process. No update to the EIS proposed

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	23.4	Chapter 3, Section 3.1.3	Higher risk of coal loss in windy, wetter coastal environments. Coal (coal dust, especially PM2.5) loss from production, loading and transport, in and through such sensitive GBR coastal landscapes, streams and wetlands must be subject to even greater regulation, compliance and financial penalty up to and including suspension or termination of environmental authorities and potential forfeiture of mining leases. This must include fully covered, sealed rail transport and dust suppressions systems at all loading and processing points. While the possible transport south through Rockhampton to Wiggins Island Coal Export Terminal is not the preferred option this should be subject to a separate EIS and extensive public consultation (For example if access to the northern coal export terminals proves difficult or financially less attractive, Gladstone coal terminals could offer a cheaper alternative given their current and foreseeable underutilisation.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.8.4 and 12.9. No plan to transport coal through Rockhampton to WICET.
	23.5	Chapter 3, Section 3.4	The proposed mine's location, remote from large freshwater streams and storages and aquifers (such as in the Bowen Basin) creates huge risk of over-extraction of ground water or natural stream flows. While historical mean monthly rainfall data shows a local range from ~25mm (Winter-Spring) to >200mm (Summer) recent events (TC Marcia, TC Debbie) have produced daily rainfall of up to 1000mm. Against this the increasing unreliability of the monsoon has resulted in the locality experiencing much more patchy scattered rainfall resulting in localised flooding while nearby areas continue to experience extended drought conditions. A more rigorous risk analysis of the risk of increasing variability and greater extremes or drought and flood is needed. Extreme local or broad-scale rain and floods would overwhelm the best engineered water management systems and flood pits, equipment and transport infrastructure causing both short and medium-term mine closure (threatening economic viability, stream and coastal contamination). Reliance on Tooloombah Creek flood harvesting, and ground water extraction needs greater scrutiny particularly in view of the	No adequacy review comment.	Addressed in Chapter 3, Sections 3.4.5 and 3.5.6 and Chapter 4, Sections 4.6 and 4.8 Addressed variously throughout, Chapter 9 – Surface Water and Chapter 10 - Groundwater

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			probability of extended dry periods (with increasing evaporation rates and reduced aquifer re-charge). The risk of depletion or lowering of ground water tables on biodiversity and potential saline intrusion due to proximity to coastal zone needs greater study.		
	23.6	Chapter 14	The proposed mine site while having somewhat depleted Terrestrial Ecology and Matters of National Environmental Significance due to over-clearing and grazing regimes retains the capacity for more ecologically sustainable activities such as carbon farming combined with opportunities for re-establishment of biodiversity hubs and corridors. The generally recognised failure of the Queensland environmental offsets policy to halt the rate of decline of biodiversity could be improved by investing in such areas as an alternative social, economic and ecologically to the risk of failed coal mining.	No adequacy review comment.	This is a comment on general Government policy. No update to the EIS proposed.
	23.7	Chapter 15	The risks to aquatic ecology extend well beyond the boundaries of the mining lease and species in the immediate area. CCC submits that the claimed economic benefits "greater community good" of the project, even if they could be realised over the life of the project are insufficient to balance the potential economic and ecological risks to the local aquatic ecology, the adjacent coastal zone and Southern Great Barrier Reef. If approved and the mine proceeds independent expert assessments, strict compliance regimes (up to and including closure and withdrawal of environmental authorities) and financial assurances (beyond the long term rehabilitation costs of the disturbed areas, that is including suitable recompense for any increased erosion, reduced water quality discharge, reduction of downstream of habitats (e.g., migratory shore birds, seagrass beds, mega-fauna, fish productivity etc).	No adequacy review comment.	This is the function of the EA and associated project conditions. No update to the EIS proposed
24	24.1	Chapter 16, Sections 16.1 and 16.2	The action title is 'Central Queensland Coal Project'. The project will be developed and operated by Central Queensland Coal and Fairway Coal. At the time of the 'controlled action' decision, the project was named 'Styx Coal Project' and the designated proponent was	Addressed.	Letter advising changes to Proponents name sent to DotEE 15/05/2018.

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			'Fairway Coal Pty Ltd' only. The Department considers that a 'Change of person proposing to take action' and 'Change of designated proponent' is required under the EPBC Act. A 'change of person proposing to take action' and 'change of designated proponent' must be completed prior to a final decision on whether or not to approve the action.		
	24.2	Chapter 16, Section 16.9.3.4	Proposed management of the potential impacts of groundwater on groundwater-dependent ecosystems, including riparian habitat suitable for EPBC listed threatened species and communities (p16-68). Provide more detail, with an assessment of their effectiveness, of the measures that will be implemented to ensure that the riparian habitat that is likely to provide habitat for listed threatened species and communities is not degraded and/or permanently lost due to groundwater drawdown. The Department notes that the current measures only involve ongoing assessment and monitoring of the stream health, hydrological function and riparian vegetation. The Department notes that there are minimal measures proposed in regards to what actions will be undertaken by the proponent if the groundwater drawdown is likely to or results in the degradation and/or loss of the riparian habitat. The Department considers that any degradation and/or loss of this riparian habitat would require an offset in accordance with the Department's Environmental Offsets Policy (2012).	Not addressed. The Department considers that there is a lack of specificity, supporting field information and scientific evidence on the effectiveness of proposed management and mitigation measures for GDEs. The Department recommends that further investigations into how groundwater-dependent ecosystems (GDEs) may be adversely impacted by the project, including the collection and analysis of field information, must be completed prior to project approval. This should include, but not limited to: - baseline ecological surveys of the condition of the riparian vegetation; - identification of the root depths (in metres) of the riparian vegetation and water table levels during both wet and dry seasons; - consideration of the vegetation as habitat against relevant EPBC Act documents and SPRAT; - provide detailed information on how the extent and quality of this habitat will be maintained over the life of an approval (i.e. scientifically robust and proven management measures); and - update of the groundwater model (see comment 21) Issue The Department notes the commitment to implement a Water Management Plan (WMP)	Further baseline monitoring has been undertaken, including water table monitoring at an expanded network (30 new bores), with target monitoring locations adjacent identified potential Type 3 GDEs. Targeted isotope studies and leaf water potential assessments to determine the baseline Environmental Water Requirements of potential Type 3 GDEs. A preliminary water balance model (Section 4, Appendix A6-Groundwater Technical Report) has been developed to estimate the groundwater baseflow supporting in-stream pools (Type 2 GDEs). A commitment to undertake baseline condition assessments

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				and a Receiving Environment Management Plan (REMP) which will describe how groundwater resources, including groundwater-dependent ecosystems (GDEs) and riparian habitat, will be managed. These plans will involve monitoring and evaluation aspects and will be revised based on baseline data collected during the first years of mining operations. Some mitigation measures have been identified, although the proponent states that they "may be implemented". The Department considers that the role of a management plan is to outline how potential adverse impacts, which have been identified and assessed using both desktop and field information, will be mitigated and managed over the project lifetime. The Department considers that the purpose of an environmental assessment process is to source and assess the relevant desktop and field information to inform a management plan. Further, the AEIS notes that further investigation into how GDEs have the potential to be adversely impacted, particularly from changes in groundwater hydrology, is required and will form part of the REMP. The Department does not consider that this "further investigation" is a mitigation or management measure and relevant baseline data collection should be undertaken prior to the commencement of the action or, at a minimum, prior to the impact occurring.	has been made as part of the REMP (see Chapter 10, Section 10.8.4). Ongoing monitoring (Section 10.8.5) and Trigger Action Response Plans (Section 10.8.4.4) will aim to detect unacceptable impacts before they occur at sensitive receptors. If an impact trigger is reached, further investigation will be undertaken to ensure mitigation measures are tailored to address specific issues. Examples of available mitigation measures have been provided (see Section 10.8.4.5) but these will be developed in detail as part of the REMP. Identification of root depth- not directly addressed, however the plant water use studies (leaf water potential and isotope study) have provided an understanding of Type 3 GDEs water sources. Section 10.8.5 details how dependent

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					vegetation communities will be monitored over the life of an approval, including establishment of permanent vegetation transects for monitoring indicators of condition including Foliage index/leaf area index, leaf water potential and NDVI image capturing over time. The groundwater model has been used to simulate a possible mitigation method of utilising abstraction bores in the Styx Coal Measures to supply water to GDEs and has shown that abstraction may be a viable option for managing unacceptable impacts to GDEs post mine closure when mine produced water is no longer available for this purpose (see Section 3.6.2.4 of Appendix A6 – Groundwater Technical Report) and Chapter 10, Section 10.8.4.5.

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	24.3	Chapter 16, Section 16.11.1.1	A description of the location, extent and heritage values of the Great Barrier Reef World Heritage Area and National Heritage Place and the environment of the Great Barrier Reef Marine Park that may be impacted by the action. Inconsistency with statements related to World Heritage property values, for example with potential seagrass habitat in Broad Sound: - There are no mapped seagrass beds known in the Broad Sound area (p16-88). - Green Turtle is known to forage on seagrasses which does not occur in the majority of Broad Sound (p16-89). - Broad Sound comprises wetland habitats including seagrass beds … (p16-89). Provide more detail on the attributes of the OUV criteria that specifically apply to the project that may be directly and/or directly impacted. Some examples are provided below for your consideration. The Department recommends using a similar format in the supplementary EIS. The Department notes the EIS contains a high level description of Broad Sound and reference the values of Great Barrier Reef World and National Heritage Areas, however, does not describe the values of these heritage areas that may be impacted by the proposed action. Note: More attributes for each criterion may be applicable to the project than those identified below. Criterion (vii): contains superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance Attribute: vast mangrove and saltmarsh forests – discussion on the extent, condition, habitat value, etc. of Broad Sound. Attribute: breeding colonies of seabirds – discussion on the bird species of Broad Sound, their habitat requirements, habitat extent, importance of habitat, etc. Criterion (vii): Be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features Attribute: Geological and geomorphological features – project	Partially addressed. The Department considers that there is no substantiated discussion (using adequate site-specific data) on the natural state of the hydrology of Broad Sound, including as a result of flooding, tidal information and storm surges up the Styx River. The Department recommends that the proponent undertakes a program to collect baseline hydrology data and ecological information in the Styx River and Broad Sound in both the wet and dry seasons. The Department considers this information is important to inform hydrology monitoring requirements and to determine if the project is impacting on the hydrology of the Styx River and Broad Sound during mine operation. Issue The AEIS notes: - “Broad Sound is in a remote location and there is limited ecological survey and monitoring data available from the area”. - “An assessment of impacts from existing (or baseline) water quality observed in the tributaries [including the Styx River] discharging into Broad Sound was not undertaken”. - “It is difficult to make this assessment without a suitable baseline data set for Broad Sound which does not appear to exist”. The Department notes that there is no desktop/baseline site-specific information on: - historical flood heights or frequency of floods in the region, including where the project is located; - local tide data;	The values of the GBRWHA in the vicinity of the Project are addressed in Chapter 16, Section 16.13.1. The wording regarding seagrasses has been changed (refer 16.13.1.6) - The only mapped seagrass beds known in the Broad Sound DIWA area are small patches located in the north-east corner of the wetland. There are no seagrass beds mapped near the Styx River estuary or surrounds. Extensive seagrass beds occur to the northwest in the Clairview area (approximately 53 km north of the Project) and in Shoalwater Bay, including small patches near the islands off Stanage Bay approximately 70 km north-east of the Project (Figure 16-132).

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			site is on a floodplain, discussion on flood regimes, prevalence and description of major flood events, storm surges and tides. Criterion (ix): Be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals. Attributes likely include coastal habitats, terrestrial habitats and marine habitat. Criterion (x): Contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation Attribute: Diversity of species (listed migratory birds, turtles, dolphins, dugong, and any other relevant listed threatened species. Criterion: Integrity of the GBRWHA Attribute: Intactness - representation of marine ecological, physical and chemical processes from the coast to deep abyssal waters, enabling key interdependent attributes to exist in their natural relationships: · Interrelationship between water quality, listed threatened and migratory species and OUV. Attribute: Management and protection of GBRWHA – consideration of water quality management measures (at a local, regional and national level).	- frequency and intensity of storm surges up the Styx River; - location of the freshwater/saltwater interface; and - current amounts of run off (sediment and pollutants) associated with the project site.	

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	24.4	Chapter 16, Section 16.11.1.5	Total quantity of Brigalow TEC in the project area (p16-95): - Current RE mapping indicates there is 12.7 ha of one RE present within the overall project area that may be considered a Brigalow TEC (RE 11.4.9). - Table 16.11 notes 12.7 ha of RE 11.4.9 in Mining Lease (ML) ML80187 and 7.14 ha of RE 11.4.9 in ML700022. Confirm the amount of potential Brigalow TEC within the project area, providing direct evidence against the description, key diagnostic characteristics and condition thresholds outlined the approved Conservation Advice for the Brigalow TEC. The Department considers that there are patches of good quality Brigalow (*Acacia harpophylla*) regrowth across the project area that were not considered to be the TEC due to it being cleared within the last 15 years. The Department considers that the EIS does not provide direct evidence (in the form of field surveys) to conclude that the regrowth patches do not meet the description, key diagnostic characteristics and conditions thresholds for the Brigalow TEC.	Addressed.	Addressed in Chapter 16, Section 16.13.3
	24.5	Chapter 16, Section 16.11.4.1	Listed threatened marine fauna associated with the GBRWHA. A number of listed marine fauna identified in the EPBC Online Protected Matters database results have not been assessed in the EIS due to the distance the project is away from potential marine habitat (p16-108). The Department considers that the project has the potential to have downstream impacts on the Styx River and Broad Sound, including suitable habitat for these species, including through changes to the hydrological regimes and water quality of Broad Sound. Provide an assessment of the likelihood of occurrence, habitat preferences and potential for the species and/or their habitat to be impacted both directly and indirectly by the project.	Addressed.	Addressed in Chapter 16, Section 16.13.5
			Critically Endangered Southern Snapping Turtle (*Elseya albagula*) known to occur in the project area (p16-111). Confirm, and provide detailed evidence from a suitably qualified expert, of the presence/absence of the Southern Snapping Turtle in the project area.	Addressed.	Addressed in Chapter 16, Section 16.13.9.20

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			Vulnerable Collared Delma (*Delma torquata*) unlikely to occur in the project area (p16-111). Provide further discussion and evidence to support the conclusion that the Collared Delma is "unlikely" to occur in the project area. The Department notes that there is 80.58 hectares of RE 11.10.1 mapped in the project area (p16-95) that is suitable habitat for the species as outlined in the SPRAT database and in the EIS (p16-111). The Department notes that field surveys for Brigalow reptiles were not undertaken in accordance with Departmental survey guidelines (did not meet the recommended 1.5 hours of survey effort per hectare for both diurnal and opportunistic survey methods).	Not addressed. Issue The Department notes that only Table 16-49 was updated with two sentences, whilst acknowledging that "Vegetation on land zone 10 occurs in the southern portion of the site". Based on a lack of evidence-based discussion, and the nature of the direct impact on the species, the Department is of the opinion that the project is likely to result in the loss of 80.58 ha of suitable habitat for the species which will require an offset under the EPBC Act Biodiversity Offsets Policy.	Addressed in Chapter 16, Sections 16.12.7, Table 16-102. Additional text is added in Section 16.13.9.4 and Figure 16-141 discussing the requirements of the Collared Delma. Suitable habitat occurs in the southern section of the ML as identified in the SEIS (Table 16-112) where intact canopy vegetation on land zone 10 (with patchily abundant cover of surface rocks) occurs. Habitat in the remainder of the ML is lowland (on land zone 4), heavily impacted by clearing, has little fallen timber and little to no cover of surface rocks. Despite the fact there are no records in the near vicinity of the Project, and the habitat is largely unsuitable, the species was elevated to 'potential to occur' in the SEIS (from unlikely in the EIS) due to the intact canopy vegetation on land zone 10 in the southern section of the

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					ML. However, it was not considered necessary to carry out a significant impact assessment which are based on 'likely' or 'known' species, due to the lack of suitable habitat impacted by the Project and distance from the nearest known records of the species occurrence.
			Vulnerable Red Goshawk (*Erythrotriorchis radiatus*) has the potential to occur in the project area (p16-112). Provide further discussion to support the conclusion that the Red Goshawk has theA6:H9 "potential" to occur in the project area, with particular reference to, but not limited to: - the suitability of the remnant vegetation, including the riparian vegetation along Deep and Tooloombah Creeks, as potential nesting and/or foraging habitat; - the suitability of the project area to contain sufficient bird species on which the Red Goshawk can prey upon; and - the suitability of the field survey undertaken to inform the "potential" occurrence conclusion (only 19 hours of survey effort was undertaken, a quarter of the recommended 80 hours over 10 days [SPRAT]). The Department considers that the species is "likely" to occur in the Project area due to the: - Protected Matters Search Tool in the EIS (Appendix A9c) states the species or species habitat is known to occur within 25 km of the project area; - species was identified 17 km north-west of the project area and has a large home range (200 square kilometres); - EIS notes there is suitable foraging habitat in the project area; and	Addressed. The Department considers that the project site contains suitable habitat for the species which is likely to be impacted by the project – riparian vegetation (nesting habitat) from groundwater drawdown and remnant vegetation (foraging habitat) from vegetation clearance. The Department notes that the offset for other EPBC listed threatened species will address the direct loss of suitable habitat for the Red Goshawk.	Addressed in Chapter 16, Sections 16.13.9.3

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			- potential prey species, in the form of other birds, have been identified in the project area.		
	24.6	Chapter 16, Section 16.11.5.1	Whimbrel (Numenius phaeopus), Gull-billed Tern (Gelochelidon nilotica) and Caspian Tern (Hydroprogne caspia) were recorded in estuarine wetlands associated with the Styx River/Broad Sound in 2011/12 site surveys (p16-123). There is no suitable estuarine habitat (mangroves, mudflats or salt pans) within or near the project area. As such, these species are not treated as "known" or "likely" to occur in the project area and therefore there will be no impacts and are not considered further in the EIS (p16-123). The Department considers that the project has the potential to have downstream impacts on the Styx River and Broad Sound, including suitable habitat for these species, including through changes to the hydrological regime and water quality of Broad Sound. Provide a description of these species as they are "known" to occur within the GBRWHA boundary and have the potential to be impacted by the project.	Not addressed. The Department recommends the comment on the draft EIS be addressed. Issue The Department notes that only the sentence "Nevertheless, there is potential downstream habitat for these species" was included in the AEIS.	Habitat for these species does not occur within or near the Project. Downstream habitat for migratory shorebirds is addressed in Chapter 16, Sections 16.13.1.9, 16.13.6 and 16.13.10.3. These species are not known to occur within the Project area, as no suitable habitat is present. However, potential habitat is located downstream, and as such Table 16-110 has been amended to include the listed species as being likely in the Styx River estuary and known within Broad Sound. Additional information on the species is provided in Table 16-145 and 16-146 and Section 16.13.6.4
	24.7	Chapter 16, Section 16.11.6	The Greater Glider (*Petauroides volans*) is listed as "Likely" to occur (p16-128). Amend the listing to "known" to occur for the Greater Glider.	Addressed.	Addressed in Chapter 16, Section 16.13.9 (refer Table 16-115)
			Migratory species list (p16-128). Amend the list to include the Whimbrel, Gull-billed Tern and Caspian Tern as "known" to occur.	Not addressed. The Department recommends the comment on the draft EIS be addressed.	Habitat for these species does not occur within or near the Project.

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					Downstream habitat for migratory shorebirds is addressed in Chapter 16, Sections 16.13.1.9, 16.13.6 and 16.13.10.3. These species are not known to occur within the Project area, as no suitable habitat is present. However, potential habitat is located downstream, and as such Table 16-110 has been amended to include the listed species as being likely in the Styx River estuary and known within Broad Sound. Additional information on these species is provided in Table 16-145 and 16-146 and Section 16.13.6.4
			Threatened species and Migratory species lists (p16-128). The Department considers that the project is likely to have downstream impacts on the Styx River and Broad Sound, including suitable habitat for listed threatened and migratory marine species. Amend the lists to include relevant "likely" or "known" listed threatened marine species and migratory marine species that use Broad Sound and its habitat. The Department would expect a robust analysis based on desktop research and the outcomes of field surveys.	Not addressed. The Department recommends the comment on the draft EIS be addressed. Based on Figures 16-30 and 16-31, the Department considers that the following species are "known" to occur in Broad Sound: - Australian Snubfin Dolphin (M) - Green Turtle (V / M) - Flatback Turtle (V / M) - Curlew Sandpiper (CE / M) - Eastern Curlew (CE / M) - Red Knot (E / M) - Great Knot (CE / M)	Addressed in Chapter 16, Section 16.13.5 The SEIS has treated Green and Flatback Turtle and Snubfin and Humpback Dolphin as 'likely to occur' downstream of the Project in Broad Sound. As such, these species have already been discussed in the detail

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				- Lesser Sand Plover (E / M) - Red-necked Stint (M) - Sharp-tailed Sandpiper (M) The Department considers that, at a minimum, the following sections must be updated to include information and discussions that are consistent with the other species determined "known" or "likely" to occur within or downstream of the project area (e.g. Koala): - 16.10.1 - 16.10.4 - 16.10.5 - 16.10.6 - 16.10.10 - 16.10.11 - 16.14.4 - 16.14.5 - 16.14.6 Issue The Department notes that the analysis is derived from desktop research and no field surveys of Broad Sound, and the Styx River, have been undertaken. Further, new information on the occurrence of these species in Broad Sound was provided in Figures 16-30 and 16-31 but was overlooked in the following discussions in the MNES chapter.	requested in this comment (refer Section 16.13.17, 16.13.5 and Table 16-107).
	24.8	Chapter 16, Section 16.12.1	Extent of impact to remnant vegetation is listed in Table 16-17 as 13.1 ha (p16-132). EIS states that 138.4 ha of remnant vegetation is predicted to be cleared (p16-130). Confirm in Table 16-17 the total amount of remnant vegetation that will be cleared as a result of the project.	Addressed.	Addressed in Chapter 16, Section 16.14.1, Table 16-117
	24.9	Chapter 16, Section 16.12.1	The project will result in the clearance of 0.2 ha of Brigalow TEC and 0.4 of SVET TEC (p16-133). Clarify why the clearance of 0.2 ha of Brigalow TEC and 0.4 ha of SEVT TEC cannot be avoided.	Addressed.	The Project layout has been revised. These areas will be avoided. Addressed in Chapter

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					16, Section 16.14.1, Table 16-117
	24.10	Chapter 16, Section 16.12.1.1	Classification and quantity of suitable habitat for the vulnerable Squatter Pigeon (southern) (*Geophaps scripta scripta*) to be impacted by the project (p16-133). Table 16-17 specifies 94.95 ha (p16-132). Table 16-26 specifies 101.8 ha (p16-175). Table 16-17 specifies 1,065.8 ha of non remnant vegetation (p16-132). Table 16-26 specifies 1,093 ha of non-remnant vegetation (p16-175). Clarify the quantity of suitable habitat for the Squatter Pigeon (southern) which will be impacted by the project, and provide further justification to inform that conclusion. The Department notes that the species was widely recorded in both remnant and non-remnant vegetation in the project area, particularly in the non-remnant habitat (p16-133). The Department notes that the project will result in the clearance of up to 1,093 ha of non-remnant vegetation (p16-132). The SPRAT database specifies that suitable habitat for the species includes remnant, regrowth or partly modified vegetation communities within three kilometres of water bodies or courses. The SPRAT database states that the species disperses into highly modified or degraded habitats (including pastures and areas where vegetation has been thinned through light cattle grazing) to forage for seed. The SPRAT database further states that individuals may be found foraging in, or moving across modified or degraded environments where scattered trees, including remnant trees or patches of habitat, occur.	Partially addressed. Issue The Department considers that the AEIS does not provide an adequate description of the suitable habitat (i.e. description of nesting, foraging and dispersal) on the project site for the Squatter Pigeon (southern) based on SPRAT. There is no discussion or assessment on what defines the different habitat requirements for the species – nesting, foraging and dispersal. In particular, there is no discussion on whether the non-remnant areas (acknowledged foraging and dispersal habitat) contains the preferred grass species required by the species. The AEIS states that "740 ha of nonremnant grassland with potential as foraging habitat". Further, the AEIS notes that "There have been no sightings of the species associated with regrowth Brigalow (on land zone 4)". The Department notes that this area forms 481 ha. Although there were no sightings, the Department would expect a discussion on how the regrowth Brigalow does/does not provide suitable habitat requirements (i.e. nesting, foraging or dispersal) for the species. The SPRAT database, in conjunction with the vegetation assessments from field surveys, must be used to inform this discussion. Based on a lack of evidence-based discussion, and the nature of the direct impact on the species, the Department is of the opinion that the project is likely to result in the loss of 1353.47 ha of suitable habitat for the species	Addressed in Chapter 16, Section 16.14.1 and Table 16-117 (Vegetation clearance and habitat for MNES fauna) The reviewer comments 'there is no discussion on whether the non-remnant areas (acknowledged foraging and dispersal habitat) contains the preferred grass species required by the species.' The species mainly eats seeds, mainly from grasses, shrubs and herbs. No 'preferred' species are identified in the literature. The species occurs across a wide swathe of Queensland and it's to be expected it's diet changes across this range. Crome (1976) examines to some degree what the species foraged on in Mareeba (north Queensland), where at times the species diet was

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				which will require an offset under the EPBC Act Biodiversity Offsets Policy.	dominated by introduced pasture species. There is no information available to assess whether 'preferred' forage species occurs in non-remnant areas. The species has been observed repeatedly in selected areas of non-remnant habitat on the site as has been stated previously. The reviewer has commented on the lack of discussion regarding the regrowth Brigalow areas as habitat for the species. The SPRAT website describes favoured habitat for Squatter Pigeon (on several occasions) as being 'well-draining, gravelly, sandy or loamy soils'. Brigalow typically grows on cracking clay soils (land zone 4) as it does within the Project area. i.e. it is not well-draining soil (or sandy or gravelly).

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					It is acknowledged that the species may occur across the property although it should also be acknowledged that the species only seems to occur in a limited portion of the site which appears to be influenced by the proximity of tree/regrowth cover to local farm dams. CDM Smith personnel have traversed the entire property on a monthly basis over much of 2017 and 2018 and the species has only been recorded in specific areas of the property on repeated occasions. The significant impact guidelines define impacts on 'vulnerable' species in the terms of 'important populations' as follows (and already discussed in Section 16.17.4): 'An important population is a population that is necessary for a species' long-term survival and recovery. This may

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					include populations identified as such in recovery plans, and / or that are: 1. Key source populations either for breeding or dispersal; 2. Populations that are necessary for maintaining genetic diversity; and / or 3. Populations that are near the limit of the species range (MNES Guidelines, DotE 2013). The subspecies range occurs north to Townsville and west to Charleville. Important populations of the Squatter Pigeon have been identified as those isolated and sparsely distributed sub-populations that occur south of the Carnarvon Ranges in central and southern Queensland including; 1. Populations occurring in the Condamine River catchment and Darling

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					Downs of southern Queensland; 2. Populations occurring in the Warwick-Inglewood-Texas region of southern Queensland; and 3. Any population that may potentially occur in NSW (Squatter Pigeon Workshop 2011). North of the Carnarvon Ranges the species remains common and is considered to be distributed as a single, continuous (that is inter-breeding) sub-population (DotEE 2018). Therefore, individuals in the Project area are unlikely to be key sources for breeding, dispersal, or maintaining genetic diversity. The subspecies commonly occurs to the north and south of the Project. Populations south of Tin Can Bay (over 400 km south-east of the Project) are considered to be

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					fragmented. The Project area is not at the edge of the species range. Under the definition provided in the MNES guidelines (DotE 2013) as issued and referred to by DotEE, the individuals occurring in the Project area cannot be considered an important population. As such there will be no significant residual impact on an 'important population'. As quoted from the EPBC Act Environmental Offsets Policy 2012: 'For assessments under the EPBC Act, offsets are only required if residual impacts are significant.'
			Classification and quantity of suitable habitat for the vulnerable Ornamental Snake (*Denisonia maculata*) to be impacted by the project (p16-133). Clarify the quantity of suitable habitat for the Ornamental Snake which will be impacted by the project, and provide further justification to inform that conclusion. The EIS states that there is suitable habitat in the form of alluvial cracking clays, gilgai depressions and substantial areas of patchy Brigalow regrowth in the project area, although this habitat has been heavily impacted by clearing (p16-133). The Department considers that there are patches of good quality Brigalow (Acacia harpophylla) regrowth across the project area that were not considered to	Addressed.	Addressed in Chapter 16, Sections 16.12.7 (survey effort) and 16.14.1 and Table 16-117 (Vegetation clearance and habitat for MNES fauna)

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			be the TEC due to it being comprehensively cleared within the last 15 years. The Department considers that this regrowth has the potential to provide suitable habitat for the Ornamental Snake within the alluvial cracking clays and gilgai. The Department notes that the diurnal and opportunistic surveys for Brigalow reptiles did not meet the recommended 1.5 hours of survey effort per hectare as per Departmental survey guidelines.		
24			Classification of suitable habitat for the vulnerable Koala (*Phascolarctos cinereus*) (p16-134). Clarify how much suitable habitat for the Koala will be impacted by the project and provide further justification to inform that conclusion. The Department considers that all types of food trees (i.e. 'primary' and 'secondary') are suitable habitat for the species and should be considered as such in the assessment of impacts to the Koala and its habitat (Koala Referral Guidelines (2014)).	Addressed.	Addressed in Chapter 16, Section 16.14.1 and Table 16-117 (Vegetation clearance and habitat for MNES fauna)
	24.11	Chapter 16, Section 16.12.3	An assessment of impacts from existing (or baseline) water quality observed in tributaries discharging into Broad Sound was not undertaken. Water quality impacts are likely to be limited to the mobilisation of sediments and associated nutrients (p16-135). Identify and provide a detailed discussion of the impacts, during construction, operation and decommissioning phases, on the attributes of the OUV criteria identified as relevant to the project. This section should not provide a general overview of the project's impacts (with a reference to another EIS chapter) – impacts need to be discussed specific to each of the OUV criteria with information sourced from other EIS chapters to reinforce arguments and justifications. The Department expects, at a minimum, detailed discussions of the following potential impacts: - Degradation of water quality from changes in hydrological regimes, increased sedimentation, surface water contamination from coal fines, dust and leachates, exposure of potential acid sulphate soils (PASS) (within the predicted	Partially addressed. The Department recommends this comment be addressed and discussions informed by site-specific information. The Department recommends that the proponent undertakes a scientifically-robust (and to an appropriate industry and/or scientific standard) ASS soil sampling program within the extent of the modelled groundwater drawdown. Issue The AEIS provides a description of the existing surface water quality but does not discuss how the already elevated water quality parameters might change during construction and operation or discuss the potential impact of these against the OUV criteria or listed threatened and migratory species known to occur in Broad Sound.	The Project has undergone substantial refinement in design. Some impacts such as the conveyor belt located under the Bruce Highway have been eliminated by relocation. There is no historical flood or tide data from the Styx River or Broad Sound. Additional information has been provided in the SEIS regarding surface water and ground water values, management and impacts (Chapter

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			extent of drawdown) and groundwater contamination. - Groundwater extraction leading to reduced water table and/or stream flow, groundwater extraction resulting in the movement of the freshwater/saltwater interface leading to saline contamination of coastal groundwater reserves, and surface water extraction leading to reduced stream flow. - Loss and degradation of habitat for terrestrial and aquatic species associated with the degradation of water quality and extraction of surface water and groundwater – which may affect listed threatened and migratory species in Broad Sound. The Department further notes that the project site is located on a major floodplain, the area is subject to large tidal ranges, and storm surges have the potential to result in inundation and runoff issues – particularly the proposed coal conveyor belt under the Deep Creek Bridge of the Bruce Highway. Provide a discussion on the potential impacts on water quality from flooding events. This discussion should include information relating to: - historical flood events, particularly how the site floods, frequency of flood events and the severity of flood events - dam and water storage technical requirements, including justification of the appropriateness of these technical requirements - how flooding of the project site during construction, operation and decommissioning of the project has the potential to contribute to water quality degradation in relation to the attributes of the OUV criteria - how changes in hydrological regimes as a result of the construction of the mine, stockpiles and train load out facility may impact on the attributes of the OUV criteria. In this discussion of impacts: - demonstrate how the proposed action will provide a net benefit for water quality in the Great Barrier Reef World Heritage property, consistent with the Reef 2050 Long-Term Sustainability Plan (2015); and - reference the key values and attributes outlined in the Great	No further investigation of PASS has been undertaken. The AEIS conclusion in relation to ASS disturbance is based on a desktop review of national mapping. Discussion on potential sediment loads presented in the AEIS is not sitespecific but based on the approach used in the Eden Bann Weir EIS. As stated above (comment 3), the Department notes that there is no desktop/baseline site-specific information on: - historical flood heights or frequency of floods in the region, including where the project is located; - local tide data; - frequency and intensity of storm surges up the Styx River; - location of the freshwater/saltwater interface; and - current amounts of run off (sediment and pollutants) associated with the project site.	16, Sections 16.10 and 16.11 respectively). The assessment presented in the SEIS relies on ASS mapping by CSIRO, 2011 within the Styx River catchment (see Figure 16-20), supported by results of site specific acid forming potential testing (see Section 16.7.3.6). The soils in the Tooloombah and Deep Creek catchments are classified as having low to extremely low acid forming potential. Geochemical testing (see Chapter 8 – Waste Rock & Rejects for further detail) indicates predominantly Non-acid Forming (NAF) materials (less than 10% PAF materials) have been identified, which is consistent with the mapping undertaken by CSIRO (2011). As discussed in Chapter 16, Section 16.11.3.6 (Table 16-93), the potential for ASS exposure in response to mine dewatering is low. The

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			Barrier Reef Outlook Report 2014 (Great Barrier Reef Marine Park Authority) that may be impacted by the proposed development.		areas most at risk of exposure of ASS occurs within the ML where drawdowns of more than 10 m are predicted, and any development of acid drainage in this area will drain toward the mine pits during mining and post-mining recovery. Back filling of mine pits with materials having neutralising capacity will provide adequate management of this risk. A nested monitoring site with a monitoring point (WMP29, Figure 16-83) targeting each hydrostratigraphic unit encountered up to approximately 230mbgl has been recently installed near the confluence of Styx River/Broad Sound in an attempt to identify the salt water interface. There is no evidence of a sea-water – freshwater interface at this location (as indicated by hydraulic head and salinity data, see Figure 16-89), indicating it

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					must occur further towards the coast, or beneath the total drilled depth. As discussed in Chapter 16, Section 16.11.3.6 (Table 16-93), the predicted drawdown data do not indicate there is a likely potential for mobilisation of the seawater-freshwater interface due to mine dewatering and associated drawdown. South-north aligned cross-sections through ML 80187 presenting model predicted drawdown for each hydrostratigraphic unit have been developed (See Figures 16-110 to 16-115) to demonstrate this. The cross-sections show that at the most northerly extent (around the upper reach of Styx River) there is unlikely to be any measurable drawdown in response to mine dewatering that can induce inland mobilisation of the seawater-'freshwater' interface, whether it be located near the point of

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					discharge of Styx River into the Broad Sound estuary or closer to the coast at Broad Sound. Net benefit to GBR ewater quality is addressed in Sections 16.9.2 and 16.7.1.3.
	24.12	Chapter 16, Section 16.12.4	Groundwater drawdown impacts to riparian vegetation, which provides suitable habitat for EPBC listed threatened species, within the predicted zone of groundwater drawdown (Figure 16-18, p16-142). Provide further detail on the quantity and quality of riparian habitat suitable for EPBC listed threatened species which has the potential to be impacted in the modelled predicted zone of groundwater drawdown (both within and outside the project area). Include this vegetation in the habitat mapping for relevant EPBC listed threatened species (including but not limited to the Koala, Greater Glider and Squatter Pigeon [southern]) in section 16.15.4. b	Addressed. Explain why a portion of riparian vegetation is not considered to be habitat for EPBC listed threatened species. Update Table 16-76 accordingly. Issue The Department notes that a small portion of riparian vegetation on Tooloombah Creek (between drawdown contour 0.5 m and 0.1 m) has not been included in Table 16-76 (see Figure 16-45).	Addressed in Chapter 16, Section 16.14.4 The impacts to potentially groundwater dependent MNES habitat is described in Table 16-118 and Table 16-148. The identified areas of impact per the outlined max drawdown levels have been checked and are correct
	24.13	Chapter 16, Section 16.12.4	Maximum predicted groundwater drawdown impacts on GDEs (Figure 16-18, p16-142). Amend the scale of Figure 16-18 to illustrate the entire maximum predicted drawdown, particularly downstream towards Ogmore and the coast, and upstream in the Deep Creek catchment.	Addressed.	Addressed in Chapter 16, Section 16.14.4 (refer Figure 16-147)
	24.14	Chapter 16, Section 16.13	Specificity of mitigation and management measures, with references to relevant MNES. Provide further detail on the proposed mitigation and management measures to manage the relevant impacts of the action on MNES, including impacts on the attributes of the OUV criteria. Resources that may assist include, but not limited to:	Partially addressed. See comments 2, 11 and 21. The Department considers that there is a lack of specificity, supporting field information and scientific evidence on the effectiveness of proposed management and mitigation measures	Management and mitigation measures are addressed in detail regarding erosion and sediment control (Chapter 16, Section 16.9.4), surface water

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			- relevant conservation advices, threat abatement plans and recovery plans for listed threatened species and ecological communities; - The Reef 2050 Long-Term Sustainability Plan (2015); - the Department's SPRAT database; and - relevant Departmental documents, policies and guidelines. This section should not provide a full discussion of the project's avoidance, mitigation and management measures (with a reference to other relevant EIS chapters). The proposed measures need to be discussed specific to each MNES with information sourced from other EIS chapters to reinforce the measures' appropriateness to mitigate and manage impacts.	for water resources. This includes, but is not limited to: - surface water impact management; - groundwater impact management; - erosion and sediment control impact management; and - feasibility of cattle-destocking, fencing and natural regeneration of vegetation. The Department recommends that the proponent provide further (evidence based) detail on the proposed mitigation and management measures and how they are informed by best available practice. This includes further discussion on how the proposed measures meet the objectives of the Reef 2050 Long-Term Sustainability Plan (2015). The Department recommends that examples must be provided to demonstrate the effectiveness of cattle de-stocking, fencing and natural regeneration as a management measure. Issue The Department notes the proponent has committed to the implementation of a number of management plans for the project - Significant Species Management Plans, Water Management Plan and Receiving Environment Management Plan. The AEIS provides a high-level outline of the purpose of these plans and no detail as to the environmental outcomes and objectives to be achieved. There is no information on monitoring programs to assess the effectiveness of management measures and no information on when, how and what adaptive management or contingency measures will be implemented if required.	(Section 16.10.7) and ground water (Section 16.11.4). and also addressed throughout Section 16.15. Modelling of the groundwater system response to mine water affecting activities, including comprehensive sensitivity and uncertainty analysis, has been used to assess the potential for groundwater effects to impact the GBR area (see Section 16.11.3). This includes an assessment of potentially sensitive groundwater receptors and potential for mobilisation of the seawater -freshwater interface. Groundwater monitoring and mitigation measures that have been designed to meet the objectives of the Reef 2050 Long-Term Sustainability Plan (refer Section 16.15.3.6). References to conservation advices, threat abatement plans

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				No information is provided on how proposed management measures take into account relevant approved conservation advices, and are consistent with the measures contained in relevant recovery plans and threat abatement plans. The Department considers that the role of a management plan is to outline how potential adverse impacts, which have been identified and assessed using both desktop and field information, will be mitigated and managed over the project lifetime. The Department considers that the purpose of an environmental assessment process is to source and assess the relevant desktop and field information to inform a management plan. The Department does not consider that a high-level statement that "a Management Plan will be implemented" is sufficient. The Department does not consider "further investigations" into baseline data collection and assessment of potential impacts an appropriate management approach. Further, the Department considers that the AEIS does not adequately demonstrate how proposed mitigation and management measures meet the objectives of the Reef 2050 Long-Term Sustainability Plan (2015). The Department notes that modelling has been undertaken but is based on the Eden Bann Weir EIS.	and recovery plans are located where applicable throughout Section 16.17
	24.15	Chapter 16, Section 16.15.4	Listed threatened marine fauna associated with the GBRWHA. A number of listed marine fauna identified in the EPBC Online Protected Matters database results have not been assessed in detail in the EIS due to the distance the project is away from potential marine habitat (p16-108). The Department considers that the project has the potential to have downstream impacts	Partially addressed. See comments 7, 11 and 21. Issue The Department notes that the proponent considers that the project is unlikely to have a residual significant impact on the GBRWHA.	Addressed in Chapter 16, Sections 16.13.5 and 16.17.5 There are no Project activities in the

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			on the Styx River and Broad Sound, which provides suitable habitat for these species, including through changes to the hydrological regime and water quality of Broad Sound. Provide an assessment of relevant listed marine fauna associated with the GBRWHA which are, and/or their habitat, is likely to be impacted by the project in the 'Key Data on Listed Threatened Species' table format.	Based on: - a lack of evidence-based discussion (supported by baseline data); - the nature of the impacts on the listed threatened marine fauna associated with the GBRWHA; and - the lack of detailed and scientifically robust and proven mitigation and management measures (i.e. not a highlevel reference to a management plan) The Department is of the opinion that the project is likely to have a residual significant impact on these species which is likely to require an offset under the EPBC Act Biodiversity Offsets Policy and/or relevant Reef 2050 Plan requirements including the Net Benefit Policy.	GBRWHA. Potential project impacts (downstream impacts) primarily relate to potential for altered water quality (relating to erosion and sediment impacts). A discussion of potential sediment impacts is provided in Section 16.9 (including an assessment against Reef 2050 targets), and mitigation measures provided in Section 16.9.4 and 16.10.7. Section 16.9.2.2 provides a discussion of Reef 2050 Plan, the 2017 Scientific Consensus Statement, and Section 16.13.1.11 discusses existing reef catchment load modelling as it relates to the Project.
	24.16	Chapter 16, Section 16.15.5	Migratory marine fauna associated with the GBRWHA. A number of listed marine fauna identified in the EPBC Online Protected Matters database results have not been assessed in detail in the EIS due to the distance the project is away from potential marine habitat (p16-108). The Department considers that the project has the potential to have downstream impacts on the Styx River and Broad Sound, which provides suitable habitat for these species, including through changes to the hydrological regime and water quality of Broad Sound. Provide an assessment of relevant migratory marine fauna associated	Partially addressed. See comments 7, 11 and 21. Issue The Department notes that the proponent considers that the project is unlikely to have a residual significant impact on the GBRWHA. Based on: - a lack of evidence-based discussion (supported by baseline data);	This is a duplication of the previous comment (24.15).

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			with the GBRWHA which are, and/or their habitat is, likely to be impacted by the project in the 'Key Data on Listed Threatened Species' table format.	- the nature of the impacts on the migratory marine fauna associated with the GBRWHA; and - the lack of detailed and scientifically robust and proven mitigation and management measures (i.e. not a highlevel reference to a management plan) The Department is of the opinion that the project is likely to have a residual significant impact on these species which is likely to require an offset under the EPBC Act Biodiversity Offsets Policy and/or relevant Reef 2050 Plan requirements including the Net Benefit Policy.	
	24.17	Chapter 16, Section 16.17.4	Identified residual and potential impacts to MNES (Table 16-38, p16-201). Update Table 16-38 to include the quantity of the residual impact to the Squatter Pigeon (southern) as a result of habitat clearance. The Department considers this habitat quantity value may be greater than 101.8 ha (p16-175) due to further consideration and analysis of the suitability of the non-remnant vegetation in the project area as suitable habitat for the species (refer to comment 10).	Not addressed. See comment 10. Issue The Department notes that there is no acknowledgement, at a minimum, that the removal of 132.47 ha of remnant vegetation (i.e. suitable habitat) will have a residual significant impact on the Squatter Pigeon (southern).	Addressed in Chapter 16, Section 16.14.1 (Vegetation clearance and habitat for MNES fauna), Table 16-117 Refer to response to comment 24.10. Under the definition provided in the MNES guidelines (DotE 2013) as issued and referred to by DotEE, the individuals occurring in the Project area cannot be considered an important population. As such there will be no significant residual impact on an 'important population'. As quoted from the EPBC Act Environmental Offsets Policy 2012: 'For

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					assessments under the EPBC Act, offsets are only required if residual impacts are significant.' Further discussions around rationale regarding species chosen as requiring offsets is provided in 16.17.4
	24.18	Chapter 16, Section 16.17.4	Potential residual groundwater drawdown impacts to riparian vegetation, which provides suitable habitat for EPBC listed threatened species, within the predicted zone of groundwater drawdown. Include a table identifying the quantity of the potential residual impact to riparian habitat suitable for EPBC listed threatened species as a result of groundwater drawdown. This should incorporate all potential suitable riparian habitat within the predicted zone of groundwater drawdown (both within and outside of the project area).	Addressed. See comment 12.	Addressed in Chapter 16, Section 16.14.4 The impacts to potentially groundwater dependent MNES habitat is described in Table 16-118 and Table 16-148.
	24.19	Chapter 16, Section 16.17.4	Consideration and discussion of residual significant impacts/offsets on the GBRWHA. Provide information on the following in relation to the GBRWHA: - residual impacts on the GBRWHA that are likely to occur after the proposed activities to avoid and mitigate all impacts are taken into account. - where residual significant impacts are likely to occur, the reasons why the avoidance or mitigation of these significant impacts is not expected to be achieved. Include details of the proposed offsets to compensate for the residual impact of the project on the GBRWHA if these are determined likely, as well as an analysis about how the offset(s) meets the requirements in the Department's Environmental Offsets Policy 2012 and relevant Reef 2050 Plan requirements including the Net Benefit Policy. Offsets should align with conservation priorities for the GBRWHA and	Partially addressed. See comments 7, 11 and 21. Issue The Department notes that the proponent considers that the project is unlikely to have a residual significant impact on the GBRWHA. Based on: - a lack of evidence-based discussion (supported by baseline data); - the nature of the impacts on the migratory marine fauna associated with the GBRWHA; and - the lack of detailed and scientifically robust and proven mitigation and management measures (i.e. not a highlevel reference to a management plan)	There are considered to be no residual impacts to the GBRWHA. Impacts and mitigations are discussed variously throughout Sections 16.14 and 16.15 respectively. Impacts to the GBRWHA are addressed specifically in Section 16.17.1

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			be tailored specifically to the attributes of the GBRWHA that is impacted in order to deliver a conservation gain. The Department notes that there is the option of using the Australian Government Reef Trust to deliver biodiversity-related offsets for residual significant impacts relating to water quality and to habitat associated with the Great Barrier Reef.	The Department is of the opinion that the project is likely to have a residual significant impact on these species which is likely to require an offset under the EPBC Act Biodiversity Offsets Policy and/or relevant Reef 2050 Plan requirements including the Net Benefit Policy.	
	24.20	Chapter 16, Section 16.17.5.1	Suitability of potential habitat on the broader Mamelon property to be used as offsets for residual impacts to MNES. Where potential offsets have been identified, show that potential offsets have been considered in accordance with the EPBC Act Environmental Offsets Policy (2012) and the offsets calculator. The offsets calculator can be found on the Department's website at www.environment.gov.au/epbc/publications/epbc-actenvironmental-offsets-policy. The Department notes that the proposed offsets on the Mamelon property may not meet the requirements of the EPBC Act Offset Policy: - the potential for groundwater drawdown impacts on identified Koala and Greater Glider habitat near Deep Creek, south of the Waste Dump Area, as illustrated in Figure 16-18 (p16-140); - the conservation gain of the proposed offsets are not new or additional as the risk of loss for the unaffected habitat is low (i.e. the habitat would not be lost in the future as a result of the proposed mining development); and - the proposed offset areas do not seem to provide connectivity with contiguous habitat in the Southern Brigalow region (Figure 16-23, p16-207).	Not addressed. See comments 5 (Collared Delma) and 10 (Squatter Pigeon [southern]). The Department recommends the proponent consider an alternative or additional offset, in accordance with the Department's EPBC Act Biodiversity Offset Policy. Issue As previously advised, the Department considers that the proposed offsets on the Mamelon property may not meet the requirements of the EPBC Act Biodiversity Offset Policy: - the potential for groundwater drawdown impacts on identified Koala and Greater Glider habitat near Deep Creek, south of the Waste Dump Area, as illustrated in Figure 16-18; - the conservation gain of the proposed offsets are not new or additional as the risk of loss for the unaffected habitat is low (i.e. the habitat would not be lost in the future as a result of the proposed mining development); and - the proposed offset areas do not provide connectivity with contiguous habitat in the Southern Brigalow region (Figure 16-23).	Substantial additional information has been provided in Chapter 16, Section 16.19 and Appendix A18 regarding the property's suitability for environmental offsets and general conservation purposes. The property is considered to provide extensive habitat suitable for habitat clearing and including for any impacts to MNES habitat from groundwater drawdown (should they occur) in the future. A per response to comment 24.5 and further correspondence, no significant impacts to Squatter Pigeon or Collared Delma are predicted.

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					Further discussions around rationale regarding species chosen as requiring offset is provided in 16.17.4
	24.21	Chapter 16, Section 16.18	Water Resources Assessment and response to the advice from the Independent Expert Scientific Committee on Coal Seam Gas and Coal Mining Development (IESC). The Department considers that the project has the potential to impact on water resources, particularly through: - changes to groundwater/surface water interactions from groundwater drawdown including the alteration of watercourse flow regimes and the loss of permanent discharge pools which may provide potential habitat for nationally listed aquatic species; - exposure of potential acid sulphate soils (PASS) in stream beds as a result of groundwater drawdown; - changes to water quality from mining operations and the release of mine-affected water into surface watercourses; - the disruption of aquifers and the alteration of the groundwater/salt water interface near the coast from groundwater drawdown; - the degradation and potential loss of ground-water dependent ecosystems (GDEs) along major watercourses due to groundwater depressurisation and the severing of base flow; - changes to surface water quality and surface water hydrological regimes as a result of extreme flooding events; and - changes to surface water and reef water quality from increased sediment and pollutants entering surface water systems.	Partially addressed. The Department recommends that DES consider referring the new information to the IESC for further consideration of the adequacy of the proponent's response to the IESC advice (dated 18 December 2017). The Department notes that the groundwater model has been updated to incorporate new information and reflect the new mine plan, resulting in a significant change in the modelled extent of groundwater drawdown. Issue The Department understands that DES and/or other agencies will provide detailed technical comments on the updated groundwater model. Further, the Department requires a high level of confidence in the modelled groundwater drawdown as groundwater drawdown will impact on GDEs along Tooloombah and Deep creeks and may result in exposure of PASS. A loss of this riparian vegetation, which is also habitat for EPBC listed threatened species, will destabilise the already incised creek banks and promote erosion in an already highly erosive area. This will increase the amount of sediment entering the Styx River system and Broad Sound (resulting in adverse impacts on migratory species and the GBRWHA).	These comments have been addressed in detail in Chapter 9, Chapter 10 and Appendix A6 - Groundwater Technical Report. Much of this information is now included in Chapter 16 – Sections 16.10 (surface water) and 16.11 (groundwater). Issues relating to potential erosion and sediment load are addressed in Section 16.9. The water resources assessment (Section 16.20) summarises the findings in these sections. Additional uncertainty analysis has been undertaken, including extending the range of hydraulic properties

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			Include a detailed response to the IESC comments on the draft EIS in the supplementary EIS. The Department requires a high level of confidence in the modelled groundwater drawdown as groundwater drawdown will impact on GDEs along Tooloombah and Deep creeks and may result in exposure of PASS. A loss of this riparian vegetation, which is also habitat for EPBC listed threatened species, will destabilise the already incised creek banks and promote erosion in an already highly erosive area. This will increase the amount of sediment entering the Styx River system and Broad Sound (resulting in adverse impacts on migratory species and the GBRWHA).		simulated, as well as exploring the model predicted outcomes that may arise if the calibrated parameters are not representative of reality, and assessing the outcomes of the "worst case" hydraulic properties. The system has not been stressed to a sufficient magnitude to enable an improved degree of confidence in the model predictions. This would only be possible once mining has commenced (and dewatering stresses are realised). Therefore, the model is still classified as a Class 1 model, but it does incorporate some elements of a Class 2 or 3 model. Riparian vegetation that may be impacted by groundwater drawdown are those emergent trees with potentially deep tapping roots (i.e. Forest Red Gum). The mid-canopy/understorey

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					community including SEVT is not accessing groundwater and as such will not be impacted. Also addressed against submission reference 24.11.
	24.22	General Comment	Approved Conservation Advices for listed threatened species and ecological communities. When considering whether or not to approve a proposed action, the Minister must have regard to relevant approved Conservation Advices. The approved conservation advices can be found on the Department's SPRAT Database. Update Chapter 16 to take account of the approved Conservation Advice for relevant listed threatened species and ecological communities.	Addressed.	Addressed in Chapter 16, Section 16.17 where applicable
	24.23	General Comment	EPBC Act terminology. The Department considers that Koala habitat on the project site, is 'critical habitat' for the purposes of the assessment of a project. Update the MNES chapter to remove references to terminology that relates to matters assessed under state legislation. The includes, but not limited to: - Regional ecosystems (REs) – apart from TECs, habitat for the species should not be discussed as specific REs but as habitat identified in relevant Departmental documents (e.g. SPRAT, listing advices, conservation advices, recovery plans and threat abatement plans). - Mapping – remove references to 'Least concern', 'Of concern', etc. and specify species' habitat (i.e. Koala habitat). - Provide habitat assessments in accordance with Departmental guidelines and use terminology specified in these guidelines throughout the MNES chapter. For example, the Departmental Koala guidelines do not refer to 'primary' and 'secondary' food trees – the guidelines define food trees	Addressed unless stated in relevant comments above.	These comments were brought up in earlier comments from DotEE prior to the issuing of the draft EIS. As stated then the use of REs as a method to identify specific areas has been used by CDM Smith before in MNES chapters and has not been commented upon. There is species mapping to indicate suitable habitat for each species in the EIS (refer Chapter 16, Section 16.14.1.2). The SPRAT database often

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			as: "Species of tree whose leaves are consumed by Koalas. Koala food trees can generally be considered to be those of the following genus: Angophora, Corymbia, Eucalyptus, Lophostemon and Melaleuca. Also note that 'primary' and 'secondary' food trees (as defined by some sources) are all considered to be 'food trees' for the purposes of assessment using these guidelines."		refers to specific REs for many species (eg. Ornamental Snake) and the commenter even uses REs him/herself to justify comments included here on Collared Delma. The Departmental Koala guidelines also state "Note that food tree species may vary spatially and temporally and information specific to the local area is likely to be most accurate." This is what has been done using the best of local knowledge of the tree species present. These comments have already been addressed. No update to the EIS proposed
	24.24	General Comment	Inconsistency with impacted habitat values for EPBC listed threatened species and communities. Review and update Chapter 16 to ensure that all values associated with habitat for EPBC listed threatened species and communities are consistent. The Department notes the following inconsistencies (note that this list is not exhaustive): - Predicted impact (Koala): 138.21 ha (p16-132) - Total clearing (Koala): 131.2 ha (p16-180) - Residual impacts (Koala): 130.86 ha (p16-201) - Predicted impact (Greater Glider): 43.37 ha (p16-132) - Total clearing (Greater Glider): 6.95 ha (p16-180) - Residual impacts (Greater Glider): Not specified (p16-201).	Addressed.	Addressed in Chapter 16, Sections 16.14.1 (Vegetation clearance and habitat for MNES fauna) and 16.19.4

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25	25.1	Chapter 10, Section 15.2.1, p.10-2	The taking of underground water through dewatering will be regulated by the Department Environment and the Great Barrier Reef through Chapter 3 of the Water Act 2000, requiring a underground water impact report (UWIR) and base line bore assessment program (BAP). It is recommended that the groundwater chapter 10 in the EIS expand in detail on the Chapter 3 Water Act 2000 requirements for the take of associated water.	The number of water quality samples now meets the recommended requirement specified in the Queensland Water Quality Guidelines (2009). This section has now been expanded although concern is now raised with the following statement: 'No water resource plan is in force over the catchment. As such, no permit is required by the Project to interfere with overland flow.' Prior to commencing works, the proponent should confirm they have undertaken all permit requirements through either DNRME or DES, as required in the Water Act 2000.	Addressed in Chapter 10, Section 10.2.1.
	25.2	Chapter 10, Section 10.6.3, p.10-48 to 10-51	The EIS notes that there is the potential to inland mobilisation of the saltwater interface (the boundary between predominantly seawater and predominantly groundwater near the coast). It is noted that "Modelling of potential for mobilisation of the sea water interface will be further addressed as part of the Supplementary EIS process". It is recommended that the extent of sea water intrusion and is potential impacts on other water users and Groundwater Dependant Ecosystems (GDEs) be addressed.	Additional work has been undertaken in the amended EIS. Given concerns about predicted drawdown in individual aquifers, it would be preferable to see those predictions of drawdown in individual aquifers/layers should be updated and a revised analysis of likelihood of saltwater intrusion made. Prior to commencing works, updated modelling and analysis of individual aquifers is necessary to predict drawdown and determine saltwater intrusion.	This has been addressed in Chapter 10, Sections 10.5, 10.7 and 10.8 and Appendix A6. The SEIS has identified a low likelihood of ingress of the saltwater interface resulting from mining activities, as discussed in Section 10.7.4.6 (also addressed against submission reference 24.11).
	25.3	Chapter 10, Section 10.6.3, p.10-48 to 10-51 and Section 10.6.5, p.10-52	The EIS discusses the uncertainties and knowledge gaps between surface water flow/pools/associated ecosystems and its interaction with potential change in the groundwater levels. It also notes that the change in drawdown has potential to impact on all types of GDEs. The EIS notes that " it is expected that there will be impact on the existing interactions between groundwater and surface water …. There is the potential for drawdown associated with the Project to capture	This issue has been adequately addressed in the amended EIS, subject to confidence in predicted drawdown in individual layers.	This has been addressed in Chapter 10, Sections 10.5, 10.6, 10.7 and Appendix A6

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			some of the Styx River stream flow, in addition to flow in the tributary creeks around the Project itself. This could impact on the extent of the normal tidal influence in Styx River (i.e. extending further upstream) and brackish river water recharging the riparian zone within the predicted zone of drawdown influence. Further work will be required to assess the groundwater impacts that could arise if this were to occur….. In the immediate vicinity of the mine where stream reaches occur within areas having predicted long-term drawdowns of more than a few metres, it can be expected that existing baseflow may cease permanently". It also notes that "Further work will be completed during the Supplementary EIS stage to fully assess how these types of GDEs will respond to potential changes in groundwater quantity." It is recommended that the groundwater –surface water interactions be identified and modelled, including the location and characteristics of GDEs, and the potential impacts on GDEs and stream baseflow be quantified.		
	25.4	Chapter 10, Section 10.6.4, p.10-51 and Appendix A6, Section 4.1.4, p.4-4	The modelling of the final void water levels should be improved. The final levels appear to be based on the hydraulic head being constrained by rainfall minus evaporation, excluding pit inflow. However in reality, inflows will also contribute as the pit fills, inducing initial larger inflows decreasing to a more steady level long term. It is recommended that the method of predicting final void water levels be reviewed.	This issue has been adequately addressed in the amended EIS – no final voids, no further response required.	Addressed in Chapter 3, Section 3.4.1.4. The mine plan has changed and there will be no final voids therefore this has been adequately addressed.
	25.5	Chapter 10, Section 10.7.3, Figure 10-20, p.10-58 to 10-59	It is noted that Figure 10-20 in the GW10 Report shows drawdown and the location of bores however it is for the period of 100yrs after mining has been completed. It is recommended that a map be included identifying maximum impacts in relation to the surrounding bores. It is recommended that the predicted maximum drawdown for each bore be tabulated to clearly identify possible impacts. This should also correspond with a range of sensitivity predictions.	This issue has been adequately addressed in the amended EIS.	This has been addressed in Chapter 10, Section 10.7 and Appendix A6.

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	25.6	Chapter 10, Section 10.8.4, p.10-72 to 10-74	The proposed monitoring network in Figure 10-27 has a broad spread surrounding the mining leases, however Table 10-20 does not identify which aquifers/formations are to be monitored. The network should also include locations monitoring potential effects on GDEs and possibly seawater intrusion. It is recommended that more detail be provided as to the aquifer/formation monitored and the purpose of each monitoring bore (e.g. monitoring GDEs, sea water intrusion, monitoring impacts on surrounding bores, monitoring background trends etc.) It is recommended that locations for additional bores be identified to ensure adequate monitoring of GDEs, sea water intrusion and water level impacts/trends etc. This could be developed in a "Groundwater Management and Monitoring Plan"	Table 10-70 identifies formations, but there is no mention of depth and no comparison with predicted drawdown levels. There remains concern that most existing bores are quite shallow and potentially not designed to monitor the drawdown likely to occur. Additionally, it would appear likely that some of the existing bores to be used as part of the network are monitoring Styx overburden or underburden, but labelled in the table as coal measures, which requires refining. There are also bores monitoring two aquifers, alluvium and Styx coal measures, which requires further explanation. There is a need to ensure the predicted drawdown in each layer is correct, so it can inform the planning of the monitoring bore network (eg. Up to 100m drawdown is predicted in the basement layer, but there are no monitoring bores in the basement layer). In relation to the Groundwater Management and Monitoring Plan, additional information is required on the proposed monitoring network. Drilling logs are required for existing monitoring bores and interpretation of aquifer top and bottom in each of those bores.	Addressed in Chapter 10, Sections 10.5 and 10.8. An additional 30 monitoring bores have been installed, up to depths of approximately 230mbgl, providing sufficient spatial coverage to monitor the drawdown likely to occur. The expanded existing monitoring network is shown on Figure 10-33 and 10-102. Drilling logs are provided for all Project monitoring bores, in Attachment 1 of Appendix A6, with interpretation of the hydrostratigraphic unit(s) encountered. It is acknowledged in Section 10.5.6.1 that there are some bores in the monitoring network that screen the alluvial aquifer and partially

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					penetrate the underlying aquitard unit, and the pressure response observed is associated with the aquifer (see Section 10.5.6.2).
	25.7	Chapter 10, Section 10.10.2, p.10-82	The EIS notes further work is required to be undertaken in a supplementary EIS. DNRME notes overall that there is very limited local hydrogeological information. The information that is available is limited to the main formations likely to be impacted, the alluvium or Styx Formation. Information on other formations is only based on literature values which may or may not be relevant. DNRME agrees that further work is required on the issues outlined in s10.10.2. It is recommended that issues outlined in Section 10.10.2 be addressed.	16 monitoring bores have now been drilled and 11 have been tested for horizontal hydraulic conductivity. However, all of these bores are either in the Alluvium or the Styx coal measures. There is additional local information for the two aquifers most likely to be impacted, but still no local information for other aquifers. While there are now some details of additional bores drilled and tested, there are no drilling logs for monitoring holes. There is concern about generally shallow drilling when pits are up to 100m in depth. Additionally there is concern that monitoring bores are accessing multiple aquifers. The proponent should provide additional comment on any limitations that these data gaps may cause and how this will be mitigated.	This has been addressed in Chapter 10, Sections 10.5, 10.6, 10.7 and 10.8 and Appendix A6. Also addressed in response to submission 25.6.
	25.8	Appendix A6, Section 2.3.4, p.2-9	The Appendix A6 conceptualises diffuse recharge and recharge from streams during wet seasons and baseflow during dry periods, however this has not been modelled. The recharge rate appears to be a flat rate applied over the whole catchment and does not consider recharge through the alluvium from stream flow. It is recommended that recharge be reviewed, and the numerical underground model is amended to include stream flow interactions/recharge.	This issue has been adequately addressed in the amended EIS.	This has been addressed in Chapter 10, Section 7 and Appendix A6.

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	25.9	Appendix A6, Section 4.2.1, p.4-7	The EIS presents drawdown predictions as being applied to the 'water table' and does not differentiate between aquifers. For example, the predictions do not differentiate that an upper layer may experience a lesser drawdown than the layer directly intersected. This causes difficulty when assigning an impact to a particular layer, for example the alluvium. It is recommended that drawdown predictions be provided separately for each formation/model layer.	The modelling in the amended EIS has been revised and while there still is a focus on the water table, Figures 43 to 48 of the revised A6 report provide predicted drawdown at end of mine life in each model layer, which is what was initially requested by DNRME. The predicted drawdowns however, look fairly similar in each layer. There is a predicted drawdown in layer 1 (alluvium) of 100m, which is considered unrealistic given the much shallower depth of the alluvium. Similarly the predicted drawdown in the basement layer (not directly impacted by mining) is 100m, which is the same as in the Styx coal measures layer. The proponent should undertake additional modelling and analysis of the underground water model.	This has been addressed in Chapter 10, Section 7 and Appendix A6
	25.10	Appendix A6, Section 4.3, p.4-11	A major deficiency in the underground water model is the absence of sensitivity analysis. This is particularly important given the lack of actual local field data relied on. This is highlighted in Section 3.4.3, Appendix A6, page 3-6 which indicates that alternate scenarios could come up with the same calibrated results. The adopted value of hydraulic conductivity in Cenozoic deposits is relatively large but provides necessary regional transmissivity to conduct groundwater from recharge areas to discharge areas without the water table filling to ground surface. Re-calibration of the model to smaller values of hydraulic conductivity in the Cenozoic deposits would be possible with smaller rates of groundwater recharge. This indicates the importance of sensitivity scenarios, as while differing combinations may calibrate to steady state results, they may produce different predictive impacts. It is recommended that the underground	This issue has been adequately addressed in the amended EIS. A sensitivity analysis has now been carried out which deals with this specific concern.	This has been addressed in Chapter 10, Section 7 and Appendix A6

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			water model be updated to include sensitivity analysis of parameters.		
	25.11	Chapter 9, Section 9.4.3, p.9-11	Watercourse determination for the purposes of the Water Act 2000 A check of the Watercourse Identification Mapping (WIM), a layer within the Queensland Globe (https://www.business.qld.gov.au/running-business/support-assistance/mapping-data-imagery/maps/queensland-globe) indicates that Tooloombah and Deep Creek have been identified as watercourses for the purposes of the Water Act 2000. All other features within the project area are shown on WIM as 'Yet To Be Mapped'. While their status for the purposes of the Water Act 2000 has not been determined yet, the EIS refers to these features within the project area as 'drainage features'. To determine whether or not a feature is considered a watercourse as defined under the Water Act 2000, a request for a watercourse determination can be made to the department. It is recommended that the proponent requests the determination of the 'Yet To Be Mapped' features within the project area as the taking or interfering with water in a watercourse will trigger the need for the proponent to obtain an entitlement under the Water Act 2000.	This issue has been adequately addressed in the amended EIS.	Appendix A21 – Waterway Assessment.
	25.12	Appendix A1, p.3	Water supply for the Project - The taking of water from a watercourse as defined under the Water Act 2000 will require a water licence under the Water Act 2000. The watercourse identification map (WIM) shows the known extent of watercourses and drainage features that are managed under the Water Act 2000. Tooloombah and Deep Creek have been identified as watercourses for the purposes of the Water Act 2000. It is recommended that the proponent contact the department regarding the requirement for a water entitlement to take water from a watercourse as defined under the Water Act 2000.	This issue has been adequately addressed in the amended EIS.	Addressed in Chapter 3, Section 3.4.5

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	25.13	Chapter 9, Section 9.2.4, p.9-3	Legislation - The EIS is not clear on the current and subordinate legislation applicable to the Water Act 2000 and how these are triggered by the proposed project activities. Following commencement of the Water Reform and Other Legislation Amendment Act 2014 (WROLA) on 6 December 2016, several provisions were changed including the provision of a new planning framework. Water resource plans have been replaced with 'water plans' and resource operations plans have been replaced as a number of other documents. It is stated in the first paragraph that 'Authorisation under the Water Act for the taking of water from overland flow, groundwater, a watercourse, lake or spring comes via a water entitlement and a development application'. Development applications are regulated under the Planning Act 2016 and administered by Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP). A development permit under the Planning Act 2016 is not required if the proposed development is located on a mining lease and is considered to be an authorised activity under the Mineral Resources Act 1989 (refer to Section 4A of the Mineral Resources Act 1989). It is recommended that the proponent: - notes the legislative changes and the EIS is corrected to reference the current and subordinate legislation applicable to the Water Act 2000. - notes that key changes to the Water Act 2000 commenced on 6 December 2016, these changes can be further referenced under via the following: https://www.dnrm.qld.gov.au/water/catchments-planning/water-reform - notes that for water planning process, these changes can be further referenced under via the following: https://www.dnrm.qld.gov.au/water/catchments-planning/planning-process - notes that development permits regulated under the Sustainable Planning Act 2016 are not required if the proposed	This issue has been adequately addressed in the amended EIS – some references to legislation have not been updated in chapters, no further response required.	Addressed in Chapter 1, Section 1.11 and Chapter 9 – Surface Water and Chapter 10 - Groundwater

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			development is located on a mining lease and is considered to be an authorised activity under the Mineral Resources Act 1989.		
	25.14	Chapter 1, Section 1.10.2.7, p.1-35 and Section 1.10.8.2, p.1-42 and Chapter 9, Section 9.2.4, p.9-3	Riverine Protection Permit Exemption Requirement Guideline - Activities carried out within a watercourse, lake or spring (i.e. excavating or placing fill), are authorised by a riverine protection permit under the Water Act 2000. You do not require a riverine protection permit if excavation or placement of fill is: - exempt under section 814 of the Water Act 2000; or - permitted under section 96 of the Water Regulation 2016; or - undertaken in accordance with the riverine protection permit exemption requirements. Throughout the text of the document, the EIS refers to the RPP exemption requirements WSS/2013/726, Version 1.02. A new version of this guideline has been released. It is recommended that the proponent: refer to the new guideline version, WSS2013/726, Version 1.04, dated 24/10/2017. The guideline can be accessed here: https://www.dnrm.qld.gov.au/?a=109113:policy_registry/riverine-protection-permit-exemption-requirements.pdf if the changes within the new guideline require further consideration with respect to the project activities, the EIS is updated to reflect these changes.	This issue has been adequately addressed in the amended EIS – some references to legislation have not been updated in chapters, no further response required.	Addressed in Chapter 1, Section 1.11.7.2
	25.15	Chapter 9, Section 9.4.6, p.9-18	Existing Water Users - The EIS covers existing water uses on and around the project area, however, it does not provide specific information on how the existing users can potentially be affected by the proposed activities and how their water rights will be protected. The proponent must note that the impact on existing water users will be considered by the department if the proponent applies to take or interfere with water within a watercourse under the Water Act 2000. The proponent in developing the project should consider the impact on existing users of water regardless of whether that	No additional information appears to have been provided. DNRME reiterates it previous advice provided in the EIS: The proponent must note that the impact on existing water users will be considered by the department if the proponent applies to take or interfere with water within a watercourse under the Water Act 2000. The proponent in developing the project should consider the	This has been addressed in Chapter 9, Section 9.4.8 and Chapter 10, Sections 10.6.2 and 10.7.4.8 and Appendix A6 – Groundwater. There are 4 bores located within the predicted drawdown area, however

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			activity is regulated under the current or subordinate legislation administered under the Water Act 2000.	impact on existing users of water regardless of whether that activity is regulated under the current or subordinate legislation administered under the Water Act 2000.	drawdown is predicted to be negligible at these locations A negligible adverse impact is expected to the operation of these bores.
	25.16	Chapter 10, Section 10.5.10	"Recharge rates to the Styx River Basin have not been identified..". - Recharge rates form an important component of the groundwater modelling and should be identified for the Styx River Basin. Recharge rates of 1 to 5 mm per year estimated from elsewhere are almost certainly too low, particularly in the alluvial groundwater systems which constitute the most important environmental and resource asset. Provide estimates of groundwater recharge through analysis of groundwater chloride concentrations. For a start, 69 bores are mentioned in Section 10.5.7 which probably have measured groundwater chloride concentrations.	This issue has been adequately addressed in the amended EIS.	This has been addressed in Chapter 10, Section 10.5 and Appendix A6. A
	25.17	Chapter 10, Section 10.5.13	It is noted the groundwater drawdown contours indicate substantial drawdown of up to 100 m post mining. With much of the area in the vicinity of the mine having high watertables, there is an abundance of GDEs, particularly associated with the alluvium. The applicant should provide specific detail on what bores would be installed to monitor impacts on important GDEs, including wetlands. A monitoring program for GDEs needs to be established as soon as possible to ensure pre-mining groundwater dependence of ecosystems can be established. This could be part of a "Groundwater Management and Monitoring Plan"	No additional information appears to have been provided. DNRME reiterate previous advice provided in the EIS: - The applicant should provide specific detail on what bores would be installed to monitor impacts on important GDEs, including wetlands. - A monitoring program for GDEs needs to be established as soon as possible to ensure pre-mining groundwater dependence of ecosystems can be established. This could be part of a "Groundwater Management and Monitoring Plan".	This has been addressed in Chapter 10, Sections 10.7, 10.8 and 10.9 The existing monitoring network has been expanded with the addition of 30 new monitoring bores (see Figure 10-18 and Figure 10-102), including monitoring bores located adjacent identified potential GDEs (see Table 10-85). The GDE monitoring program is outlined in Section 10.8.5 which will form part of the REMP.

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	25.18	Chapter 14, Section 14.7.10	Substantial groundwater drawdown in the vicinity of Tooloombah and Deep creeks is expected to adversely impact forest red gum (and Koala) habitat there for 100 years or more. Yet there is no indication given as to how widely distributed this habitat is. Provide a statement or survey to indicate the value of forest red gum habitat which will probably be adversely impacted by mine groundwater drawdown.	This issue has been adequately addressed in the amended EIS. Drawdowns predicted to extend to 25 years post mining, with the maximum at 10 years post mining. Drawdown of between 0.1 m and 1 m in riparian areas is considered to cause a low threat of adverse impacts to Type 3 GDEs while more than 1 m of drawdown is considered a moderate to high threat. Based on this classification and ground-truthed vegetation mapping, mining effects are predicted to pose a low level threat to an area of 53.5 ha of vegetation communities along Tooloombah Creek and 75 Ha along Deep Creek. A moderate to high threat is predicted in vegetation communities encompassing 15.05 ha along Tooloombah Creek and 58.9 ha along Deep Creek. Mining effects are predicted to cause a low to moderate threat to 0.11 ha of terrestrial Type 3 GDEs based on ground-truthed vegetation mapping.	Addressed in Chapter 14, Section 14.12.4, Table 14-21
	25.19	Chapter 11. Section 11.16	Whilst climate change has been considered in Section 4.7.7.1, it is not clear that climate change scenarios are considered in hydraulic design of structures and floods (such as in 11.16(j)). Given the likelihood of more extreme events, including cyclones, it would seem prudent to include climate change scenarios. Provide a commitment to include climate change scenarios for extreme events for floods and hydraulic design of landforms	This issue has been adequately addressed in the amended EIS.	Addressed in Chapter 4, Section 4.7, Chapter 9, Section 9.6 and Chapter 11, Section 11.11
	25.20	Chapter 11, Section 11.11	There needs to be more firm commitment to backfilling pits. The talk of flexibility in completion criteria provides little confidence in rehabilitation outcomes. The post mining existence of mined out voids and associated waste rock dumps probably constitutes the greatest environmental and visual amenity impacts that will be ongoing. Significant	This issue has been adequately addressed in the amended EIS.	Addressed in Chapter 3, Section 3.4.1.4 and Chapter 11, Sections 11.11.1 and 11.11.9

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			improvements in post mining environmental impact will result from minimisation of voids. Under Section 11.9.10 it is stated: "Optimisation of the mine plan is being progressed and there is potentially an option within the mine plan for Open Cut 4 to be backfilled such that no void will remain." A firm commitment to the level of backfilling of pit 4 should be given and far more preferable that this statement.		
	25.21	Chapter 11, Section 11.7.1.2	The proponent provides a commitment to monitoring erosion rates in the Mine Closure Plan. It is recommended that the proponent model erosion rates from the site, including from waste rock dumps, and provide an estimate of associated increases in sediment load (and its environmental impact) in creek reaches directly downstream of the mine and out to the reef. Provide estimates of increased sediment loads, and their environmental impacts, in Tooloombah and Deep Creeks directly downstream of the mine and on the reef during mine operations states and the post mining environment.	This issue has been adequately addressed in the amended EIS.	Addressed in Chapter 5, Section 5.6
	25.22	Chapter 11, Section 11.9.10	The proponent gives a commitment to post mining retention of dams collecting sediment from waste rock dumps. However, there is no indication as to the life of these dams, and the eventual fate of retained sediment and waste rock dump erosion (and its environmental impacts) in the event of dam breaching. It could be concluded that in the long term these dams will eventually fill with sediment, then outflow to the downstream environment. In the considering waste rock dump design and disposal methods, identify erosion and sediment control mitigation measures for waste rock dumps and the build up of sediment in those dumps over time.	This issue has been adequately addressed in the amended EIS.	Addressed in Chapter 11, Section 11.3.3.
26	26.1	Chapter 6, Section 6.5.1	Increased traffic on local and main roads north of the mine, particularly roads that provide access to local communities where some workers may live (St Lawrence, Clairview). Road impacts need to be taken into account and possible dust issues for the St Lawrence North road. Travel routes for workers driving in and out on the TMR network: road impacts and increased safety concerns, Bruce Highway, St Lawrence	No adequacy review comment.	Addressed in Chapter 6, Sections 6.8 and 6.10

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			Croydon Rd and the Marlborough - Sarina Rd. Increased defects on these roads due to increased traffic would mean more pressure on Council's RMP Contract with TMR. Changed overland flow conditions could alter flow paths across roads, resulting in the need for new culverts or culverts with increased capacity. The wider impact of the proposed Central Queensland Coal Project (CQCP) on the regional road network during construction and operation should be considered. Measures to mitigate the impact should be introduced such as: Dilapidation studies before construction commence and after completion of construction; and The introduction of maintenance agreements between Central Queensland Coal and the relevant local authority effected during the construction period.		
	26.2	Chapter 6, Section 6.4.2	1 diesel-electric locomotive hauling 40 coal wagons - load limit of 20 tonne per axle. Transfer coal via the Queensland Rail North Coast Line to the Dalrymple Bay Coal Terminal. This will result in the introduction of an additional eleven (11) trains per day (at full operational capacity) running through the Isaac coastal communities. Extra safety measures to be implemented at rail crossings in Isaac coastal communities (Carmila, Ilbilbie, Clairview, St Lawrence) Central Queensland Coal must develop and implement coal dust management procedures to mitigate the emission of coal dust from loaded and unloaded trains. Consideration should be given to the installation of acoustic barriers in proximity of sensitive receptors along the North Coast line where it cuts through the Isaac coastal communities.	No adequacy review comment.	Outside of the EIS Scope. Safety and infrastructure construction within the rail corridor is a matter for Aurizon and QR as the manager / operators of the corridor
	26.3	Chapter 7, Section 7.5.7	Potential use of waste transfer facility at St Lawrence. St Lawrence only has a Waste Transfer Station and will not be able to accept any waste from the CQCP	No adequacy review comment.	Addressed in Chapter 7, Section 7.5.7
	26.4	Chapter 9, Section 9.4.2	St Lawrence Creek is the only water source available for water supply to St Lawrence. Extra demand for water and sewerage in St Lawrence will put additional pressure on water sources.	No adequacy review comment.	Outside of the EIS Scope

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			Measures should be put in place to protect the source and the quality of the water. Water security for the St Lawrence community should be ensured or alternatively Central Queensland Coal should indicate how the situation will be mitigated should the mining activity impact on the quality and quantity of the St Lawrence water source.		
	26.5	Chapter 15, Section 15.6.2.5	Dam failure on mine site resulting in release of contaminated water to the Styx River flowing out into the Great Barrier Reef Marine Park. Dams should be designed and constructed to a standard to minimize any potential for dam failure.	No adequacy review comment.	Addressed in Chapter 9, Section 9.8
	26.6	Chapter 19, Section 19.2.7	Isaac Regional Council and RDA MIW documents have not been referenced or considered despite references to IRC and broader RDA MIW footprints being acknowledged as part of the study area at figures 19.2 and 19.3 respectively. Explicit references to potential impacts affecting the townships of St Lawrence and Clairview are evident throughout chapter 19 of the EIS. ▪ Consider the provisions of and reference the following plans as a minimum: Broadsound Shire Council Planning Scheme 2005; ▪ Isaac Regional Council Community Strategic Plan 2015-2035; ▪ Isaac Regional Council Corporate plan 2015-2020; and ▪ Mackay Isaac Whitsunday Regional Plan	No adequacy review comment.	Addressed in Chapter 19A, Sections 19.2.3.6, 19.2.3.7, 19.2.3.8 and 19.2.3.9 and Chapter 19B, Sections 19.2.2.6, 19.2.2.7, 19.2.2.8 and 19.2.2.9
	26.7	Chapter 19, Section 19.4.1.1	The methodology does not reference qualitative or quantitative data sets from the Isaac LGA despite the project's identified impacts on townships within the Isaac LGA. Datasets from the broader MIW region are referenced in the form of 'reports and plans' from Regional Development Australia Mackay-Isaac-Whitsunday, however these are not referenced as 'Relevant Programs and Plans' at section 19.2.7. Include Isaac LGA datasets (specifically Broadsound-Nebo SA2) in socio-economic baseline profiles. If reports and plans from RDA MIW have been considered, reference under 'Relevant Programs and Plans' at section 19.2.7 or provide explanation	No adequacy review comment.	Addressed in Chapter 19A, Sections 19.2.2, 19.4.2 and Chapter 19B, Section 19.4.1.4 and Appendix A17 - SIA

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			of why the provisions of reports and plans of RDA MIW, in the context of including in its footprint the largest coal mining region in Queensland, are not considered relevant to this project.		
	26.8	Chapter 19, Section 19.4.1.3	The study area does not include Isaac Regional Council despite explicit references throughout the chapter to the St Lawrence and Clairview communities which both are within the Isaac local government area. The RDA MIW area is identified as part of the study area but as per previously noted does not appear to be considered under 'Relevant programs and Plans' nor included in the socio-economic baseline profiles. Include Isaac LGA datasets (specifically Broadsound-Nebo SA2) in socio-economic baseline profiles. Include Isaac Regional Council under 'Local Government Areas (LGA). Ensure Social Impact Assessment includes affected IRC communities.	No adequacy review comment.	Addressed in Chapter 19B, Sections 19.2.2, 19.4.1.4, 19.5.5 and 19.5.7 and Appendix A17 – SIA.
	26.9	Chapter 19, Section 19.4.2.1	The study area does not include Isaac Regional Council despite explicit references throughout the chapter to the St Lawrence and Clairview communities which both are within the Isaac local government area. The RDA MIW area is identified as part of the study area but as per previously noted does not appear to be considered under 'Relevant programs and Plans' nor included in the socio-economic baseline profiles. Include Isaac LGA datasets (specifically Broadsound-Nebo SA2) in socio-economic baseline profiles. Include Isaac Regional Council under 'Local Government Areas (LGA). Ensure Economic Impact Assessment includes affected IRC communities.	No adequacy review comment.	Addressed in Chapter 19A, Sections 19.2.2, 19.4.2.1 and Chapter 19B, Section 19.4.2 and Appendix A17 – SIA.
	26.10	Chapter 19, Section 19.5.1	As per the above comments Isaac Regional Council is not identified as a relevant stakeholder despite being the administrative body for two communities clearly referenced as impacted. Include Isaac Regional Council as a relevant stakeholder and ensure inclusion in engagement activities on this basis.	No adequacy review comment.	Addressed in Chapter 19B, Sections 19.2.2, 19.5 and Appendix A17 – SIA.
	26.11	Chapter 19, Section 19.5.2	Isaac Regional Council profile has been omitted despite being the administrative body for two communities clearly referenced as impacted and in geographical proximity of the	No adequacy review comment.	Addressed in Chapter 19B, Sections 19.2.2,

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			project site. Woorabinda Aboriginal Shire Council has been considered (although ultimately determined to not be significant) despite being some 170 kilometres from the project site. Include Isaac Regional Council profile and ensure potential socioeconomic impacts on communities within the Isaac LGA are adequately considered and enhanced or mitigated as appropriate.		19.5 and Appendix A17 – SIA.
	26.12	Chapter 19, Section 19.5.2.3	The description of the Mackay-Isaac-Whitsunday region appears to be somewhat misleading, positioning the regions' economic driver as tourism based on visitation to the Great Barrier Reef. In reality the Isaac Regional Council area alone produces over 50% of Queensland's total saleable coal, and coal mining is the key driver of the regional economy. A thriving heavy engineering sector is based out of Mackay supporting coal operations in the Bowen Basin. Provide and accurate description of the economic drivers of the MIW region to ensure the relevance of the region to the project is reflected in the document.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.5.2.
	26.13	Chapter 19, Section 19.5.4	The communities of St Lawrence and Clairview in the Isaac local government area have been excluded from the baseline profile datasets. As such the baseline profile does not accurately describe the socio-economic composition of the affected communities and as such there is significant risks of associated impact enhancement and mitigation strategies being fundamentally flawed and at best be ineffective and at worst significantly exacerbate identified issues. Include datasets and profiles for all impacted communities to establish an accurate baseline upon which effective and relevant enhancement and mitigation strategies can be based.	No adequacy review comment.	Addressed in Chapter 19B, Section 19.5.5.
	26.14	Chapter 19, Section 19.5.5	The communities of St Lawrence and Clairview in the Isaac local government area have been excluded from the baseline profile datasets. As such the baseline profile does not accurately describe the socio-economic composition of the affected communities and as such there is significant risks of associated impact enhancement and mitigation strategies	No adequacy review comment.	Addressed in Chapter 19B, Section 19.5

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			being fundamentally flawed and at best be ineffective and at worst significantly exacerbate identified issues. (St Lawrence and Clairview are identified as locations for housing DIDO workers). Negative impact of accommodation villages on regional communities. Include datasets and profiles for all impacted communities to establish an accurate baseline upon which effective and relevant enhancement and mitigation strategies can be based. 2The need for an accommodation village during construction is acknowledged. Permanent accommodation villages should only be allowed if there are no alternative as it discourage families from living in the regional communities and deprive regional councils from opportunities to expand their rates base.		
	26.15	Chapter 19, Section 19.5.6	The communities of St Lawrence and Clairview in the Isaac local government area have been excluded from the baseline profile datasets. As such the baseline profile does not accurately describe the socio-economic composition of the affected communities and as such there is significant risks of associated impact enhancement and mitigation strategies being fundamentally flawed and at best be ineffective and at worst significantly exacerbate identified issues. Include datasets and profiles for all impacted communities to establish an accurate baseline upon which effective and relevant enhancement and mitigation strategies can be based.	No adequacy review comment.	Addressed in Chapter 19B, Section 19.5
	26.16	Chapter 19, Section 19.5.7	The communities of St Lawrence and Clairview in the Isaac local government area have been excluded from the baseline profile datasets. As such the baseline profile does not accurately describe the socio-economic composition of the affected communities and as such there is significant risks of associated impact enhancement and mitigation strategies being fundamentally flawed and at best be ineffective and at worst significantly exacerbate identified issues. Include datasets and profiles for all impacted communities to establish	No adequacy review comment.	Addressed in Chapter 19B, Section 19.5

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			an accurate baseline upon which effective and relevant enhancement and mitigation strategies can be based.		
	26.17	Chapter 19, Section 19.5.8	The communities of St Lawrence and Clairview in the Isaac local government area have been excluded from the baseline profile datasets. As such the baseline profile does not accurately describe the socio-economic composition of the affected communities and as such there is significant risks of associated impact enhancement and mitigation strategies being fundamentally flawed and at best be ineffective and at worst significantly exacerbate identified issues. (St Lawrence and Clairview are identified as locations for housing DIDO workers which will impact on local essential and emergency services). Include datasets and profiles for all impacted communities to establish an accurate baseline upon which effective and relevant enhancement and mitigation strategies can be based.	No adequacy review comment.	Addressed in Chapter 19B, Section 19.5
	26.18	Chapter 19, Section 19.5.9	The communities of St Lawrence and Clairview in the Isaac local government area have been excluded from the baseline profile datasets. As such the baseline profile does not accurately describe the socio-economic composition of the affected communities and as such there is significant risks of associated impact enhancement and mitigation strategies being fundamentally flawed and at best be ineffective and at worst significantly exacerbate identified issues. (St Lawrence and Clairview are identified as locations for housing DIDO workers which will impact on local essential and emergency services). Include datasets and profiles for all impacted communities to establish an accurate baseline upon which effective and relevant enhancement and mitigation strategies can be based.	No adequacy review comment.	Addressed in Chapter 19B, Section 19.5
	26.19	Chapter 19, Section 19.5.10	The communities of St Lawrence and Clairview in the Isaac local government area have been excluded from the baseline profile datasets. As such the baseline profile does not accurately describe the socio-economic composition of the affected communities and as such there is significant risks of	No adequacy review comment.	Addressed in Chapter 19B, Section 19.5

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			associated impact enhancement and mitigation strategies being fundamentally flawed and at best be ineffective and at worst significantly exacerbate identified issues. (St Lawrence and Clairview are identified as locations for housing DIDO workers which will impact on local essential and emergency services). Include datasets and profiles for all impacted communities to establish an accurate baseline upon which effective and relevant enhancement and mitigation strategies can be based.		
	26.20	Chapter 19, Section 19.6	The communities of St Lawrence and Clairview in the Isaac local government area have been excluded from the baseline profile datasets. As such the baseline profile does not accurately describe the socio-economic composition of the affected communities and as such there is significant risks of associated impact enhancement and mitigation strategies being fundamentally flawed and at best be ineffective and at worst significantly exacerbate identified issues. (St Lawrence and Clairview are identified as locations for housing DIDO workers which will impact on local essential and emergency services). Include datasets and profiles for all impacted communities to establish an accurate baseline upon which effective and relevant enhancement and mitigation strategies can be based.	No adequacy review comment.	Addressed in Chapter 19B, Section 19.5
	26.21	Chapter 19, Section 19.7.1	Potential impacts on the housing market are not included. While the EIS nominates the Isaac communities of St Lawrence and Clairview as locations for the provision of accommodation no analysis of available housing stock or future requirements appears to have been conducted. The impacts of upward growth pressures on local housing markets during the construction phase of the mining boom are clearly documented with weekly rents in towns hosting large non-resident populations peaking at $1900.00 per week. While increases in property values and rents can deliver economic returns to property owners, they can also serve to displace lower income earners from their communities as rental prices escalate beyond their means. Small businesses can struggle to	No adequacy review comment.	Addressed in Chapter 19B, Sections 19.5 and 19.6 and Appendix A17 – SIA.

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			attract staff as they are unable to offer employees a wage which would permit them to meet escalating rent payments. As evidenced during the peak of the mining construction boom particularly in Bowen Basin townships and Mackay, local accommodation such as motels, hotel and caravan parks can become overwhelmed with resource sector employees and contractors and limit accommodation options for other visitors such as tourists. While easing of demand and additional supply has alleviated this problem, the local tourism industry is still struggling to overcome market perceptions of lack of accommodation and associated decreased visitation. Include and fully consider impacts on the local property market in the Social Impact Assessment, particularly on vulnerable residents and lower income workers. Fully consider the impacts of induced employment and family multipliers. Consider the impacts of accommodation options on other industry sectors, for example impacts on the local tourism industry should local accommodation such as hotels, motels and caravan parks be fully booked by resource sector employees.		
	26.22	Chapter 19, Section 19.7.1.1	While employment opportunities are clearly a benefit for local residents, there is a risk of some elements of 'Dutch Disease' impacts where by the higher wages typically paid by the resource sector serve to drain the labour force from other industry sectors which are unable to compete with resource sector remuneration. Consider and report on workforce availability impacts on other industry sectors.	No adequacy review comment.	Addressed in Chapter 19B, Sections 19.5 and 19.6 and Appendix A17 – SIA.
	26.23	Chapter 19, Section 19.7.1.3	The commute to and from the project site for workers located in Mackay and Rockhampton is potentially more serious than 'tedious' for those commuting. The risk of vehicle crashes due to fatigue particularly after long shifts is statistically likely to increase and place a strain on the limited emergency services located between Rockhampton and Mackay. Consider the impacts of fatigue related vehicle crashes on emergency services.	No adequacy review comment.	Addressed in Chapter 19B, Sections 19.5 and 19.6 and Appendix A17 – SIA.

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	26.24	Chapter 19, Section 19.7.1.6	Education services - Information is only provided for Livingstone Shire Council and Rockhampton Regional Council area footprints despite communities in the Isaac and Mackay Regional Council areas. Emergency Services - While the office hours of Marlborough and St Lawrence Police stations may be limited, both these stations provide a 24/7 emergency response to both the local communities and Bruce Highway incidents such as vehicle crashes. If, for example, fatigue related crashes increase as a result of the project this will inevitably place strain on existing services. Given the provision of State funded services is based on estimated resident population only (i.e. excludes impacts of non resident workforces) these services could quickly become strained beyond capacity and compromise community safety. The same applies for local SES and ambulance services. Consider the impacts on education services for all communities identified as likely to be impacted by the project. Consider the impacts of the project on emergency services beyond the immediate project site for example any predicted increase in vehicle crashes and possible disruption related to due to 'issues of interaction between workers and the community, and alcohol' as described at section 19.7.1.5	No adequacy review comment.	Addressed in Chapter 19B, Sections 19.5 and 19.6 and Appendix A17 – SIA.
	26.25	Chapter 19, Section 19.7.3.2	Adverse impacts on Emergency services as described above are not considered. Inflationary pressure on Central Queensland housing market is acknowledged, however 'Central Queensland' is not explicitly defined. It is unclear whether local property markets in locations identified as impacted have been considered. References to impacts on property markets being included in this summary section but omitted from previous sections is somewhat confusing. Impacts on other industry sectors as described in previous responses are not considered. Consider impacts on emergency services and identify as adverse impact if appropriate. Define geographic boundaries of 'Central Queensland' in relation to property markets and ensure all	No adequacy review comment.	Addressed in Chapter 19B, Sections 19.5 and 19.6 and Appendix A17 – SIA.

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			locations identified as likely to be impacted by the project are considered if not included in the 'Central Queensland definition. Reference property market impacts at section 19.7.1 to ensure provisions of the EIS are not misinterpreted and eliminate confusion.		
	26.26	Chapter 19, Section 19.8	Impacts on emergency services have not been fully considered and therefore it is unclear whether a mitigation measure is necessary. Impacts on other industry sectors as described in previous responses have not been considered and therefore it is unclear whether a mitigation measure is necessary. Consider impacts on emergency services beyond the immediate project site and develop mitigation measure if appropriate. Consider impacts on other industry sectors and possible displacement of local SMEs and develop mitigation strategy if necessary.	No adequacy review comment.	Addressed in Chapter 19B, Sections 19.5 and 19.6 and Appendix A17 – SIA.
	26.27	Chapter 19, Section 19.8.4	Community and Stakeholder Engagement - The Isaac communities of St Lawrence and Clairview are identified as stakeholders; however Isaac Regional Council is not included. Workforce Management Strategy - The objective 'To attract and maintain a well-trained and highly skilled workforce from the Livingstone Shire Council and Rockhampton Regional Council areas' is inconsistent with other sections of the document which describe local employment opportunities in both Isaac and Mackay Regional Council areas. Health, Social, Family and Community Wellbeing Strategy - The strategy includes working with community and emergency service providers to monitor types of services and demand despite being impacts on emergency services being deemed insignificant in previous sections of the document. As per previous responses, Isaac and Mackay regional Council communities are identified as likely to be impacted by the project but only Livingstone Shire Council and Rockhampton	No adequacy review comment.	Addressed in Chapter 19B, Section 19.8 and Appendix A17 – SIA.

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			Regional Council appear to be participants in the 'community planning processes' referenced in the strategy framework. Include Isaac Regional Council as local government stakeholder for engagement purposes. Clarify where employment opportunities will be realised and maintain consistency throughout the document to permit stakeholders to respond appropriately and effectively to the EIS.		
27	27.1	Economic Impact Assessment	The EIS fails to demonstrate that the Project is economically viable The Proponent must provide a legitimate and accurate rationale for the Project, including by demonstrating that the Project's capital expenditures, operating costs, royalties, and any other expenditures, will exceed the export value.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6
	27.2		The EIS incorrectly states that global price and demand for thermal coal is growing. The Proponent must provide current information that demonstrates conclusively how the global demand and price projections for thermal coal justify the Project.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6
	27.3		The EIS relies on outdated and inconclusive projections for Southeast Asian thermal coal demand. The Proponent must provide current information that demonstrates conclusively how demand for thermal coal in Southeast Asia justifies the Project, taking into account the possibility of a significant reduction in demand for coal in Southeast Asia based on countries acting in line with the Paris Agreement.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6
	27.4		The EIS fails to demonstrate how the Project will be economically viable in light of falling prices for coking coal. The Proponent must demonstrate how the Project would be economically viable if the price for coking coal falls below US$125 per tonne.	No adequacy review comment.	Addressed in Chapter 19A, Section 19.6

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	27.5		The EIS does not demonstrate how the Proponent will pay for rehabilitation. The Proponent must calculate the cost of implementing the rehabilitation strategy and demonstrate that it will have sufficient financing available to implement it.	No adequacy review comment.	Addressed in Chapter 3, Section 3.9 and Chapter 19, Section 19.6.3.
	27.6		The EIS does not adequately or accurately assess direct and indirect greenhouse gas emissions. The EIS fails to demonstrate the basis for the calculations of greenhouse gas emissions. The Proponent must demonstrate the basis for the calculation of the emissions in Year 12 and over the total lifetime of the Project, including by itemizing greenhouse gas emissions for each year of operation. It must also demonstrate why Year 12 is considered the "maximum operational phase" of the Project.	No adequacy review comment.	Addressed in Chapter 12, Section 12.10
	27.7		The EIS fails to calculate the Project's downstream greenhouse gas emissions. The Proponent must revise the EIS to include a calculation of the downstream emissions that will result from the Project. The Proponent must also demonstrate it has considered the cumulative impacts of the Project's downstream emissions in the context of Queensland, Australian, and global commitments to reduce greenhouse gas emissions.	No adequacy review comment.	Scope 3 Emissions were excluded from the EIS Term of Reference as Scope 3 Emissions are measured at the location coal is used. No update to the EIS proposed.
	27.8		The EIS fails to adequately address the impacts on the Great Barrier Reef World Heritage Area. The EIS fails to consider the impacts of greenhouse gas emissions on the World Heritage Area facilitated by the Project. The Proponent must provide a detailed assessment of the impacts of the emissions from, and facilitated by, the Project on the World Heritage Area, its OUV, and the resilience of its ecosystem to adapt to climate change, in the context of the current and projected rapid deterioration of the OUV from the impacts of climate change and the urgent need to reduce greenhouse gas emissions to ensure the World Heritage Area's survival.	No adequacy review comment.	Impacts the GBRWHA associated with GHG are addressed in Chapter 16, Section 16.16. Scope 3 Emissions were excluded from the EIS Term of Reference as Scope 3 Emissions are measured at the location coal is used. No update to the EIS proposed.

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	27.9		The EIS fails to consider the impacts of industrial shipping through the World Heritage Area facilitated by the Project. The Proponent must provide a detailed assessment of the cumulative impacts of industrial shipping on the World Heritage Area's OUV that may be facilitated by the Project.	No adequacy review comment.	Addressed in Chapter 6, Sections 6.4.4 and 6.12.4
	27.10		The EIS fails to adequately assess the Project's vulnerability to climate change. The Proponent must include detailed projections of any changed flood conditions resulting from climate change and must then assess the Project's vulnerability to future flood risk based on this information. The Proponent must also present detailed flood modelling, hydraulic design, and flood immunity design, to enable the Project's vulnerability to changed flood conditions resulting from climate change to be assessed.	No adequacy review comment.	Addressed in Chapter 4, Sections 4.7 and 4.8.2
	27.11		The EIS fails to adequately assess the Project's vulnerability to changed drought conditions resulting from climate change. The Proponent must include detailed modelling of changed water availability conditions resulting from climate change, provide details of the design of the water management system, assess the Project's vulnerability to drought based on this information, and demonstrate that there will be sufficient water available for the Project throughout its life.	No adequacy review comment.	Addressed in Chapter 4, Sections 4.7 and 4.8.4
	27.12		The EIS fails to assess the impact on Strategic cropping land surrounding the mine site. Supplementary information must be prepared outlining the impacts on values outlined in the Regional Planning Interests Act.	No adequacy review comment.	Addressed in Chapter 5, Section 5.5.5.
	27.13		The EIS fails to adequately assess impacts on Groundwater chemistry. A deep well should be drilled and screened so that coal measures can be pump tested to determine their hydraulic and water chemical properties.	No adequacy review comment.	Addressed in Chapter 10, Sections 10.5 and 10.7. Additional bores have been installed to the deeper Styx Coal Measures and have

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					been tested and sampled.
	27.14		The EIS fails to adequately assess impacts on Groundwater Quality Changes. The kinetic tests should be run: (1) until both the pH and sulfate production have stabilised; (2) with more test cells to both better represent the large amount of waste rock to be backfilled and stored on the surface; and (3) with some stratigraphies selected for their problematic potential.	No adequacy review comment.	Addressed in Chapter 10, Sections 10.5 and 10.7.
	27.15		The EIS fails to adequately assess impacts on aquifer disruption. Modelling of complete backfill of Open Cut Pit 1 and Open Cut 4 should be performed to see if this would alleviate groundwater loss and/or saltwater influx impacts on the Styx River north of the mine, and dewatering in the Tooloombah Creek and Deep Creek catchments.	No adequacy review comment.	Addressed in Chapter 10, Section, 10.7 and Appendix A6.
	27.16		Groundwater Depressurisation and Drawdown of Water Table Mitigation and Management Measures. Backfilling of the remaining voids in Open Cut Pit 1 and Open Cut 4 should be considered as a closure alternative.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.1.4
	27.17		The EIS fails to adequately assess impacts on Change in Groundwater Quality. A re-analysis of the collection strategy for potential contaminants from the surface waste storage piles is needed. Slurry walls, liners, and collections wells should be evaluated for collection efficiency and cost.	No adequacy review comment.	Addressed in Chapter 21, Section 21.6
	27.18		The project will have an unacceptable adverse impact on the surroundings through noise and dust. The project has not adequately assessed the impact of the project on the health of surrounding areas from fine particulates, for which there is increasing evidence of adverse health impacts.	No adequacy review comment.	Addressed in Chapter 12.
28	28.1		No specific comment provided other than reliance on information provided by other submitters. Additional information to be provided in the SEIS in relation to comments made by others.	No adequacy review comment.	The SEIS will provide updated information to address submissions by others where relevant.

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29	29.1	Chapter 18	The Department has received a written notice (on 27 June 2017) to develop a cultural heritage management plan (CHMP) pursuant to Part 7 of the ACHA for the Central Queensland Coal Project in accordance with the EIS conditions. The CHMP must either be approved and registered prior to approving the project or alternately, work cannot commence on the project until the CHMP has been approved and registered.	No adequacy review comment.	Addressed in Chapter 18, Sections 18.4.4, 18.4.6 and 18.6
	29.2	Chapter 19	Strategies in support of the Agreement (DATSIP – Central Queensland Regional Centre) in regard to identifying opportunities for training and employment, traineeships and apprenticeships, business development and contracting opportunities. In partnership establish education and training programs and pathways officers, develop and implement pre-vocational training and job ready education programs. Identify and oversee the implementation of appropriate traineeships and apprenticeship opportunities including nationally accredited schemes.	No adequacy review comment.	No recommendation. No update to the EIS is proposed.
	29.3	Chapter 19	In implementing these strategies, it may be the case that local community groups may identify alternatives means of engaging, developing and retaining Indigenous people in relation to the project through the establishment of a contracting company. Alternative engagement models other than direct employment which could be an attractive means of self-determination for Indigenous people. In the event that a contracting company is established, it may be an effective means of meeting the statutory and business objectives of the project.	No adequacy review comment.	No recommendation. No update to the EIS is proposed.
30	30.1	Chapter 1, Section 1.7	A brief description of historical consultation undertaken is provided in this section, along with a list of key stakeholders. However, there is insufficient detail regarding the consultation process, outcomes and key issues raised, and the manner in which the outcomes have informed the development of the EIS/SIA. Further detail should be provided regarding stakeholder engagement activities, as required by Appendix 4, Clauses 4	The proponent has updated the chapter to include details of consultation undertaken with key stakeholders as part of the public notification of the EIS. However, there is still insufficient detail regarding the key issues raised, and how this has informed the development of the EIS/AEIS.	Addressed in Chapter 19b and Appendix A17 – Social Impact Assessment.

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			and 5 of the ToR. It is recommended that this be presented as a standalone chapter.	Appendix 4, Clause 5 of the ToR requires the stakeholder engagement to be adequately described and addressed in the EIS. More specifically, the ToR requires evidence of how stakeholder issues and feedback have been or will be address, as well as details of any negotiations or agreements required for the impact. There is no evidence of stakeholder consultation activities for the purposes of informing the development of the SIA report. Specifically, there is no detail on how community and stakeholder issues and concerns have been addressed or considered in the report, nor details of how stakeholder feedback has informed or influenced the development of social impact management measures outlined in Chapter 19.8. Appendix 4, Clause 4 of the ToR requires engagement with stakeholders and the community to commence early in the EIS process to ensure the baseline study, assessment of potential impacts and development of appropriate mitigation measures and management plans are informed by an inclusive and collaborative engagement process. Further engagement is required to: - supplement and fill data gaps identified in the social baseline - understand the values and characteristics of the potentially affected communities - identify and assess potential social impacts, including stakeholders feedback on their views,	

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				perceptions and experiences with projects of this nature - validate potential impacts and benefits - inform the development of the proposed social impact management measures. As required by Appendix 4, Clause 5 of the ToR, this process should be adequately documented in the EIS. Consultation outcomes and issues raised by key stakeholders and the community should be referenced, where relevant, throughout the SIA to adequately demonstrate how stakeholder input has informed the various phases of the SIA. It is recommended that this information be placed into a dedicated chapter.	
	30.2		For several of the plans and policies reviewed, there is little or no comment provided regarding the consistency of the proposed project with the relevant requirements and objectives of the plan/policy in question, and whether these have informed the development of the project or aspects of the SIA. For example, Item 19.2.7.4 provides an overview of Livingstone Shire Council's Corporate Plan 2014-2019. However, there is no further information regarding the consistency of the project with the identified aspects of the plan, and/or whether the plan has been considered as part of the SIA or project design. A detailed review of all aspects of each policy/plan listed in this section is beyond the scope of this EIS, however the key requirements of each should be interpreted in the context of the project. Where applicable, the regulatory review should be updated to consider factors such as: Which aspect of the project concept or design has been influenced by the plan/policy in question?; Is the proposed project consistent with the objectives of the	The proponent has updated the regulatory review to include an interpretation of key policies and plans in the consideration has been given to how these policies have influenced or been considered in the proposed mitigation and management strategies. As required by Appendix 4, clause 1c), where appropriate, demonstrate how key policies and plans have been considered in the development of the proposed mitigation and management measures. Clear statements should be provided to evidence this.	Addressed in Chapter 19A, Section 19.4 and Chapter 19B, Section 19.4

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			relevant plan/policy? Does the relevant plan/policy influence core commitments or mitigation actions proposed by the proponent?		
	30.3	Chapter 19, Section 19.4.1.1	The data used in the SIA appears to have been sourced exclusively from secondary sources. Primary data should be utilised to address any gaps in available secondary data, as required by Appendix 4, Clause 3 of the ToR. A gap analysis of available secondary data should be undertaken to determine the requirements for additional primary data collection as appropriate to the nature of the project and potential impacts. An updated social baseline should be provided, and this should incorporate the use of primary data where deemed necessary by the outcome of the gap analysis. The baseline data should be sufficient to provide a benchmark against which the matters described in Appendix 4, Clause 7 of the ToR can be assessed, along with any other potential impacts identified through the SIA process.	The proponent has not utilised additional supplementary data for the baseline. Further, the rationale which has been provided for excluding primary data from the assessment suggests a misunderstanding of the nature and purpose of such data in the SIA process. The size of the study area should not preclude the collection of targeted primary data where such data is relevant to the assessment. Appendix 4, Clause 3 of the ToR requires the social baseline study to be based on "qualitative, quantitative and participatory methods", The data used in the SIA has been sourced solely from secondary sources. Appendix 4, Clause 6 of the ToR requires that the SIA contain sufficient detail to allow local and state authorities to make informed decisions about the project's effects. The lack of participative primary data limits understanding of the existing social and economic conditions and trends within the SIA study area. The baseline data does not provide a sufficient benchmark against which the matters described in Appendix 4, Clause 7 of the ToR can be assessed, along with any other potential impacts identified through the SIA process. Primary data should be utilised to address any gaps in available secondary data, and validate relevant findings, as required by Appendix 4, Clause 3 of the ToR. A gap analysis of available secondary data should be undertaken to determine the requirements	Addressed in Chapter 19B, Sections 19.4 and 19.5 and Appendix A17 – Social Impact Assessment, Chapters 5 and 6.

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				for additional primary data collection as appropriate to the nature of the project and potential impacts. Updated social and economic baselines should be provided, and this should incorporate the use of primary data where deemed necessary by the outcome of the gap analysis. The baseline data should be sufficient to provide a benchmark against which the matters described in Appendix 4, Clause 7 of the ToR can be assessed, along with any other potential impacts identified through the SIA process.	
	30.4	Chapter 19, Section 19.4.1.3	The following matters are noted regarding the social study area: The criteria or process for determining the SIA study area has not been clearly articulated. Multiple areas based on both local government boundaries and regional development area boundaries have been identified, however the purpose of these varying areas is not described. No baseline data has been provided for the portion of the study area which incorporates the regional development areas of Fitzroy and Central West Region, and Mackay-Isaac-Whitsunday, apart from a brief summary profile. Additionally, these areas have not been referred to again in the impact assessment. The social study area excludes the Isaac Regional Council (IRC) local government area (LGA). Given the proximity of the mine to IRC, it is highly likely that direct impacts (particularly positive impacts) will extend to this area. For example, potential local employees may live within IRC, and IRC-based business may service the project. Chapter 19.7.13 also notes that workers may be accommodated in Clairview, which is situated within IRC.	Whilst the social study area now includes the Isaac Regional Council (IRC) local government area (LGA), the criteria or process for determining the SIA study area has still not been clearly articulated. Multiple areas based on both local government boundaries and regional development area boundaries have been identified, however the purpose of these varying areas is not described. Further, the geographic scales of the study area do not adequately reflect the nature and scale of the proposed project. For example, the geographic scale of the 'local study area' does not capture the distinct characteristics of the individual communities that may be affected by the project, including (but not limited to) community culture and values, community history, community well-being, land/property ownerships and the utilisation of natural resources. This is not consistent with Appendix 4, Clause 1.b) of the ToR. Additionally, individual communities near the project may also have very different characteristics when compared to each other,	Addressed in Chapter 19B, Section 19.4 and Appendix A17 – Social Impact Assessment, Chapter 1.

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			A rationale should be provided for determining the study area(s), and this should be consistent with the requirements of Appendix 4, Clause 2 of the ToR. The SIA study area boundaries should be modified to reflect the geographic scope of the potential social impacts (both negative and positive) of the project. If local government boundaries do not accurately reflect the required area, other methods should be used, for example utilising a combination of Queensland Government Statistician's Office (QGSO) statistical area boundaries. Consistent with the approach in the economic assessment (Chapter 19.4.2.1), it is recommended that multiple SIA study areas be defined in order to assess potential social impacts at different geographic scales, for example: a local study area within which direct social impacts are assessed; and a regional study area within which regional-level social impacts (including those that may occur as a result of economic influences) are assessed. Baseline data provided in Chapter 19.5 should be updated as necessary to reflect any changes to the study area. Where necessary, layering of data for multiple geographic areas should be used, dependant on data availability.	and so may also be affected differently. While some secondary demographic data about the individual communities has been presented in the social baseline (Chapter 19.5.6.1), the level of detail is limited and does not provide present a clear understanding or appreciation of the community characteristics and values of nearby communities. There is still no baseline data for the portion of the study area which incorporates the regional development areas of Fitzroy and Central West Region, and Mackay-Isaac-Whitsunday, apart from a brief summary profile. Additionally, these areas have not been referred to again in the impact assessment. The SIA study area boundaries should be modified to reflect the geographic scope of the potential social impacts (both negative and positive) of the project. It is suggested that study areas defined in the SIA, economic assessment and SEP (Appendix 14) be revised and updated to include a study area (or combination of local and regional study areas) that is consistent across all studies, and accurately captures the potential social and economic impacts at different geographic scales. The study area should reflect the social, economic and geographic boundaries for the impact assessment, and should be determined in a manner consistent with the requirements of Appendix 4, Clause 2 of the ToR. Baseline data provided in Chapter 19.5 should be updated as necessary to reflect changes to the study area, including a greater focus on impacted communities. Where necessary,	

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				layering of data for multiple geographic areas should be used, dependant on data availability.	
	30.5	Chapter 19, Section 19.4.2.1	The following matters are noted regarding the economic study area: Many of the social and economic impacts of the project are inter-related, however the boundaries of the economic study area and social study area differ. No justification is provided for excluding IRC from the economic study area, however it is highly likely that economic opportunities may extend to this area. This is particularly valid since potential workers and service providers / suppliers with coal industry experience may be based in this area. The Fitzroy Statistical Area Level 4 (SA4) is now referred to by QGSO as Central Queensland SA4. The economic study area boundaries should be reviewed and updated to more accurately reflect the geographic scope of the potential economic benefits and losses as a result of the project. If feasible, consistent boundaries should be used for both the SIA study area and economic study area in order to reflect the inter-relationships between economic and social matters. The updated terminology for Fitzroy SA4 should be should be used.	The economic study area has been updated to include the IRC LGA or more specifically the Broadsound-Nebo Statistical Area Level 2. The inclusion of this area more accurately reflects the geographic scope of the potential economic benefits and losses as a result of the project. The boundaries for the SIA study area and economic study area remain inconsistent, despite the fact that these matters are closely interrelated. Refer to comment no.4 above.	Addressed in Chapter 19a and Chapter 19b, Section 19.4 and 19.5 and Appendix A17 – Social Impact Assessment, Chapter 5.
	30.6	Chapter 19, Sections 19.5 and 19.7	The baseline data presented in Chapter 19.5 has provided a useful high-level overview of Livingstone Shire Council (LSC) and Rockhampton Regional Council (RRC), however it does not demonstrate an appreciation of the characteristics of individual communities within these LGAs. The study area contains a range of communities with distinct characteristics. As such, each of these communities will be impacted differently by the project. For example, nearby communities such as Marlborough would be affected very differently to more distant towns such as Stanage, or large urban settlements such as Rockhampton. Additionally, individual communities near the project may also have very different characteristics when compared to each other, and so may also be affected differently. While some secondary demographic	It is acknowledged that Chapter 19.5 has been updated to include some secondary demographic data about the nearby communities within the defined study area. However, the level of detail is limited and does not clearly articulate the social context and characteristics of these individual communities. Participative primary data collection is required to better understand relevant community characteristics. The proponent's decision to exclude the use of primary data from the assessment has resulted in a limited understanding of the existing community values and characteristics of local communities	Addressed in Chapter 19b, Sections 19.4.2 and 19.5 and Appendix A17 – Social Impact Assessment, Chapters 5 and 6.

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			data about these individual communities is publicly-available, participative primary data collection is typically required to better understand relevant community characteristics. Both primary and secondary baseline data should be provided for the various individual communities which have the potential to be directly impacted by the project, in accordance with the requirements of Appendix 4, Clause 1b of the ToR. The impact assessment presented in Chapter 19.7 should be updated to more clearly assess the way different communities may be impacted differently by the project. The greatest focus should be on those communities which are predicted to experience the most significant impacts.	including existing community sentiment, and the social trends / changes currently being experienced by the communities. The exclusion of participative primary data also affects the state government's ability to evaluate the project's effects as there is no benchmark against which potential social impacts can be assessed. In accordance with Appendix 4, Clauses 3-9 of the ToR, the social and economic baselines, together with the impact assessment presented in Chapter 19.7, should be updated to include primary data to more clearly assess the way different communities may be impacted differently by the project. Key matters should include (but not be limited to): - community characteristics such as community culture and values, community history, community well-being, land ownership and utilisation of natural resources - social changes and or trends that are currently being experienced by community such as seasonal population changes due to tourism or employment, land use changes and industrial development, and changes in labour market and employment base - community sentiment towards mining development, including legacy issues and existing perceptions. The greatest focus of the baseline and impact assessment should be on those communities which are likely to experience the most significant impacts.	

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	30.7	Chapter 19, Section 19.5.2	Woorabinda Aboriginal Shire Council (WASC) has been excluded from the study area on the basis that it has a small population and no support infrastructure. This is not consistent with the requirements of Appendix 4, Clause 2 of the ToR. If a community has the potential to be directly impacted by the project – either negatively or positively – it should be considered as part of the baseline. Additionally, Chapter 19.7.1.1 highlights that employment of Indigenous personnel will be a priority for the proponent. This provides a further driver to consider potential impacts and opportunities for this community. The rationale for excluding WASC from the baseline assessment should be reviewed. If WASC is to be excluded, the EIS should demonstrate that it is unlikely to be impacted by the proposed project. If there is potential for WASC to be impacted by the project (for example as a source location for Indigenous personnel), then it should be included within the study area.	It is recognised that the Woorabinda Aboriginal Shire Council (WASC) communities are located some distance from the project (approximately 305 km) with a driving time of approximately 3.5 hours. However, the SIA reports that the project has the potential to provide employment opportunities for people as far north as Mackay and Sarina, with a driving time of up to 2.5 hours. While the commuting distances to Mackay and Sarina are shorter than Woorabinda communities, they are still considered too far to allow for daily commuting to and from the project site. It is considered very likely that workers based in centres such as Mackay would be required to stay in the local area whilst on roster. As such, excluding communities located in WASC on the basis of distance is inconsistent with the proponent's proposed recruitment approach. Further, inclusion of the WASC LGA in the economic study area recognises the potential for the WASC to be impacted by the project given its potential as a source location for Aboriginal and / or Torres Strait Islander personnel. Chapter 19.8.6.1 highlights that employment of Aboriginal and / or Torres Strait Islander personnel will be a priority for the proponent. This commitment, coupled with the exclusion of WASC from the proponent's Cultural Heritage Management Plans further justifies the need to consider this community as part of the social baseline. The rationale for excluding WASC from the social baseline assessment should be reviewed, taking into account the requirements of Appendix 4,	The rationale for not including the Woorabinda Aboriginal Shire Council (WASC) within the Project's study area is due primarily to Central Queensland Coal's obligations to prepare Cultural Heritage Management Plans (CHMP) with the relevant Indigenous parties which will include employment strategies and the distance from the Project site to the Council area. Central Queensland Coal is in the process of developing CHMPs with the relevant Indigenous parties. These CHMPs will include strategies in respect of employment opportunities for the relevant local Indigenous parties. Consequently, the employment of residents from within the WASC will not fall within the agreed CHMP employment strategies.

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				Clause 2 of the ToR. If there is potential for WASC to be impacted by the project (for example as a source location for Aboriginal and / or Torres Strait Islander personnel), then it should be included within the study area.	Separate to the CHMP employment strategies, it is very unlikely that the Project will have any impact on WASC. The WASC is located approximately 170 km south of the Project; however, by vehicle, the trip from WASC to the Project is approximately 305 km and will take approximately three and a half hours as identified in Figure 19-2. The proximity and trip time from WASC to the Project is considered as being too long, and as such, no impacts on this community are expected and therefore not considered as part of the Study area. There are a number of proposed and current mining projects that are located within closer proximity to the WASC than the Project, including: • Baralaba North continued operations project; • Rolleston coal expansion project;

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					• Dawson mine; • Blackwater mine; and • The Walton Coal project These projects are all expected to have a greater influence on the WASC given their proximity and shorter transit time.
	30.8	Chapter 19, Sections 19.5.8 and 19.6.3	The lists of major projects provided in Chapter 19.5.8 and 19.6.3 do not correlate, potentially because of different definitions of what constitutes a major project, and different search methods. Since Livingstone and Rockhampton both fall within the regional study area used in the economic assessment, it is presumed that major projects listed for these two LGAs would also be applicable for the Fitzroy SA4/Central QLD SA4 area. The definition of "major project" should be clarified. If different definitions are used between Chapter 19.5.8 and 19.6.3, this should be articulated	The term 'major projects' has been removed from Chapters 19.5.4.5 and 19.5.5.5, and replaced with 'local projects'. However, there appears to be a lack of understanding regarding the purpose of considering other major projects as part of the SIA. Details on other proposed major projects in the study area is required to ensure that potential cumulative impacts that could result from the combined effect of similar actions by multiple projects are considered and assessed as part of the SIA. Further, the definition of major projects (Chapter 19.6.3), and inclusion of some of the major projects listed in Table 19-39 remains unclear. The proponent defines 'major projects' as "projects that require an EIS, as well as projects that require both a tenure from DNRM and an Environmental Authority from DES". However, some of the projects listed in Table 19-39 are not consistent with this definition. For example, the projects listed under 'other projects' are not required to obtain a tenure from DNRM and therefore do not constitute a 'major project' in accordance with the definition.	Addressed in Chapter 19A, Section 19.5.3

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				In addition, several of the major projects appear are located outside the defined study area, for example the South Burnett Coal Project and Kevin's Corner Project, and a rationale for including project's outside the study area has not been provided. As required by Appendix 4, Clause 7 of the ToR, the cumulative impact assessment should be updated to include specific reference to the potential cumulative impacts resulting from the project, in combination with other existing or proposed projects within the defined study area. It is also recommended that the definition of major projects, and the corresponding list of projects presented in Chapter 19.6.3, Table 19-39 be reviewed and updated to include only those projects that may have a cumulative effect on the communities in the social and economic study areas. If projects which are located outside of the study area are to be retained, a rationale for this should be provided.	
	30.9	Chapter 19, Section 19.5.8	A summary of key community facilities is provided in Table 19-13; however, it is difficult to assess potential impacts to these services unless further information is provided regarding capacity and utilisation. A lack of this information also limits the value of the comparisons provided between RCC, LSC and QLD. Where data is available, additional information should be added to Chapter 19.5.8 to clarify the capacity and utilisation of the services described. Dependant on data availability, examples may include: hospitals: distance from project, total number of hospital beds, ratio of hospital beds per capita in the service	It is acknowledged that some additional information has been provided on key community facilities and emergency services (e.g. the number local hospitals in the study area including distance of hospitals from the project, total number of beds and typical waiting times in the emergency wards, number of police stations and operating hours) (refer Chapters 19.5.4.5, 19.5.5.5 and 19.7.1.6). However, other relevant information, such as capacity, utilisation and existing demand for these services has not been incorporated.	Addressed in Chapter 19B, Section 19.5 and Appendix A 17 – Social Impact Assessment, Chapter 5.

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			catchment, utilisation rates of hospital beds, typical waiting times in the emergency ward; police stations: number of on-duty officers per shift at each station, ratio of on-duty police per capita in the area serviced, distance of police stations from the project; and ambulance stations: distance of stations from the project, number of available ambulances at each station. The assessment of health service capacity should also consider other services which may be used by the project workforce, for example mental health services.	A number of health and safety impacts, including the potential demand and impacts to emergency services have been identified and assessed in alternative sections of the EIS, namely Chapter 20 – Health and Safety, and Chapter 21 – Hazard and Risk. However, the SIA should still consider the information presented in these chapters and reference relevant findings and / or impacts where appropriate to determine the potential impacts of the proposed project on emergency and health services. As required by Appendix 4, Clause 7 of the ToR, further information on the capacity and existing demand on social infrastructure and services (particularly health and emergency services) is required to validate the assumption that there is unlikely to be significant demand on social infrastructure and services in the defined study area. More rigorous quantification of potential impacts should also be provided, for example by providing comparative scenarios demonstrating the likely effects of the project on these services, and providing relevant indicators (e.g. changes in doctor/patient ratios). Where appropriate, include references to relevant findings and / or impacts addressed in other section of the EIS to identify and / or validate the potential impacts of the proposed project on existing social infrastructure and services.	
	30.10	Chapter 19, Section 19.5.8	Chapter 8.15, and Appendix 4, Clause 7 of the ToR require an assessment of potential impacts to community health and wellbeing. It is acknowledged that this is a multi-faceted analysis, and that the EIS has addressed various relevant	Chapter 8.15, and Appendix 4, Clause 7 of the ToR require an assessment of potential impacts to community health and wellbeing. However, Chapter 19.5 still only provides minimal health	Addressed in Chapter 19B, Section 19.6 and Appendix A 17 – Social

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			aspects, for example levels of socioeconomic advantage (Chapter 19), health services capacity (Chapter 19), health impacts due to pollutant exposures (Chapter 20), and safety hazards (Chapter 21). However, Chapter 19.5 has provided only minimal health baseline information, with a focus on the availability of health services. Other relevant information, such as population health and safety indicators, has not been incorporated. The social baseline provided in Chapter 19.5 should be expanded to include relevant community health and wellbeing indicators, considering the potential health and wellbeing impacts (both positive and negative) associated with the project. The ToR cross-reference table in Chapter 19.13 should be updated to indicate the various chapters of the EIS within which health-related matters have been addressed.	baseline information, with a focus on the availability of health services. Other relevant information, such as population health and safety indicators, has not been incorporated. It is acknowledged that this is a multi-faceted analysis, and that the EIS has addressed various relevant aspects, for example levels of socioeconomic advantage (Chapter 19), health services capacity (Chapter 19), health impacts due to pollutant exposures (Chapter 20), and safety hazards (Chapter 21). However, where potential impacts with social relevance are addressed in other sections of the EIS, cross-references should be provided, and the social dimensions of those impacts should be addressed in the SIA. s required by Appendix 4, Clause 7 of the ToR, the SIA should include an assessment of the potential scope and significance of the impacts on local and regional communities, considering factors such as lifestyles and amenity, community values, and health and social-cultural wellbeing of families and communities. As required by Appendix 4, Clause 7 of the ToR,the social baseline (Chapter 19.5), together with the impact assessment presented in Chapter 19.7, should be updated to include information on other indicators of community health and wellbeing (e.g. lifestyles and amenity, community values, and health and socialcultural wellbeing), with reference to relevant sections of the EIS (for example, water or noise), where appropriate. It is not expected that the SIA will reiterate all the potential impacts on community health and	Impact Assessment, Chapter 8.

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				wellbeing in detail if they have been addressed in other sections of the EIS but rather address the social dimensions of those impacts, and cross-reference to other sections as required.	
	30.11	Chapter 19, Sections 19.5 and 19.6	There is duplication of some data (for example population data) between the social and economic baseline. The layout of Chapter 19 should be revised to reduce duplication of data where possible. Potential options may include: - presenting a combined socio-economic baseline; and - utilising cross-references for datasets which are utilised in both sections of the chapter.	There is still some duplication of data (for example population data) between the social and economic baselines. The layout of Chapter 19 should be revised to reduce duplication of data where possible, and improve readability. Potential options may include: - presenting a combined socio-economic baseline - utilising cross-references for datasets which are utilised in both sections of the chapter.	Noted – the SEIS Chapter has been separated into two chapters. Chapter 19a – Economic and Chapter 19b – Social. Additionally a standalone Social Impact Assessment is at Appendix A17.
	30.12	Chapter 19, Section 19.6	In some instances (for example Table 19.16, Figure 19.10, Table 19.20) data from the 2016t census has not been used. This data has been publicly released by the Australia Bureau of Statistics (ABS) and the Queensland Government Statistician's Office (QGSO). The proponent should update the information provided with the most recent data available.	There appears to be some discrepancy between what constitutes a major project, and those projects listed in Table 19-39. In addition, several of the major projects appear are located outside the defined study area, for example the South Burnett Coal Project and Kevin's Corner Project, and a rationale for including project's outside the study area has not been provided. Refer to comment no. 8 above.	Addressed in Chapter 19b, Section 19.5 and Appendix A17 – Social Impact Assessment, Chapter 5.
	30.13	Chapter 19, Section 19.6.3	Table 19-19 provides a summary of major projects under development within Fitzroy/Central QLD SA4. Several of these projects appear to be from outside this area, for example the South Burnett Coal Project and Kevin's Corner Project. The list of projects should be reviewed. If projects which are located outside of the study area are to be retained, a rationale for this should be provided.	Limited additional detail has been provided in the assessment of potential social impacts when compared to the EIS. As noted in the previous submission, there is typically very little quantification of potential outcomes, no community-level assessment, and no indication that stakeholder engagement has been	Addressed in Chapter 19a, Section 19.5.3

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				conducted to validate the findings. As a result, many of the risk rankings provided in Table 19-87 are still not clearly evidenced. Indicative examples include: - Chapter 19.7.1.7 has noted that accommodation will be provided in the surrounding townships (Marlborough, Ogmore, St Lawrence, Clairview etc.). However, no community-level baseline information is provided for these townships, and there is no indication that any consultation has occurred to validate the assumption that suitable accommodation may be available (for example with relevant local government agencies, real estate agents, or the Department of Housing and Public Works). Additionally, Table 19-87 identifies impacts to the local housing market as 'very low' however, Chapter 19.8.1 indicates that the project has the potential to result in increased housing costs particularly during the construction phase. The discussion of impacts and the subsequent risk ratings appear contradictory, and no data is referenced to validate these findings. - Chapter 19.7.1.7 also notes that the Marlborough Caravan Park has the potential to be upgraded to provide accommodation for the project's non-local construction and operations workforce. However, the current demand and capacity of the park, and the capacity to which the park will be upgraded is unknown. Further, there appears to be no contingency with regard to the provision of workforce accommodation should the Marlborough Caravan Park be unable to complete the necessary upgrades (due to planning approval or funding constraints).	

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				- Chapter 19.7.1.4 has noted potential impacts to surrounding property owners and landholders but no information is given to further quantify this, for example the number of properties that may be impacted, the location of the properties in relation to the project etc. Table 19-87 rates impacts to landholders and disruption to community cohesion as 'medium' impact however, no data has been provided to validate these findings. It is acknowledged that some impacts to landholders (sensitive receptors) have been addressed in other sections of the EIS, however these sections have not been crossreferenced in the SIA. Additionally, while Chapter 1.8 notes that consultation with affected landholders has been undertaken, there is still no indication that this has informed the impact assessment. - Chapter 19.8 has noted the potential for skills shortages, however there is no discussion of data (for example skills profiles) to inform the analysis. The risk ranking in Table 19-87 is deemed to be "low", however no data is referenced in the discussion of impacts to validate these findings. Unemployment and workforce participation data has been provided in the baseline (Chapter 19.6.2), however this is at a whole-of-LGA level for LSC, RRC and IRC, and so is not detailed enough for an analysis of community-level impacts as required by the ToR. Additionally, there is no evidence that the conclusion has been verified through consultation (for example with local industry bodies or unions). Chapter 19.8.2 identifies engagement with Construction Skills Queensland and Training Queensland	

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				(Table 19-87) as a mitigation measure, however this is a future action and will not inform the current assessment of impacts. The above list is not intended to be exhaustive, but rather to provide an indication of the typical limitations in the assessment. Where relevant baseline and project data is available, this should be utilised to allow a more accurate quantification of potential impacts. This information should be incorporated into Chapter 19.7 to provide a more detailed analysis of potential impacts. Appendix 4, Clause 3 of the ToR states that baseline should be "based on qualitative, quantitative and participatory data". Appendix 4, Clause 6 of the ToR also requires that the impact assessment be informed by "community engagement, social baseline study and impact analysis processes". Further stakeholder engagement should also be undertaken by the proponent to: - supplement baseline data and fill data gaps identified in the social baseline - understand the values and characteristics of the potentially affected communities - identify and assess potential social impacts, including stakeholders feedback on their views, perceptions and experiences with project so this nature - validate potential impacts and benefits and associated significance ratings - inform the development of the proposed mitigation and management measures. Where risk rankings are provided in Table 19-87, there should be a clear indication of what data	

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				(or other means of assessment) the conclusion is based on. If there are limitations in available data, this should be stated. Where potential impacts with social relevance are addressed in other sections of the EIS, cross references should be provided in the SIA, and the social dimensions should be discussed.	
	30.14	Chapter 19, Section 19.10	Limited detail has been provided in the assessment of potential social impacts; there is typically very little quantification of predicted outcomes, no community-level assessment, and no indication that stakeholder engagement has been conducted (where appropriate) to validate the findings. As a result, some of the risk rankings provided in Table 19-26 are also not clearly evidenced. Indicative examples include: Chapter 19.7.1.3 has noted that accommodation will be provided in the surrounding townships (Marlborough, Ogmore, St Lawrence, Clairview etc.). However, no community-level baseline information is provided for these townships, and there is no indication that any consultation has occurred to validate the assumption that suitable accommodation may be available (for example with relevant local government agencies, or the Department of Housing and Public Works). Chapter 19.7.1.4 has noted potential impacts to surrounding property owners and landholders but no information is given to further quantify this, for example the number of properties that may be impacted, the location of the properties in relation to the project etc. No cross-references are provided to other sections of the EIS where this data may be held. Additionally, while Chapter 1.7.2 notes that consultation with affected landholders has been undertaken, there is no indication that this has informed the impact assessment. Chapter 19.7.3.2 has noted the potential for skills shortages,	The assessment of potential cumulative impacts remains unfocused and non-specific. Chapter 19.5.3 notes the location of other potential mining projects in the region, and other major projects (either existing or developing) that are highlighted in Chapter 19.6.3. However, this data has not been utilised or referenced as part of the cumulative impact assessment. It is recommended that the Chapter 19.10 be updated in accordance with Appendix 4, Clause 8 of the ToR, with reference to specific major projects that may contribute to cumulative impacts. It is acknowledged that cumulative impacts would typically be assessed in less detail than project-specific impacts. However, some level of quantification should be provided, for example estimating cumulative workforce demand from multiple projects over a specified period, using publicly-available workforce estimates.	Addressed in Chapter 19B, Sections 19.5 and 19.6, Appendix A17 – Social Impact Assessment, Chapters 5 and 8.

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			however there is no discussion of data (for example skills profiles) to inform the analysis. The risk ranking in Table 19-26 is deemed to be "low", however no data is referenced in the discussion of impacts to validate these findings. Unemployment and workforce participation data has been provided in the baseline (Chapter 19.6.2), however this is at a whole-of-LGA level for LRC, and so is not detailed enough for an analysis of community-level impacts as required by the ToR. Additionally, there is no evidence that the conclusion has been verified through consultation (for example with local industry bodies, unions or the Department of State Development). Table 19-26 identifies engagement with Construction Skills Queensland as a mitigation measure, however this is a future action and will not inform the current assessment of impacts. Where relevant baseline data is available, this should be utilised to allow a more accurate quantification of potential impacts. Appendix 4, Clause 3 of the ToR states that baseline should be "based on qualitative, quantitative and participatory data". Appendix 4, Clause 6 of the EIS also requires that the impact assessment should be informed by "community engagement, social baseline study and impact analysis processes". Where risk rankings are provided in Table 19-26, there should be a clear indication of what data (or other means of assessment) the conclusion is based on. If there are limitations in available data, this should be stated.		
	30.15	Chapter 19, Section 19.7	No focused assessment of potential cumulative impacts is provided. Chapter 19.5.3 notes the location of other potential mining projects in the region, and other major projects (either existing or developing) are highlighted in Chapter 19.5.8 and 19.6.3. However, this data has not been utilised for a cumulative impact assessment. As assessment of potential cumulative impacts should be provided in accordance with Appendix 4, Clause 8 of the ToR. If the SIA predicts that no cumulative impacts will occur, this should be stated, and a rationale should be provided. It is acknowledged that	he various management strategy frameworks provided in this chapter still contain limited detail. Chapter 8.15 and Appendix 4, Clause 10 of the ToR require the proponent to prepare management plans to manage and enhance potential impacts (both positive and negative). More specifically, the ToR requires the assessment to identify opportunities to capture social and economic benefits of the project. Based on the information	Addressed in Chapter 19B, Section 19.9 and Appendix A17 – Social Impact Assessment Chapter 11.

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			cumulative impacts would typically be assessed in less detail than project-specific impacts.	presented in the EIS, these could include (but are not limited to): - enabling local suppliers of goods and services to receive full, fair and reasonable opportunity to tender for work throughout the life of the project - employment strategies and implementation plans for local and regional residents including ATSI peoples, women and people with disability - opportunities to support strategic development priorities within the agricultural and tourism sectors - regional workforce development plans including recruitment training development programs and initiatives to be offered - strategies to promote the location of workers and their families to regional centres. It is acknowledged that the project is still in the planning stages, and that detailed information on various relevant matters such as workforce planning and operational management may not yet be available. However, additional relevant information which is available should be incorporated to satisfy the requirements of the ToR. To be consistent with Appendix 4, Clause 10 of the ToR, the proponent should update Chapter 19.8 to incorporate additional relevant information which is readily-available. This may include (but should not be limited to): - details of any established industry guidelines or codes of practice which the proponent intends to commit to or comply with	

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				- details of existing programs and services that could assist in building capacity of local businesses, upskilling local workers etc. - procurement strategies and initiatives for local and nearby regional suppliers including ATSI owned businesses - specific measures the proponent will utilise to ensure that the level of service provided to the local community by existing services, facilities and infrastructure is not reduced -details on the provision of on-site health services to be provided for workers - details of potential community development programs the proponent could implement, and the outcomes to be achieved - emergency response arrangements with reference to relevant management measures or plans identified elsewhere in the EIS (e.g. Chapter 20).	
	30.16	Chapter 19, Section 19.8.4	The various management strategy frameworks provided in this chapter contain limited detail. It is acknowledged that the project is still in the planning stages, and that detailed information on various relevant matters such as workforce planning and operational management may not yet be available. However, additional relevant information which is readily-available should be incorporated. The management strategy frameworks should be further developed to the extent possible given available project information. All potentially significant impacts identified in Chapter 19.7 should be adequately addressed within these strategies. Where sufficient information is not yet available, the proponent should provide indicative time-frames or works programs for the further development of the relevant frameworks, and preparation of the detailed mitigation plans. Further guidance on the preparation of the management plans is provided in the draft SIA guideline (2016), available at:	The risk assessment framework has been revised to capture positive impacts and benefits, and has been applied in Chapter 19.11.1.1, Table 19-86. The framework has been improved by adding a rating scale for potential positive impacts, however, no enhancement measures are specified in Table 19-86. As required by Appendix 4, Clause 1g) of the ToR, benefit enhancement measures should be incorporated into Table 19-86 where appropriate.	Addressed in Section Chapter 19B, Sections 19.8 and 19.10 and Appendix A17 – Social Impact Assessment, Chapter 10.

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			http://eisdocs.dsdip.qld.gov.au/Strong%20and%20Sustainable%20Resource%20Communities%20Bill%202016/draft-social-impact-assessment-guideline-october-2016-public.pdf		
	30.17	Chapter 19, Table 19-26	The same risk assessment process has been used for both positive and negative potential impacts. Based on the information presented in the risk assessment methodology in Chapter 1.6.4, the risk assessment process (including hazard and consequence definitions) has not been designed to address positive impacts. For example, the potential positive impact of "economic stimulus to the regional economy during construction and operation" has a potential risk ranking of "extreme", which would require that "works must not proceed until suitable mitigation measures have been adopted to minimise the risk". Additionally, for potential positive impacts, no enhancement measures are specified in Table 19-26. An appropriate framework for assessing potential positive impacts / benefits should be developed, and this should be applied Chapter 19.10. As required by Appendix 4, Clause 1g) of the ToR, benefit enhancement measures should be incorporated into Table 19-26 where appropriate.	The reference to Appendix 10c in the ToR cross-reference table has been amended.	Addressed in Chapter 19B, Section 19.13 and Appendix 17 – Social Impact Assessment, Chapter 3.
	30.18	Chapter 19, Section 19.13	The ToR cross-reference table refers to Appendix 10c which is not available on the EIS download page. If the reference to Appendix 10c is a typo, this should be amended.	No adequacy review comment.	Noted Addressed in Chapter 19A and Chapter 19B.
31	31.1	Chapter 12	The approval and construction of new thermal coal mines in Queensland will lead to a net increase in carbon dioxide emissions through a net increase in coal being burnt for energy, regardless of in which country the product coal is burnt. As such Scope 3 emissions should be included in the EIS. Request that Scope 3 Emissions are calculated and assessed in relation to the Styx Coal Project.	No adequacy review comment.	Scope 3 Emissions were excluded from the EIS Term of Reference as Scope 3 Emissions are measured at the location coal is used. No update to the EIS proposed.
32	32.1	Executive Summary, Section 3.4;	Supplementary environmental flows. In Chapter 10 of the Environmental Impact Statement (EIS) it states that environmental flows to supplement local shallow water table levels will be provided for any ecological impacts that occur	The mitigation measure to supplement environmental flows has insufficient information. The additional information	Addressed in Chapter 10, Sections 10.6, 10.7, 10.8 and 10.9

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		Chapter 10 Groundwater	because of changes to natural groundwater discharges. The source of environmental flow water is unclear and it is unclear as to whether this is included in the 3.76 ML/day requirement. It appears that there is uncertainty regarding the potential impact on Groundwater Dependent Ecosystems (GDEs) and requirements to supplement environmental flows. Provide additional information regarding the volume of water required to supplement shallow ground water to support GDEs and the likely period for the provision of supplementary water. Provide information on sourcing the water supply to supplement flows. Indicate how supplementary water supply will be managed post mine closure noting that the local hydrology will likely to be permanently altered.	requested in submission 1 has not been included in the amended EIS chapter. Provide additional information regarding the volume of water required to supplement shallow groundwater to support GDEs and the likely period for the provision of supplementary water. Provide information on sourcing the water supply to supplement flows. Indicate how supplementary water supply will be managed post mine closure.	A preliminary water balance model (Section 4, Appendix A6) has been developed to estimate the groundwater baseflow supporting in-stream pools (Type 2 GDEs). The groundwater model has been used to simulate a possible mitigation method of utilising abstraction bores in the Styx Coal Measures to supply water to GDEs and has shown that abstraction may be a viable option for managing unacceptable impacts to GDEs post mine closure when mine produced water is no longer available for this purpose (see Section 3.6.2.4 of Appendix A6) and Chapter 10, Section 10.8.4.5.
	32.2	Chapter 1, Section 1.10.2.3 and; Chapter 11, Section 11.2.1.1	Backfilling voids. The Mineral and Energy Resources (Financial Provisioning) Bill 2017 is before Parliament and includes provisions to amend the Environmental Protection Act 1994 (EP Act) to require backfilling and rehabilitation for all voids in floodplains to a state where it will not cause environmental harm. The EIS does not commit to backfilling of all voids at closure. A commitment to backfill all voids in floodplains and rehabilitation to a state where it will not cause environmental	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.1.4 and Chapter 11, Sections 11.11.9 and 11.13

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			harm is required for consistency with the proposed policy changes. Appropriate changes to mine planning should be made to achieve this.		
	32.3	Chapter 2, Section 2.3.3.1	Residual voids. This section states 'open cut 2 will be back-filled' and 'small final voids will be left in open cut 1 and open cut 4'. Confirm if there will not be final voids.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.1.4 and Chapter 11, Sections 11.11.9 and 11.13
	32.4	Chapter 3, Section 3.4.2 and Chapter 13	Noise criteria. Chapter 13 – Noise and Vibration of the EIS addresses noise impacts from both the construction and operational phases of the mine separately with different noise criteria. However, according to the EIS the construction and operation phases will be occurring concurrently and it will not be possible to differentiate between the noise sources. Refer to 3.4.2 Construction Program and Figure 3-15 Indicative Project development schedule. The noise criteria developed with the Model Mining Condition methodology (see 13.6.2 Operational Noise Criteria) must be applied for all noise generated from the mine and a revised assessment must be completed which addresses the cumulative noise impacts at sensitive receptors (considering both construction and operational phases occurring concurrently). Following the results of the modelling and predicted noise levels, the report must demonstrate, with suggested mitigation measures, how the nearby sensitive receptors will not be subjected to adverse noise impacts from the mine.	No adequacy review comment.	Addressed in Chapter 13, Sections 13.6 and 13.7
	32.5	Chapter 3, Section 3.4.2 and Chapter 13	Noise impact in the rehabilitation stage. Noise impacts generated during the rehabilitation stage of the mine have not been considered in the noise impact assessment. The revised noise impact assessment must consider the equipment schedule and location of machines during the rehabilitation stage of the mine and include these in revised modelling of noise impacts for nearby sensitive receptors.	No adequacy review comment.	Addressed in Chapter 13, Sections 13.6 and 13.7.3.2.
	32.6	Chapter 3, Section 3.5.5.2	Sewage treatment plant. This section states 'a sewage treatment plant is proposed to be located near the MIA' and 'effluent and sludge waste streams will be appropriately	No adequacy review comment.	Addressed in Chapter 7, Section 7.9.2

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			treated and discharged to pits or used as mulching media, respectively'. The project proponent is requested to confirm the type of sewage treatment/septic tanks to be utilised on the mine site. Infiltration trenches and irrigation schemes need to be regulated by ERA 63 and EA conditions. Appropriate EA conditions should be included in an additional schedule.		
	32.7	Chapter 3, Section 3.6.2.3	Sewage treatment plant. This section states 'toilet facilities at the MIA will be pumped out at an appropriate schedule and taken to a licenced facility for treatment'. The project proponent is requested to confirm if the proposed camp sewage treatment plant will be irrigated on the mining lease.	No adequacy review comment.	Addressed in Chapter 7, Section 7.9.2
	32.8	Chapter 5, Section 5.5.4.3	Acid sulfate soil assessment. It is noted that the area at risk of potential acid generation will extend to the extent of groundwater drawdown. This does not appear to have been considered in the EIS and therefore no acid sulfate soil (ASS) or potential acid sulfate soil (PASS) investigations were conducted. Confirm the probability of ASS/PASS occurrence within the predicted area of groundwater drawdown by undertaking specific ASS sampling. Amend the 'Acid Sulfate Soils' section of 5.5.4.3 with a discussion of the results.	Acid sulfate soil assessment It is noted that the area at risk of potential acid generation will extend to the extent of groundwater drawdown. This does not appear to have been considered in the EIS and therefore no acid sulfate soil (ASS) or potential acid sulfate soil (PASS) investigations were conducted. Confirm the probability of ASS/PASS occurrence within the predicted area of groundwater drawdown by undertaking specific ASS sampling. Amend the 'Acid Sulfate Soils' section of 5.5.4.3 with a discussion of the results. Response states this is addressed in SEIS; a desktop assessment only has been completed. Confirm the probability of ASS/PASS occurrence within the predicted area of groundwater drawdown by undertaking specific ASS sampling. Amend the 'Acid Sulfate Soils' section of 5.5.4.3 with a discussion of the results.	Addressed in Chapter 5, Section 5.10, Chapter 8, Section 8.9 and Chapter 10, Sections 10.5 and 10.7. Also see response to submission reference 24.11.
	32.9	Chapter 7, Table 7-3	ERA 60. The table states the preferred method for managing contaminated soil will be either remediated onsite or disposed of within the mine pit. ERA 60 is required for disposal of	No adequacy review comment.	Addressed in Chapter 7, Section 7.9.3.

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			regulated waste onsite as per section 60(1)(a)(i) of the Environmental Protection Regulation 2008. ERA 60 has not been proposed for the project. Disposal of regulated waste onsite requires ERA 60 and EA conditions. Remediation of contaminated soils onsite would also require EA conditions. Confirm if ERA 60 is required for disposal of regulated waste or if bioremediation is proposed. Conditions will be required to be added to regulate these activities.		
	32.10	Chapter 7, Table 7-3	Sewage treatment plant. The table and chapter state that septic tanks on site will be pumped and transferred to the camp Sewerage Treatment Plant (STP). The project proponent is requested to confirm if the proposed camp STP will be irrigated on the mining lease.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.7 and Chapter 7, Section 7.9.2.
	32.11	Chapter 8, Section 8.4.4	Backfilling pits. Open Cut 1 does not commence until year 10, when Open Cut 2 would be available; however, Figure 8-4 indicates that the waste rock from Open Cut 1 will be managed outside a void for year 10 and part of year 11. Explain why backfilling Open Cut 2 in year 10 and 11 is not the preferred option.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.1.
	32.12	Chapter 8, Table 8-3	Sampling frequency of overburden Reference is made to the Western Australian Department of Mines and Petroleum's Draft Guidance – Materials Characterisation Baseline Data Requirements for Mining Proposals 2016. The completed sampling frequency has not been identified as consistent with this guidance. Clarify that the sampling intensity of the overburden and interburden is consistent with the guidelines.	Reference is made to the WA DMP March 2016 Guidance. Is the sampling frequency completed consistent with this guidance? If not please comment on adequacy. Response from proponent states the issue was addressed in 8.7.2, 8.9 and 8.10 of SEIS. Section 8.7.2 states that the suggested sampling frequency from WA DMP 2016 would be 'a few hundred' and that the completed sampling frequency is 'slightly below'. The completed sampling number is 174 which is 58% of 'a few hundred'. Over 98% of samples were classified as NAF (Section 8.9) with two samples uncertain and one sample PAF. However, sampling frequency was almost halved.	Addressed in Chapter 8, Sections 8.7.2 and 8.9.2 The WA DMP Guidelines (2016) nominate the minimum number of samples required for >10,000,000 tonnes of disturbed rock as being "a few hundred". For the purpose of this assessment a few hundred was interpreted as more than 200. To date 195 samples comprising 174

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				What is the rationale for the statement and assessment of the adequacy of the data for decision-making purposes? Are there any additional management measures as to how the risks of spoil will be quantified and managed during operations other than that presented in 8.10?	samples analysed by RGS Environmental in 2012 of the overburden and interburden materials and a further 21 samples of waste materials from the CHPP analysed by ALS in 2018. Whilst being just short of the 200 samples, the lack of variability (sulphidic sample results) across the samples taken would suggest that the frequency of sampling undertaken for the Central Queensland Coal Project is adequate. This is further expanded in Section 8.9.2.
	32.13	Chapter 8, Section 8.7, p.8-23	Acid generation from waste rock. It is not clear whether the data collected is sufficient to support the conclusion that the risk of acid generation from waste rock is low. This comment is reinforced in Section 8.8 and recommends a Project-specific Mineral Waste Management Plan. This information is required prior to extraction/processing to ensure adequate planning and management. Clarify that the data collected is sufficient to support the conclusion that the risk of acid generation from waste rock is low. Or propose commitments in the Mineral Waste Management Plan for dealing with potential acid generation from waste rock.	No adequacy review comment.	Addressed in Chapter 8, Sections 8.7.2 and 8.9.2 The WA DMP Guidelines (2016) nominate the minimum number of samples required for >10,000,000 tonnes of disturbed rock as being “a few hundred”. For the purpose of this assessment a few hundred was

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					interpreted as more than 200. To date 195 samples comprising 174 samples analysed by RGS Environmental in 2012 of the overburden and interburden materials and a further 21 samples of waste materials from the CHPP analysed by ALS in 2018. Whilst being just short of the 200 samples, the lack of variability (sulphidic sample results) across the samples taken would suggest that the frequency of sampling undertaken for the Central Queensland Coal Project is adequate. This is further expanded in Section 8.9.2.
	32.14	Chapter 8, Section 8.7.2	Leaching of metals/metalloids. The EIS claims that metal/metalloid concentrations in water extracts were consistent with what is in the regional geology and associated aquifer. A claim is made that the leaching of metals/metalloids from rock is likely to have a negligible impact on surface and groundwater. Limited evidence was provided to justify this claim.	No adequacy review comment.	Addressed in Chapter 8, Section 8.7

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			Address: - has regional data been collected to support the statement that it is likely consistent with the regional geology and associated aquifer? - on what basis is the statement regarding minimal impact made?		
	32.15	Chapter 8, Table 8-13 and Table 8-14	Groundwater monitoring program**.** The mitigation measures propose a specific monitoring program. Note that the frequency is not adequate to establish baseline data required for a trigger/compliance program. The development of an approved groundwater monitoring program is required, including at a minimum the measures described in Table 8-13.	No adequacy review comment.	Addressed in Chapter 8, Table 8-17 and variously throughout Chapter 8 and Chapter 10 – Groundwater. Chapter 23 – Draft EA Conditions has been updated similarly with groundwater monitoring bore locations.
	32.16	Chapter 9, Page 9-2, Section 9.2 Relevant Legislation, Plans and Guidelines	Reference and guidance material**.** Two of the relevant documents for the Regulated Dam Assessment are not mentioned in the list of Guidance Documents. They are DES's EIS information guideline—Regulated structures; and DES's Guideline on structures that are dams or levees constructed as part of environmentally relevant activities. Amend the last section of Section 9.2 by including two more references as shown in underlined text below: "The following Codes and Manuals apply to the Project in the context of flooding, drainage structure design and regulated structure assessment: - Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (DES 2016) - EIS information guideline - Regulated structures - Guideline on structures which are dams or levees constructed as part of environmentally relevant activities (ESR/2016/1934) State Development Assessment Provisions (DILGP 2013), 5.2 constructing or raising waterway barrier works in fish habitats state code".	The recommendation to include extra relevant Reference Guidelines in the Reference List was not done. DES will require CQCP to use these Guidelines even though they are not listed in Section 9.2.	Addressed in Chapter 9, Section 9.2.10 and 9.8

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	32.17	Chapter 9, Section 9.6.2.5, p.9-98	Flood impact data in Table 9-35. This Table contains numerical information on AEP flood events at key locations. There is insufficient data to provide an adequate understanding of the flood profiles in Deep Creek and Tooloombah Creek, and many of the co-ordinate pairs for the selected key locations are erroneous. Table 9-35 should be expanded to include a new column "Peak water levels in metres AHD" at all locations for the existing and developed cases. This is in addition to the existing columns in the Table showing Peak water depth and Peak water velocity. The Eastings and Northing Coordinates for the eleven selected key locations appear to be seriously in error for most of the named locations. All the UTM coordinates need to be checked and converted to Latitude-Longitude coordinates. The Bruce Highway Crossing on Tooloombah Creek should be added to Table 9-35 as another key location for reporting flood levels. The proposed P4DD diversion drain outlet, which discharges into Tooloombah Creek near Open Cut 4, should also be included in Table 9-35 as a selected key location for reporting of flood levels. All the key locations listed in Table 9-35 should also be shown on an appropriate Figure or Plan in Chapter 9. Location number 9 in Table 9-35 is described as the P3DD outlet. Please show the location of the P3DD drain on a Figure or Plan in Chapter 9.	No adequacy review comment.	Addressed in Chapter 9, Section 9.6.2.5
	32.18	Chapter 9, Section 9.6.2.5, p.9-101	Access road between CHPP1 and CHPP2. The access road connecting CHPP1 and CHPP2 that wraps around Waste Area 2 is quoted as having an AEP protection level of 9.5% or 10% only. Because of its role in preventing backwater inundation, the road should be raised to at least the 0.1% AEP protection level to prevent backwatering from Deep Creek in major flood events. Figures 9-23 through to 9-28 showing AEP flood inundation maps clearly show that the access road connecting CHPP1 and	Figures 9-23 to 9-28 in the EIS showed the Access road from CHPP1 being used as a flood management levee to prevent backwater from Deep Creek flooding into Open Cut Pit 2. Figures 9-44 to 9-48 and Figure 9-64 in the amended EIS dispense with using the road as a levee. They show a dedicated levee being constructed inside of the Waste Rock Stockpile 2 to prevent backwater flooding	Addressed in Chapter 9, Sections 9.6.2 and 9.8 and Chapter 23, Section 23.1.10.

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			CHPP2 is preventing backflow entering the Open Cut Pit 2 up to the PMF flood level. The road formation is being used as a levee as well as an access road. The AEP protection levels quoted for this road formation need to be amended to at least 0.1% AEP, to reflect its function as a levee. The quoted raisings of 1.8m or 2m in the two paragraphs under the heading "Flooding of Access Roads" need to be reviewed to determine whether the road should be increased further to protect the Waste Area 2 and Open Cut Pit 2 up to a 0.1% AEP protection level.	into Open Cut Pit 2. Standard Conditions for levees as regulated structures will have to be included in the EA for this and for other levees.	
	32.19	Chapter 9, Section 9.6.2.5	The Flood impact of the Deep Creek conveyor option describes the assessment that the conveyor would be inundated and that above 2.47m/s flow rate the product would be inundated. Describe what mitigation measures will be implemented when Deep Creek floods to ensure coal product will not be discharged into the creek. Issues to be addressed include: - Developing a Trigger Action Response Plan (TARP) or similar - Determining when the conveyor is to be stopped in the case of a predicted flood or a flood warning - Identifying a location for storage of coal in the case where the conveyor cannot be used for a long period of time due to flooding - Whether trucks will be used to transport coal to the train loadout facility. This needs to be factored into the traffic management plan.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.2 and Chapter 9, Section 9.6.2.5. The conveyor has been relocated outside of the Deep Creek flood area.
	32.20	Chapter 9, Section 9.6.3.3, p.9-105	Dirty water drain nomenclature and depiction. There is a lack of clarity in the first paragraph about the names and the actual total number of "Dirty water drains" and "Environmental Dams". There is also considerable inconsistency between Section 9.6.3.3 and the numbering and names of drains and dams on Figure 9-42 "Mine site drainage". The description in the first paragraph of Section 9.6.3.3 includes reference to "dirty water drains" BCSCD-1, BCSCD-2 and MIACD that would be diverting water from catch drains into the CHPP Environment Dam(s). The only feature on Figure 9-42 similarly named to these three drains is MIA1CD. The	The amended EIS has not addressed the issue about drain nomenclature by completely redrawing Figure 9-64 with fewer drains, and without names on the drains that are shown. Effectively the issue of the direction and number of drains has been left to the final design stage. Can be conditioned.	Addressed in Chapter 9, Section 9.6.3

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			acronym MIA1CD presumably stands for Mine Infrastructure Area 1 Collection Drain. The first paragraph in Section 9.6.3.3 also refers to perimeter catch drains around the waste areas. No perimeter drains are named in the text of section 9.6.3.3 but there do appear to be perimeter drains featured next to Waste Area 2 on Figure 9-42. What are presumed to be perimeter drains around Waste Area 2 on Figure 9-42 are named as WRD2CD-1 and WRD2CD-2. The cross referencing between Section 9.6.3.3 and Figure 9-42 is made difficult by the fact that neither of these pages show a complete list of named and featured drains, whether “dirty water drains” or “perimeter drains”. Also the Legend on Figure 9-42 does not distinguish between Diversion Drains and Collection Drains. This causes more uncertainty as to what is being presented in Figure 9-42. A Collection Drain, such as WRD2CD-1 that is shown in Figure 9-42, is labelled with a blue dashed line indicating that it is a Diversion Drain. This is not acceptable because Diversion Drains can discharge directly to the environment, whereas Collection Drains such as WRD2CD-1 that contain potentially contaminated water must discharge to an Environment Dam. Figure 9-42 does not include all of MLA 700022 so that Dam 3 and other drainage features are not shown. An updated Figure 9-42 must show the entire project area. The lack of consistency and lack of comparability between Section 9.6.3.3 and Figure 9-42 must be rectified by having the same named features appearing in both places. Different coloured lines should be used for Diversion Drains and Collection Drains. Figure 9-42 should be revised, and should be presented in a clear and legible format showing a complete suite of all the different proposed drains: a Diversion Drains b Dirty Water Drains c Perimeter Drains and		

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			d Collection Drains. Their starting and finishing points should be clearly visible, and their acronym names, as shown on leaders on Figure 9-42, should be clearly explained in a glossary. The Legend as currently shown on Figure 9-42 should be expanded so that all drains can be identified by different coloured lines according to their function. Figure 9-42 must be revised to present all of the project site's drainage features within MLA 700022 that is currently omitted.		
	32.21	Chapter 9, Section 9.8.1, p.9-129	Dam information. Table 9-49 lists eleven dams that are proposed to be constructed for the project. Figure 9-61 shows the locations or surface area of these dams on MLA 80187 but does not show all of those on MLA 70022. It is not possible to reconcile the descriptions of the project dams shown in Figure 9-47 (page 9-115) with the dams that are listed in Table 9-49 (page 9-130). A plan of the project at a minimum must show at the appropriate scale the: - locations of the dams - the dam surface areas that are colour shaded appropriately - the spillway discharge points; and d the locations of the channels that would carry the discharge in an AEP overflow event. An additional column should be included in Table 9-49 showing the surface area of each pond at Full Supply Level. Table 9-49 describes ID 5 and ID 6 as "CHPP Dewatering Ponds". However, there is a doubling up of the same entry for these ponds, with a quoted capacity of 8.3 Megalitres. If there is a pond at both 'CHPP & MIA 1' and 'CHPP & MIA 2', then they must be shown separately in Table 9-49. The names that are used for the proposed water management network in Figure 9-47 need to be consistent with names used in Table 9-49 so that references can be made from the Figure to the Table and vice versa.	This issue was about the naming and listing of the project's dams should be consistent in different parts of Chapter 9. The amended EIS is a significant improvement but not a complete fix of the original EIS in this respect. There are still two of the larger dams listed in the Storage Sizing Assessment Summary in Table 9-49 which are not listed in Table 9-48, the Consequence Assessment Summary. Dam 2 (600 ML) and Dam 3 (150 ML) should be preliminarily assessed and listed in Table 9-48. Standard conditions for Regulated Dams will have to be included in the EA for this project. This will require Consequence Category Assessments to be undertaken.	Addressed in Chapter 9, Sections 9.6.2 and 9.8 and Chapter 23, Section 23.1.10.

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	32.22	Chapter 9, Section 9.4.3	Mapping tidal influence. The spatial extent of tidal influence on freshwater streams in the project area has not been clearly delineated. This should be shown on a map with the location of sites to improve interpretation of the data. This is needed as different water quality objectives apply in the upper estuary compared with the freshwater section. Update Figure 9-4 to indicate the location of the extent of the estuarine influence.	No adequacy review comment.	Addressed in Chapter 9, Sections 9.4.2, 9.4.4, 9.5.5, 9.6.2 and 9.9.1.
	32.23	Chapter 9, Section 9.4.3	Updating wetlands map. Figure 15-3 does not show the location of wetlands in relation to water infrastructure and streams. Provide a map of streams, wetlands and dams within and surrounding the Project area.	No adequacy review comment.	Addressed in Chapter 9, Figure 9-2
	32.24	Chapter 9, Section 9.5.2.1	Stream flow. Stream flow and tidal conditions can strongly influence results for some indicators and were not adequately defined making them difficult to assess. It is not clear what stream flow was used to define base flow and stormflow. Provide information to describe the influence on stream flow and tidal flow conditions on water quality observations in section 9.5.2.1. This would include providing records of estimated stream flow in cumecs or a definition of the approaches used to define the flow categories used. Provide separate summary figures for water quality indicators for base flow and high flow conditions.	No adequacy review comment.	Addressed in Chapter 9, Section 9.6.1.2.
	32.25	Chapter 9, Section 9.5.2.2	Metals**.** It is not stated whether the results for metals in Table 9-9, Table 9-10, Table 9-11 and Table 9-12 represent the total or dissolved fractions. Indicate in Table 9-9, Table 9-10, Table 9-11 and Table 9-12 whether the data for metals represent the dissolved (<0.45 µm) or total (unfiltered) fraction.	No adequacy review comment.	Addressed in Chapter 9, Section 9.5, Tables 9-11, 9-12, 9-13, 9-14 and 9-25 to 9.41.
	32.26	Chapter 9, Section 9.5.2.2	Samples. The number of samples was not shown on Table 9-9, Table 9-10, Table 9-11 and Table 9-12 making it difficult to establish what the figures represent. Add the number of samples to Table 9-9, Table 9-10, Table 9-11 and Table 9-12.	No adequacy review comment.	Addressed in Chapter 9, Section 9.5.
	32.27	Chapter 9, Section 9.5.2.2	Water quality trigger values**.** In Table 9-26 (and Table 9-6), incorrect guidelines have been applied. Where the most conservative trigger available has not been used to assess	The Water Quality Objectives (WQOs) have been updated in several tables for Surface water quality results in 2017 to reflect the Low	Addressed in Chapter 9, Section 9.5.

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			water quality, the assessment of background water quality is not valid. If an Aquatic Ecosystems trigger value is not available in Table 3.4.1 of ANZECC (2000) a Low Reliability Trigger (LRT) may be found in Volume 2, Chapter 8 of ANZECC (2000). The most conservative trigger available should be used in preference, therefore aquatic ecosystem over stock watering guideline value. For example, the Low Reliability Trigger (LRT) for Cobalt is 1.4 µg/L, 34 µg/L for Molybdenum and 350 µg/L for iron for aquatic ecosystems. Update Water Quality Objectives (WQOs) in Table 9-26 to reflect the Low Reliability Trigger (LRT) for cobalt and vanadium of 1.4 µg/L (0.0014 mg/L) and 6 µg/L (0.006 mg/L) respectively. The molybdenum WQO in Table 9-6 needs to be updated to reflect the LRT of 34 µg/L (0.034 mg/L).	Reliability Trigger (LRT) for cobalt and vanadium of 1.4 µg/L (0.0014 mg/L) and 6 µg/L (0.006 mg/L) respectively. The molybdenum WQO in Table 9-8 Water quality objectives for toxicants has been updated to reflect the LRT of 34 µg/L (0.034 mg/L). However, all tables within Chapter 9 should be updated accordingly. Update the molybdenum WQO in Table 9-26 (Surface water quality results in May 2017 sample events) and 9-29 (Surface water quality results in September 2017 sample events) to the LRT of 34 µg/L (0.034 mg/L).	Tables 9-42 updated as requested. Footnotes updated to clarify high and low reliability TV
	32.28	Chapter 9, Section 9.5.2.2	Stock water trigger for sulfate**.** The stock water trigger for sulfate was not included in the list of objectives in Table 9-5. Include the stock water trigger for sulfate in Table 9-5.	The ANZECC Stock water trigger value for sulphate is not included in the EIS. The ANZECC stock water trigger for sulphate (1000 mg/L) should be included in Section 9.5.1 Environmental Values and Water Quality Objectives.	Addressed in Chapter 9, Section 9.5.6. As per correspondence with DES (7 Aug) the EIS follows the Fitzroy Basin MMC and no further action is required.
	32.29	Chapter 9, Section 9.5.2.2	Toxicity trigger values**.** Draft ANZECC toxicity trigger values should be used to inform the assessment given these reflect the best available scientific understanding of toxicity impacts on aquatic ecosystems. Update Table 9-6 to include a WQO of 0.3 µg/L for zinc, 1.2 µg/L for copper, 830 µg/L for boron, and 2400 µg/L for fluoride.	Table 9-6 Water Quality Objectives for toxicants has not been updated to include a WQO of 0.3 µg/L for zinc, 1.2 µg/L for copper, 830 µg/L for boron. Only the fluoride value has been updated. The values for boron, copper and Zinc should be reviewed once the updated ANZECC guidelines	Addressed in Chapter 9, Section 9.5, Table 9-8. Note: Zinc, Copper and Boron high-reliability values for slightly-to-moderately disturbed ecosystems Added in Table 9-6 as requested.

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				are published and further site-specific water quality data is available.	
	32.30	Chapter 9, Section 9.5.2.2	WQO units. Table 9– 6 did not include the units of the Water Quality Objectives. Add the relevant units to Table 9– 6 for the Water Quality Objectives.	Units are still missing for some indicators in Section 9.5.5. (e.g. Table 9.25 does not include units for nitrate and nitrite). Include units for all indicators in all Tables in Section 9.5.5.	Addressed in Chapter 9, Section 9.5, Table 9-8 Footnote added that WQO to be updated when new guidelines are available.
	32.31	Chapter 9, Section 9.5.2.2	Metals assessment**.** Inappropriate techniques were used to assess potential levels of metals due to the project. The median of toxicant values was used to compare against guidelines. Individual observations should be used to compare with toxicant triggers. Alternatively, in some situations where adequate data is available to accurately estimate the 95th or 99th percentile, these may be used to compare against triggers. Amend Table's 9-9, 9-10, 9-11, and 9-12 to remove comparisons of median values with toxicant trigger values for metals. Instead show the number of observations that exceed or where considered reliable, use the 95th or 99th percentiles to compare with toxicant triggers.	Tables 9-11, 9-12, 9-13, and 9-14 include the 95th percentile for comparisons with ANZECC toxicant trigger values for dissolved metals. However, the 95th percentile for dissolved metals has not been included in Table 9-35. The 95th percentile should be added to Table 9-35: Stream water quality (June 2011 – April 2018) to compare dissolved metal concentration to ANZECC toxicant trigger value.	Addressed in Chapter 9, Section 9.5.5 Missing units updated in all tables.
	32.32	Chapter 9, Section 9.5.3.2	Sediment sampling. Section 9.5.3.2 is titled 'Water Quality and Sediment Sampling Method' but does not describe the sediment sampling methods used. Sampling methods should reflect the guidance in the Department of Environment and Heritage Protection Monitoring and Sampling Manual 2009, Version 2, July 2013. Sampling methods sections should also describe the quality assurance and quality control practices and results obtained to ensure figures provided are reliable. Revise Section 9.5.3.2 to include an adequate description of the sediment sampling methods used. Refer to the https://www.ehp.qld.gov.au/water/pdf/monitoring-man-2009-v2.pdf. Describe the quality assurance and quality control practices used to ensure reliable sampling and analyses.	No adequacy review comment.	Section heading corrected to refer to water sampling method only. Quality control methods were updated. Sediment sampling methods will be described within Receiving Environment Monitoring Plan (to be developed) and will be aligned with the DES manual

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					95th percentile of all data now included in table.
	32.33	Chapter 9, Section 9.5.4	Water quality sampling**.** A limited number of samples were used to describe the background water quality conditions. Table 9-26, page 9-54 provided summary statistics for all water quality samples collected. The number of samples is stated as 14. However, the number of samples greater than the LOR used to calculate the summary statistics is required to assess whether the minimum data requirements specified in Table 4.4.2, page 78 of the Queensland Water Quality Guidelines (2009) have been met. The units for Electrical Conductivity in Table 9-26 don't appear to be correct. Particularly, when compared to data in Tables 9-23 to 9-25. The number of samples greater than the LOR should be included in Table 9-26. Additional samples may be required before a baseline data set is considered sufficient (i.e. 12 samples per site over 24 months). Refer to the minimum data requirements specified in Table 4.4.2, page 78 of the Queensland Water Quality Guidelines (2009). Check and amend if necessary the units for Electrical Conductivity in Table 9-26.	There is no indication on the number of results with result greater than LOR in the Summary of compliance with WQOs 9-11, 9-12, 9-13, 9-14, 9-15 and Table 9-35 Stream water quality (June 2011-April 2018). If there are greater than 15 % of the data with results <LOR it is no longer appropriate to apply a simple substitution. For information on the treatment of non-detects (or LOR), see reference –"U.S. Environmental Protection Agency (EPA) (2009). Statistical analysis of groundwater monitoring data at RCRA facilities. Unified Guidance." EPA 530/R-09-007. Office of Resource Conservation and Recovery. The number of samples with results greater than the LOR should be included in the summary tables. Additional samples will be required before a baseline data set is considered sufficient. Refer to the minimum data requirements specified in Table 4.4.2, page 78 of the Queensland Water Quality Guidelines (2009).	Addressed in Chapter 9, Section 9.5. No reference to removing <LOR data found in guidelines. <LOR have been retained as they form part of the data set
	32.34	Chapter 9, Section 9.5.5	Mine affected water release limits. Table 9-28, proposed mine affected water release limits only detail the pH and turbidity parameters. No limits were proposed for other contaminants of potential concern including metals, salinity and sulfate. It was stated that there is insufficient data to propose end-of-pipe release limits for electrical conductivity (EC) and that these would be established post establishment of site specific WQOs.	Mine affected water (MAW) release limits in Table 9-28, proposed release limits for pH and turbidity. In Section 9.5.6 Proposed contaminant trigger levels and release criteria – it is stated that there is insufficient data to propose end of pipe release limits and that EC will be determined post establishment of site specific WQOs and	Addressed in Chapter 9, Sections 9.5.6 and 9.9.2 and Chapter 23, Section 23.1.8.

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			Propose mine affected water release limits in Table 9-28 for all relevant contaminants of concern.	Table 9-63 and Table 9-64 do not contain any values. Flow triggers ad EC criteria are discussed in Section 9.9.2.2 and values are proposed in the Draft EA conditions without details. The end-of-pipe EC values <3,500 µS/cm or <2,500 µS/cm proposed in the EA conditions appear higher than the WQOs, yet no details on mixing assessment were provided in Chapter 9. There is no information on how the maximum flow rates were established. Details should be provided in Section 9.5 regarding how maximum flow rates and end of pipe EC values were reached and how the release will occur in a way that will protect the environmental values of the receiving environment.	
	32.35	Chapter 9, Section 9.9.2	Strategy to release mine affected water. There was insufficient information describing the strategy to release mine affected water (MAW) from mine water storages. For example, it is not clear what the maximum rate and volume of mine affected water that is expected to be released. It is not clear if MAW would be released during events and if so what is the instream flow rate that would be achieved. Similarly, it is not clear what is the concentration of contaminants expected and how much dilution would be needed in the receiving environment. Also, given the dilution required, it is not clear if there would there be sufficient and regular flows that would allow MAW releases to occur in a way that would be protective of the receiving environment. There is a need to provide more information describing the release strategy including but not limited to; the expected contaminant concentrations in MAW, the dilution needed to achieve water quality objectives, maximum release rates, and appropriate flow triggers that are needed to achieve water	The water release strategy is still unclear. There is no information on the concentration of contaminants expected in the MAW or what the dilution requirements are to achieve the WQOs in the receiving environment. It was demonstrated in Chapter 9 that the receiving environment (three freshwater creeks) are different. Therefore, differences in stream flow rate, release points and contaminant concentrations should be considered. It is not clear if there would be sufficient and regular flows that would allow MAW releases to occur in a way that would be protective of the receiving environment. Flow triggers and EC criteria are discussed in Section 9.9.2.2 based on Figure 9.79 – Tooloombah monitoring point flow duration	Addressed in Chapter 9, Section 9.9 and Chapter 23, Section 23.1.8.

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			quality objectives. Clarify whether continuous releases will occur into no stream flow conditions and define rules around discharges during dry conditions.	curve yet Deep Creek is also listed as a receiving water in Section 9.9.1. The locations of gauging stations to determine instream flows has also not been provided. The expected MAW quality should be discussed in Section 9.9 to demonstrate that it can be released to achieve WQOs. Information should be included on how the instream flow, the maximum rate and volume of MAW proposed in the Draft EA were determined. The location/s where instream flow rates (gauging stations) will be monitored should be specified. There is insufficient background data to characterise water quality and flow. Stream flow is very important to be able to determine the EA conditions for Table 23-10. Gauging station locations have not been discussed in the EIS, this is required for Table 23-10 in the EA. Flow categories, and release rates have been established without discussion of location of gauging stations (monitoring of in-stream flow). It is also unclear how discharge criteria can be determined for 11 release points on two different creeks without this information.	
	32.36	Chapter 9, Section 9.9.2	Low flow trigger. A Low flow trigger was suggested based on by the 20th percentile probability of exceedance, occurring on ~22.1% of days; this is the same as the Moderate flow trigger outlined on page 9-137. A more accurate reflection of the change in flows from baseflows to flows in Figure 9-63 is the 30th percentile. Revise the Low flow trigger suggested to reflect the change in flows from baseflows to flows in Figure 9-63.	The low flow trigger has not been revised. A low flow trigger was suggested based on by the 20th percentile probability of exceedance, occurring on ~22.1% of days; this is the same as the moderate flow trigger outlined on page 9-183. The low flow trigger should be revised, as it is the same as the medium flow trigger.	Addressed in Chapter 9, Section 9.9 and Chapter 23, Section 23.1.8.

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	32.37	Chapter 9, Section 9.9.2	Flow and EC release conditions. Flow and EC release conditions are summarised in Table 9-53 and Table 9-54. The end-of-pipe EC values <3,500 µS/cm or <2,500 µS/cm appear higher than the Water Quality Objectives, yet no mixing assessment was provided and no maximum volume of release water was discussed. Define rules for flow based release criteria including the maximum volume that may be released and the maximum salinity. Provide a mixing study and impact assessment where the end-of-pipe trigger exceeds water quality objectives (e.g. for salinity and potentially other indicators).	Mine affected water (MAW) release limits in Table 9-28, proposed release limits for pH and turbidity. In Section 9.5.6 Proposed contaminant trigger levels and release criteria – it is stated that there is insufficient data to propose end of pipe release limits and that EC will be determined post establishment of site specific WQOs and Table 9-63 and Table 9-64 do not contain any values. Flow triggers ad EC criteria are discussed in Section 9.9.2.2 and values are proposed in the Draft EA conditions without details. The end-of-pipe EC values <3,500 µS/cm or <2,500 µS/cm proposed in the EA conditions appear higher than the WQOs, yet no details on mixing assessment were provided in Chapter 9. There is no information on how the maximum flow rates were established. Details should be provided in Section 9.5 regarding how maximum flow rates and end of pipe EC values were reached and how the release will occur in a way that will protect the environmental values of the receiving environment.	Addressed in Chapter 9, Section 9.9 and Chapter 23, Section 23.1.8.
	32.38	Chapter 9, Section 9.10.1	Sediments. In section 9.10.1, 'Increased Sedimentation of Waterways and Sediment Runoff' there was no discussion of sediment mobilisation from sediment ponds or during the construction phase and management of the stream diversions. There is a need to assess the potential impacts of these activities and describe how these risks will be mitigated and monitored. It was discussed that "the dewatering dam (Dam 2 – see Figure 9-42) has potential to mobilise sediments entering the creek during rainfall periods in the construction period. The diversion of clean stormwater run-off from	In section 9.10.1 "Increased sedimentation of waterways and sediment run off", the sediment mobilisation during the construction and operation phases and linked management of the stream diversions should be discussed. The inclusion of the Erosion and Sediment Control management in Chapter 5 - Section 5.11 is helpful but insufficient. There is a need for an estimation of the increase in sediment loads associated with the	Addressed in Chapter 5, Sections 5.6, 5.8 and 5.11 and Chapter 9, Sections 9.8, 9.10.1 and 9.11.1

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			upstream of Open Cut 1 western section may mobilise sediments during the operational period", p. 9-140. The monitoring and mitigation strategies for these areas require further consideration. Describe how the risks of sediments (and contaminants where relevant) will be mitigated and monitored with respect to: - sediment pond releases; - during the construction phase; and - management of the stream diversions. Outline mitigation and monitoring strategies for dewatering dam Dam 2 and the diversion of clean stormwater run-off from upstream of Open Cut 1.	construction/operation activities and stream diversions on the site. For example, it is stated "The diversion of clean stormwater run-off from upstream of Open Cut 1 western section may mobilise sediments during the operational period" (p186). This needs to be discussed and mitigation and monitoring strategies need to be outlined. Describe how the risks of sediments (and contaminants where relevant) will be mitigated and monitored with respect to the construction phase; sediment pond releases and the management of the stream diversions in section 9.10. Outline mitigation and monitoring strategies for dewatering Dam 2 and the diversion of clean stormwater run-off from upstream of Open Cut 1 in Section 9.11.	
	32.39	Chapter 9, Section 9.10.2	Sediment and erosion. Section 9.10.2 discussed potential increases in water velocities for sections of the stream downstream of the mine site. There is a need to assess and discuss the potential increased risk of stream bed and bank erosion and potential impacts to aquatic fauna as a result of bed mobilisation. The sediment loads exported to the Great Barrier Reef (GBR) world heritage area need to be assessed and minimised and adequate monitoring is necessary. Describe potential impacts from increases in water velocities for sections of the stream downstream of the mine site including the risk of stream bed and bank erosion and potential impacts to aquatic fauna as a result of bed mobilisation. A description of hydrologic change in section 9.10.4 is useful but does not address these issues. Also, describe the potential sediment loads exported to the GBR world heritage area. Detail any proposed mitigation measures	There is still a need to assess and discuss the potential increased risk of stream bed and bank erosion and potential impacts to aquatic fauna as a result of bed mobilisation. The sediment loads exported to the Great Barrier Reef (GBR) world heritage area should also be discussed in more detail. Information presented in Chapter 5 is useful but insufficient. In Chapter 5, section 5-7, it is stated that "it is considered that the potential sediment load contribution would be negligible given the specifically design[ed] and engineered erosion protection works". There is a need to assess and discuss the potential increased risk of stream bed and bank	Addressed in Chapter 5, Sections 5.6, 5.8 and 5.11, Chapter 9, Section 9.11.11 and Chapter 15, Section 15.7.9 and Chapter 23, Section 23.1.8.

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			and how sediment and nutrient loads exported to the GBR world heritage area will be adequately monitored.	erosion and potential impacts to aquatic fauna due to bed mobilisation. How was it determined that the sediment load contribution was negligible? The sediment loads exported to the Great Barrier Reef (GBR) need to be estimated. Measures to minimise the load need to be described and adequate monitoring presented if necessary. Describe potential impacts from increases in water velocities for sections of the stream downstream of the mine site including the risk of stream bed and bank erosion and potential impacts to aquatic fauna as a result of bed mobilisation in Section 9.10. Also, describe the potential sediment loads exported to the GBR world heritage area. Detail any proposed mitigation measures and how sediment and nutrient loads exported to the GBR world heritage area will be adequately monitored in Section 9.11.	
	32.40	Chapter 10	General comment. A number of matters have been identified concerning the description of groundwater resources and the impact of the project of these resources.	No adequacy review comment.	Refer to Chapter 10 and Appendix A6.
	32.41	Chapter 10, Section 10.6.4	Residual voids. Concern is raised about the nature of two pits being left open after mine closure. This will permanently alter the groundwater regime. If GDEs are affected, they will be permanently impacted. Further description of the inter-relationship between surface water and groundwater, and potential for impacts on GDEs is needed.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.1.The mine plan has been changed and will no longer involve residual voids. This has therefore been addressed. Refer to Chapter 10, Section 10.7 for the assessment of impacts to GDEs.

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	32.42	Chapter 10, Section 10.10.2	Further groundwater work required. Much of the required information for the assessment of groundwater impacts, surface water / groundwater interactions and GDEs is not provided in the EIS. The EIS refers to further work that will be completed to support the groundwater studies in the supplementary EIS. The EIS needs to address uncertainties associated with the impacts of this project on groundwater. This includes an understanding of seasonal water levels and water quality. Remodelling would also be required to predict potential impacts of the groundwater drawdown.	No adequacy review comment.	Addressed in Chapter 10, Sections 10.5, 10.7, 10.8 and 10.9 and Appendix A6.
	32.43	Chapter 10, Section 10.4.3, p.10-6	Water Quality Objectives. The Water Quality Objectives (WQOs) for the Styx River, Shoalwater Creek and Water Park Creek Basins are discussed, however, it is unclear which WQOs are relevant across the Project area. The location of the Mining Lease (ML) 80187 and ML 700022 in relation to the Styx Basin groundwater zones defined in the Styx River, Shoalwater Creek and Water Park Creek Basins Environmental Values and Water Quality Objectives (DEHP 2014) should be displayed on Figure 10-1 (page 10-6). Update Chapter 10 – Groundwater where necessary.	Water Quality Objectives The WQOs for the Styx, Uplands and Bison groundwater chemistry zones are discussed, however, it is unclear which WQOs are relevant across the Project area. The location of the Mining Lease (ML) 80187 and ML 700022 in relation to the Styx Basin groundwater zones defined in the Styx River, Shoalwater Creek and Water Park Creek Basins Environmental Values and Water Quality Objectives (DEHP 2014) have still not been displayed on Figure 10-1 (page 10-8). A Figure which shows the location of the mining lease overlaying the groundwater zones is required in Section 10.4. This is important as the WQOs are significantly different between each zone. Figure 10-1 (page 10-8) should be updated with the project outline to show the location of the project in relation to the groundwater zones present.	Addressed in Chapter 10, Section 10.5.
	32.44	Chapter 10, Section 10.4.3, p.10-7	Water quality units**.** The units provided for the WQOs presented in Table 10-2 are incorrect (see notes for the Table).	The units provided for the WQOs presented in Table 10-2 are incorrect (notes for the Table).	Addressed in Chapter 10, Section 10.5

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			The units for major ions and metals should be mg/L not g/L and the units for EC should be µS/cm. The units within Table 10-2 should be corrected. Update Chapter 10 – Groundwater where necessary.	The units for major ions and metals have been revised in Table 10-2. However, the units for EC are still wrong, they should be µS/cm not mg/L. Table 10-2 should be revised so that correct units are provided for all indicators. Therefore, the Table heading should be EC (µS/cm).	
	32.45	Chapter 10, Section 10.5.5, p.10-13	ANZECC 2000 aquatic ecosystem trigger values. It is stated on Page 10-13 10 that 'The groundwater system is understood to provide baseflow to perennial streams in the lower elevated areas of the river basin, and it is likely that some ecosystems in the lowlands of the river basin are reliant on groundwater resources, particularly during periods of prolonged drought'. Where there is an interaction between the surface and groundwater, the surface Water Quality Objectives (WQOs) should be protected and the ANZECC 2000 aquatic ecosystem trigger values applied. Further clarification regarding the surface and groundwater interaction should be included in the impact assessment. Update Chapter 10 - Groundwater, Chapter 15 - Aquatic Ecology, Chapter 16 – MNES, Chapter 9 – Surface Water where necessary. In the absence of appropriate locally derived surface water quality values, ANZECC 2000 aquatic ecosystem trigger values should be applied, in the first instance, as groundwater quality triggers and limits to protect surface WQOs. Update Chapter 10 – Groundwater where necessary. Further clarification is required regarding the surface and groundwater interaction at the wetlands identified in Section 10.6.1.	Further clarification regarding the surface and groundwater interaction has been included in Section 10.5.6.7. However, further clarification is still required regarding the surface and groundwater interaction at the wetlands identified in Section 10.6.1.3. Further clarification is required regarding the surface and groundwater interaction at the wetlands identified in Section 10.6.1.3.	Addressed in Chapter 10, Sections 10.5, 10.6, 10.7 and 10.8 and Appendix A6. A targeted water source and use study to improve understanding of surface and groundwater interactions has been undertaken at identified potential GDEs (including the wetlands), as discussed in Sections 5 and 6 of Appendix A6 and summarised in Section 10.6.1 of Chapter 10. Also addressed in Chapter 14, Sections 14.7.10 and 14.8.11 and Chapter 15, Section 15.6.4 and 16 - MNES
	32.46	Chapter 10, Section 10.5.8	Aquifers**.** The aquifers are not adequately described. From the limited information provided it is suggested that a shallow aquifer is present in the Cenozic alluvium within the project	No adequacy review comment.	Addressed in Chapter 10, Sections 10.5 and 10.7

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			drainage areas and there may be groundwater present in the fractured zones of Cretaceous and Permian rocks. Further clarification regarding the aquifers present in ML 80187 and ML 700022 (and the extent off lease where impacts are likely) and their characteristics should be included in the impact assessment. See the Groundwater Guideline for further details (DSITI 2017). Update Chapter 10 – Groundwater where necessary.		
	32.47	Chapter 10, Section 10.2.10, p.10-23	Groundwater flow**.** The EIS states that (page 10-23) "There are insufficient data to provide an interpreted contour map of the water table or to construct a meaningful groundwater flownet over the river basin." The direction of groundwater flow has not been adequately described. The direction of flow of groundwater across the site should be further refined so that potential impact flow paths can be determined. Further clarification regarding the direction of groundwater flow across ML 80187 and ML 700022 should be included in the impact assessment. Potential impacts of drawdown of aquifers due to the project and implications for groundwater flow should be described. Potential sources of contamination and areas of potential impact from the activity should be determined based on the direction of groundwater flow across ML 80187 and ML 700022 and should be included in the impact assessment. Update Chapter 10 – Groundwater where necessary.	No adequacy review comment.	Addressed in Chapter 10, Sections 10.5 and 10.7.
	32.48	Chapter 10, Section 10.5.11	Site specific groundwater data**.** Regional information has been presented to describe the groundwater quality at the site. However, site specific information is required to determine the current groundwater quality and to identify the potential impacts from the project on the groundwater quality. The groundwater quality at the site for each aquifer has not been adequately described. There is inadequate groundwater quality data to categorise the groundwater quality for each aquifer across the site. Additional monitoring bores and	Additional groundwater quality data for the project area has been included in Section 10.5.6.5. However, boxplots and time series plots of the groundwater quality data have not been included. Boxplots and time series plots of the groundwater quality data should be included in Section 10.5.6.5.	Addressed in Chapter 10, Sections 10.5 and 10.7 Once sufficient additional data is available, Central Queensland Coal will seek to adjust the EA conditions

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			groundwater quality data is required across the site to represent the different aquifers. Additional groundwater quality data should be provided in the impact assessment. As described in the DES guidelines, at least 8 samples over a 12-month period are required for each bore. Seasonal variations should also be considered due to the nature of shallow alluvium aquifers. Summary groundwater quality data for ML 80187 and ML 700022 should be presented in Chapter 10, which includes each bore sampled, number of samples, median, minimum, maximum, 80th and 95th percentiles if sufficient data are available. Boxplots and time series plots should be used to analyse the groundwater quality data. See the Groundwater Guideline for further details (DSITI 2017). Update Chapter 10 – Groundwater where necessary.		
	32.49	Chapter 10, Section 10.5.11, p.10-27	Data presentation. It is unclear what data is presented in Figure 10-10. The legend is not described and is not consistent with monitoring bores described in Figure 10-9 or Table 10-10 (page 10-26 & page 10-28). The data presented in Figure 10-10 should be fully described. Update Chapter 10 – Groundwater where necessary. Groundwater quality piper diagrams (e.g. Figure 10-8) should also include the relevant Styx Basin WQOs.	Groundwater quality data. A piper plot has been provided (Figure 10-27) to replace the Durov plot (Figure 10-10). Groundwater quality piper diagrams (e.g. Figure 10-8) should also include the relevant Styx Basin WQOs.	Addressed in Chapter 10, Section 10.5. Piper diagrams and Stiff patterns are used in place of a Durov plot. WQOs do not include Potassium, so WQO's cannot be included in the Piper diagram.
	32.50	Chapter 10, Section 10.5.11	Groundwater quality data**.** The major ions and other water quality indicators at each bore located within the site (STX00103, STX104, STX204, STX205, STX170) have not been provided and were not compared to the Styx Basin groundwater WQOs (EHP 2014) and the ANZECC 2000 aquatic ecosystem trigger values. This information is needed to determine if the site specific groundwater quality triggers are required. Existing groundwater quality data from each bore should be provided and compared to the Styx Basin groundwater WQOs (EHP 2014) and the ANZECC 2000 aquatic ecosystem trigger	Site-specific groundwater quality triggers and limits. Existing groundwater quality data from each bore has been provided and compared to the Styx Basin groundwater WQOs (EHP 2014) and the ANZECC 2000 aquatic ecosystem trigger values have been included in Section 10.5.6.5. However, it should be determined which WQO (Styx or Bison) is relevant to each groundwater bore.	Addressed in Chapter 10, Section 10.5

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			values. The comparison should be included in the impact assessment. Update Chapter 10 – Groundwater where necessary.	The relevant WQO (Styx or Bison) for each groundwater monitoring bore should be determined and the relevant WQO be compared to the relevant bore groundwater quality data in Section 10.5.6.5. The metals and metalloid analytical results provided in Tables 10-36 to 10-57 should be compared to not only the Styx Basin WQOs and ANZECC stock water guidelines but also the ANZECC aquatic ecosystem protection and irrigation guidelines and the NHMRC Australian drinking water guidelines. Please note that whilst the ANZECC stock guidelines have been compared the WQOs have not been included in the tables. The WQOs should be included in the tables.	
	32.51	Chapter 10, Section 10.5.11	Site specific groundwater quality triggers and limits. From the data presented it appears that site specific groundwater quality triggers and limits for some indicators are required, however, additional groundwater quality data is needed to calculate site specific values to support the development of relevant EA conditions. Units are not provided for the guideline values in Table 10-12. Groundwater quality data from ML 80187 and ML 700022 representing the different aquifers present should be used to calculate site specific groundwater quality triggers and limits if required. See the Groundwater Guideline for further details (DSITI 2017). This information should be included in the impact assessment. The units within Table 10-2 should be provided. Update Chapter 10 – Groundwater where necessary.	Drawdown impacts on GDEs. Existing groundwater quality data from each bore has been provided in Section 10.5.6.5. However, at least 8 samples over a 12-month period are required from each bore. Seasonal variations should also be considered due to the nature of shallow alluvium aquifers. From the limited data presented it appears that site specific groundwater quality triggers and limits for some indicators are required, however, additional groundwater quality data is needed to calculate site specific values to support the development of EA conditions. Additional groundwater quality data is required to meet the minimum samples required to account for seasonal variability.	Addressed in Chapter 10, Sections 10.5, 10.7 and 10.8. Once sufficient additional data is available, Central Queensland Coal will seek to adjust the EA conditions

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	32.52	Chapter 10, Section 10.6.3, p.10-48	Drawdown impacts on GDEs**.** Groundwater Quantity – the significant level of risk associated with drawdown impacts on stygofauna and other GDEs is not adequately identified. The potential area of GDEs that could be impacted by drawdown should be defined and discussed. The estimated area of GDEs that could potentially be impacted by drawdown and the extent of this impact should be described.	No adequacy review comment.	Addressed in Chapter 10, Sections 10.5, 10.6 and 10.7.
	32.53	Chapter 10, Section 10.6.3, p.10-48	Salt water ingress**.** Groundwater Quantity – the potential of salt water ingress due to groundwater drawdown was briefing discussed on p. 10-51. However, the potential impacts if salt water ingress occurred and associated mitigation measures have not been included in the impact assessment. The impacts on GDEs from salt water ingress due to groundwater drawdown should be described in the impact assessment. Mitigation measures should also be proposed. This should include consideration of using monitoring bores to determine if salt water ingress is likely to occur or is occurring and what measures would be taken to avoid/minimise this impact.	No adequacy review comment.	Addressed in Chapter 10, Sections 10.5, 10.7 and 10.8. Also see response to Submission reference 24.11.
	32.54	Chapter 10, Section 10.6.4, p.10-51	Contaminants of concern**.** The potential contaminants of concern and sources of contaminants (e.g. waste rock dump [WRD]) from the proposed activity have not been adequately described. Potential seepage from WRDs and stockpiles has not been discussed. Concentrations of dissolved aluminium (Al), arsenic (As), selenium (Se) and vanadium (V) in waste rock leachate were found to be greater than the ANZECC 2000 aquatic ecosystem trigger values (Chapter 8, page 8-27). The contaminants of concern and sources of contaminants from the activity should be identified to inform the selection of water quality indicators that should be monitored and included in the EA to regulate potential impacts from the project. From Chapter 8, electrical conductivity, aluminium (Al), arsenic (As), selenium (Se) and vanadium (V) are of potential concern due to seepage from the WRD. A determination of the contaminants of concern from activities across ML 80187 and ML 700022 should be included in the	Groundwater Quality - The potential contaminants of concern and sources of contaminants (e.g. waste rock stockpile [WRS]) from the proposed activity have still not been adequately described in Section 10.7 or Table 10-67. Potential seepage from WRSs and coal stockpiles has not been adequately discussed. Concentrations of dissolved aluminium (Al), arsenic (As), selenium (Se) and vanadium (V) in waste rock leachate were found to be greater than the ANZECC 2000 aquatic ecosystem trigger values (Chapter 8, Waste Rock and Rejects). The contaminants of concern and sources of contaminants from the activity should be identified to inform the selection of water quality indicators that should be monitored and	Addressed in Chapter 10, Sections 10.5, 10.7 and 10.8. Contaminants of concern and water quality indicators to be monitored are identified in Section 10.8.4.4. The receptor exposure and threat assessment presented in Section 10.7.4.8 discusses the threat of leaching of contaminants of concern from waste rock storages (see Table 10-81).

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			impact assessment. Update Chapter 10 – Groundwater where necessary.	included in the EA to regulate potential impacts from the project. The potential contaminants of concern and sources should be described in Section 10.7 and table 10-67. From Chapter 8, electrical conductivity, aluminium (Al), arsenic (As), selenium (Se) and vanadium (V) are of potential concern due to seepage from the WRS. Table 10-76 and discussions of impacts should address potential impacts to near-surface ground waters from saline seepage from waste rock stockpiles. Additional groundwater bores to detect seepage from mining infrastructure may need to be added.	The monitoring network has been expanded to include monitoring bores to specifically monitor seepage from waste rock storages (see Figure 10-102 and Table 10-85).
	32.55	Chapter 10, Section 10.6.5, p.10-52	Surface water – groundwater interaction. A reduction in recharge of the groundwater due to changes in the topography and the catchment across the site has not been adequately described. Further clarification regarding the impact of changes in topography across ML 80187 and ML 700022 and the effects on recharge to the groundwater and the associated impact on the surface and groundwater interaction should be included in the impact assessment. Update Chapter 10 - Groundwater, Chapter 9 – Surface Water, Chapter 15 - Aquatic Ecology and Chapter 16 – MNES where necessary.	Surface water – groundwater interaction. A reduction in recharge of the groundwater due to changes in the topography and the catchment area available for recharge across the site has still not been adequately described. Further clarification regarding the impact of changes in topography across ML 80187 and ML 700022 and recharge to the groundwater and the associated impact on the surface and groundwater interaction should be included in Section 10.7.	Addressed in Chapter 10, Sections 10.5 and 10.7. Additional uncertainty simulations have been run including scenarios that consider increased recharge conditions (see Section 10.7.4.7). Results (Figure 10-99) indicate that there are no obvious differences in predicted drawdown compared to the base case of average climate conditions. Also addressed in Chapter 14, Sections 14.7.1 and 14.8.11,

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					Chapter 15, Sections 15.5.2 and 15.6.4 and 16 - MNES
	32.56	Chapter 10, Section 10.6.5, p.10-52	Drawdown impacts on aquatic fauna. The change in surface flow conditions due to drawdown and the impact on aquatic fauna has not been adequately discussed. For instance, the existence of refugia (pools fed by groundwater) in ephemeral systems can be very important for a range of aquatic species. The change in surface flow conditions due to drawdown and the impact on aquatic fauna should be described in more detail in Chapter 10 with a link to Chapter 15. Update Chapter 10 - Groundwater, Chapter 9 – Surface Water, Chapter 15 - Aquatic Ecology and Chapter 16 – MNES where necessary. The change in surface and groundwater interactions due to drawdown and the impact on HES wetlands should be described in more detail.	The associated impact of drawdown on the surface and groundwater interaction have been described in Section 10.7. However, the impact of drawdown on the two wetlands specified under the Vegetation Management Act, having High Ecological Value have not been identified. Namely - 'wetland 1' (UFI 3797128), identified as an artificial/highly modified wetland reliant on surface expression of groundwater (this wetland is also mapped as a Wetland Protection Area under the Queensland government 'map of referrable wetlands') 'wetland 2' (UFI3797178) identified as a coastal/subcoastal floodplain swamp reliant on surface expression of groundwater. The change in surface and groundwater interactions due to drawdown and the impact on HES wetlands should be described in more detail in Section 10.7 and included in Table 10-66.	Addressed in Chapter 10, Sections 10.5, 10.6 and 10.7. Targeted field studies have shown that it is unlikely that there are Type 2 GDEs associated with the HES wetlands (Section 10.6.1.3) but there is some potential for Type 3 GDEs at these locations. The potential impact on Type 3 GDEs arising from mine induced drawdown is discussed in Table 10-80. Also addressed in Chapters 14 - Terrestrial Ecology, 15 - Aquatic Ecology and 16 - MNES
	32.57	Chapter 10, Section 10.8.4, p.10-72	Monitoring bores. The Groundwater Monitoring and Evaluation Program does not adequately consider potential impacts to groundwater quality. Groundwater monitoring (management, compliance) bores should be located to detect potential impacts to groundwater quality. The potential contaminants of concern should be identified to inform the selection of appropriate groundwater quality indicators. The Groundwater Monitoring and Evaluation Program should consider all potential impacts to groundwater quality. Bores should be located to detect potential impacts to groundwater quality from sources of contaminants (e.g. the	The Groundwater Monitoring and Evaluation Program has been provided in Section 10.8 and provides an indicative location of reference and compliance bores and a description of the monitoring bores and their purpose (compliance, etc.). However, a list of dissolved metals that will be monitored has not been provided. The metals measured should be appropriate for the potential impacts to groundwater quality from sources of contaminants (e.g., the waste rock	Addressed in Chapter 10, Sections 10.7 and 10.8.

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			waste rock dumps). A description of the monitoring bores and their purpose (such as management or compliance) and a determination of the contaminants of concern from the activity should also be included in the Groundwater Monitoring and Evaluation Program. Sulphate, nitrate and major ions should be monitored at all bores. Metals should be monitored at bores located on the mining lease. A comparison of reference bore and compliance bore water quality data should be included to determine if reference bores are appropriate for comparisons with the compliance bores. Boxplots and time series plots should be used to analyse the groundwater quality data. See the Groundwater Guideline for further details (DSITI 2017). Update Chapter 10 – Groundwater where necessary	stockpiles). Due to the variable nature of the alluvium aquifer the major ions, TDS, EC, dissolved metals and hydrocarbons (TPH, TRH and BTEXN) should be measured quarterly instead of six monthly. A list of proposed dissolved metals that will be measured in the groundwater bores should be included in Section 10.8 based on an identification of contaminants of concern. The major ions, TDS, EC, dissolved metals and hydrocarbons should be measured quarterly and not six monthly.	
	32.58	Chapter 11, Section 11.3.3.1, p.11-8, Section 11.3.2 and Section 11.3.4.1	High risk of sodicity and erosion and sediment The project is located within the F3 neighbourhood catchment, which is described as having a high sediment delivery ratio to the GBR. This is a potential issue when disturbing soils within the mining lease. Chapter 8, section 8.7.3 details the potential high risk of sodicity associated with waste rock rehabilitation. However, this is not mentioned in section 11.3.2 and Table 11-1. It is noted that sodic soils have severe erosion potential on slopes in high intensity rainfall and as such, slopes require quick establishment of vegetative cover. Describe how dispersive sodic soils and sodic soils will be managed onsite. This should be detailed within the erosion and sediment control plan referred to in Chapter 23, Condition F26. Condition F26 should be reworded to replace 'appropriately qualified person' with 'suitably qualified person'. Amend section's 11.3.2 and Table 11-1 to address the potential high risk of sodicity associated with waste rock rehabilitation.	No adequacy review comment.	Addressed in Chapter 5, Section 5.11 and Chapter 11, Sections 11.3 and 11.9.4 and Chapter 23, Section 23.1.8.

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	32.59	Chapter 11, Section 11.3.3.2, p.11-11	Post-closure flooding impacts of diversions. There was no discussion on the post-closure flooding impacts of the diversions. There was no discussion in Table 11-3, Table 11-5, section 11.9.8, or elsewhere in this section about how the diversions will be constructed to ensure safe, stable and non-polluting channels during operations and closure. Describe the post-closure flooding impacts of the diversions. Discuss how the diversions will be constructed to ensure safe, stable and non-polluting channels during operations and closure.	Post-closure flooding impacts of diversions. There was no discussion on the post-closure flooding impacts of the diversions. There was no discussion in Table 11-3, Table 11-5, section 11.9.8, or elsewhere in this section about how the diversions will be constructed to ensure safe, stable and non-polluting channels during operations and closure. What is the benefit of retention of these structures post mining? What is the impact on floodplain environmental values of retaining the structures post mining? Response defers to PRCP (to be developed). An assessment of impacts on the floodplain is required. Describe the post-closure flooding impacts of the diversions. Discuss how the diversions will be constructed to ensure safe, stable and non-polluting channels during operations and closure.	Addressed in Chapter 11, Sections 11.3.3.2, 11.11 and 11.13.
	32.60	Chapter 11, Section 11.3.3.2, p.11-11	Post rehabilitation management. The project depends on permanent dams to capture potential acid rock drainage or saline drainage. This is a long-term management solution that requires ongoing intervention/active management that is not conducive to relinquishment. Discuss how appropriate assessment of the risks and/or management measures prior to generation of salinity/acidity could reduce post rehabilitation management.	Post rehabilitation management. The project depends on permanent dams to capture potential acid rock drainage or saline drainage. This long-term management solution requires ongoing intervention/active management that is not conducive to relinquishment. Response states that this is addressed in Section 11.9, however, a response addressing the ongoing management of the dams does not appear to be there. Discuss how appropriate assessment of the risks and/or management measures prior to generation of salinity/acidity could reduce post rehabilitation management. Clarify response.	Addressed in Chapter 8, Sections 8.9 and 8.10, Chapter 11, Sections 11.3.3.2, 11.9 and 11.11.8

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	32.61	Chapter 11, Section 11.6, Section 11.7 and Section 11.12	Progressive Rehabilitation and Closure Plan. The Mineral and Energy Resources (Financial Provisioning) Bill 2017 includes provisions to amend the EP Act that require a Progressive Rehabilitation and Closure Plan and schedule. These sections of the EIS (and associated documentation/references) will need to be consistent with the new process. Amend the relevant sections of the chapter to address the proposed policy changes.	No adequacy review comment.	Addressed in Chapter 11, Section 11.2 and variously throughout the chapter.
	32.62	Chapter 11, Section 11.9	Waste rock management. Section 8.9 notes the risk of mine affected water and/or waste rock leachate to surface water bodies and commits to the Plan of Operations detailing waste rock management. Waste rock management and minimising the potential for mine affected water are key components of rehabilitation success and therefore should be included in the proposed rehabilitation strategy. The proposed rehabilitation strategy must address waste rock management and minimising the potential for the release of mine affected water.	No adequacy review comment.	Addressed in Chapter 11, Sections 11.3.2, 11.8, 11.9, 11.10 and 11.11.
	32.63	Chapter 8, Section 8.9.1 and Chapter 11, Section 11.9.10	Waste rock dump design. Section 8.9.1, page 8-34, states that sourcing of material with low sodicity for rehabilitation of waste rock dumps is important. This issue is not addressed in the Rehabilitation chapter. How are the design commitments in Section 8.9.1 captured? For example, location in terms of sensitive receptors and surface water flow considerations? Describe how the design commitments in section 8.9.1 will be addressed in the Rehabilitation chapter. This would include accounting for the location of sensitive receptors and surface water flow.	No adequacy review comment.	Addressed in Chapter 11, Section 11.11.10.
	32.64	Chapter 11, Table 11-5 and Chapter 23, Table 23-14, p.23-19	Residual voids. The decommissioning and rehabilitation objectives and completion criteria for sub-domain open pit completion criteria differs from that in Chapter 23 Draft EA Conditions. The draft EA states 'no final void' and table 11-5 states 'minimised retained voids'. Confirm if there will be no final voids.	No adequacy review comment.	Addressed in Chapter 3, Section 3.4.1.4 and Chapter 11, Section 11.11

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	32.65	Chapter 11, Table 11-5, p.11-39	Rehabilitation objective. Rehabilitation objectives state 'low intensity beef cattle grazing' however this is inconsistent with section 11.9.9 which states that final voids are unlikely to be suitable for agricultural use. However, it is recommended that the voids be filled, in which case an appropriate land use should be identified. Indicate the final land use for the filled voids.	Rehabilitation objective. Rehabilitation objectives state 'low intensity beef cattle grazing' however this is inconsistent with section 11.9.9 which states that final voids are unlikely to be suitable for agricultural use. However, it is recommended that the voids be filled, in which case an appropriate land use should be identified. Response states this is addressed in section 3.4 of SEIS. The text describes the proposed final land use. Provide areas in a table and map showing the proposed final land use that justify the rehabilitation objectives.	Addressed in Chapter 3, Section 3.4.1.4 and Chapter 11, Section 11.11
	32.66	Chapter 11, Table 11-6	Commitments. Table 11-6 is inconsistent with the EP Act including environmental values and the Rehabilitation requirements for mining resource activities Guideline. It requires updating. Amend the following three points in Table 11-6: - include environmental values as per the Environmental Protection (Water) Policy 2009 - include "non-polluting" as this is a key factor in the Rehabilitation Guideline - include chemical monitoring as this is committed to throughout the document	No adequacy review comment.	Addressed in Chapter 11, Section 11.20
	32.67	Chapter 12, Section 12.6	Critical information. The Air Quality chapter does not provide the critical information as discussed in Appendix 7 – Air Quality Assessment. For example, Section 12.6 of Chapter 12 does not provide predicted maximum ground level concentrations of the project in isolation and cumulative impact as provided in Tables 6-1 and Table 6-2 of Appendix 7 – Air Quality Assessment. Provide all critical information in Chapter 12 – Air Quality including the tables and contour plots showing the predicted maximum ground level concentrations. Describe the modelling results in detail including comparison	No adequacy review comment.	Addressed in updated Chapter 12 Appendix A7 – Air Quality

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			against the Environmental Protection Policy (EPP) - Air 2008 objectives and the National Environment Protection Measures (NEPM) - Ambient Air Quality 2016 standards.		
	32.68	Chapter 12, Section 12.5.7.1	Emissions inventory. The air quality impact assessment was based on air emissions expected to be released during year 12 of the project as it is expected to produce the highest dust emissions. However, no emission inventory data of other years was provided to support this. In order to demonstrate that year 12 of the project represents the worst-case emissions, an emissions inventory should be provided for several other intervals when there is considerable disturbance and activity on site. Using this data, the worst-case emissions that are expected to occur during the life of the project can be identified. If the worst-case emissions are greater than those modelled for year 12, then evaluate the worst-case impact, as a separate exercise.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.4.3 and 12.6 and Appendix A7 – Air Quality
	32.69 (note 2 Number 69 in EHP submission)	Appendix 7 – Air Quality Assessment Appendix B	Emission factors. A number of parameters (e.g. soil and coal moisture content and silt content) were adopted for the estimation of emission factors. The selection of these parameters is critical, as these parameters have a major influence in the generation of dust emissions. It is not clear how these parameters were selected. As a best practice, these must be selected from the proposed mine site-specific data. Discuss the values of the emission parameters (e.g. soil and coal moisture content and silt content) adopted for the estimation of emission factors within the appropriate section of Chapter 12. These parameters must be representative of the worst case conditions of the site.	Emission factors. Soil and coal moisture content and silt content data was revised and information provided in Appendix B of Appendix 7. The selected values are based on measured data from the site. No comments on this issue. However, because of new moisture content and silt content, emission inventory was revised in the amended EIS. See comments on the revised emission inventory data (Table 2 below).	Addressed in Appendix A7 – Air Quality, Appendix B.
	32.70	Chapter 12, Section 12.5.8	Emission sources of power generation units. A number of power generation units are proposed during the construction and operation phase of the project (see Appendix 7 – Air Quality Assessment, Table 5-1 and Table 5-2). Air emissions from these power generators were not discussed in the EIS. It is mentioned in Section 7.2 of Appendix 7 – Air Quality Assessment that low NOx emissions are expected to protect	Emission sources of power generation units. Air emissions from the power generation unit have been included in the revised impact assessment (amended EIS). However, the following information was not provided:	An engine supplier has not yet been commissioned for the Project and the specific details of the generator exhaust parameters are therefore not known at

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			the onsite workers' exposure for health and safety requirements. For new stationary emission sources, DES considers the best practice guidelines relevant to the proposed activities. When deciding the best practice, reference should be made to the NSW EPA Protection of the Environment Operations (Clean Air) Regulation 2010: https://www.legislation.nsw.gov.au/regulations/2010-428.pdf If fuel burning to produce more than 10KW of power is proposed, identify the power generation unit(s) proposed for the operation phase of the project with respect to emission sources under the Protection of the Environment Operations (Clean Air) Regulation 2010. Provide the following information: - Type of fuel used in the power generation units; - Expected pollutant concentrations and mass emission rates; and - Stack height and gas exit velocity. Based on this information, discuss whether emissions are likely to adversely impact sensitive receptors.	- Type of fuel used in the power generation units; - Expected pollutant concentrations (mg/Nm3); and - Stack height and gas exit velocity. Amended EIS partly addressed the issues. The following information are required to specify the stack emission limits in the Environmental Authority: - Type of fuel used in the power generation units; - Expected pollutant concentrations (mg/Nm3);and - Stack height and gas exit velocity.	this stage of the project. Diesel combustion emissions were estimated for the proposed mining equipment including the two generator types based on estimated fuel consumption and emission factors outlined in the tables in Appendix B of the NPI EET Manual. As shown in the amended EIS, predicted $PM_{2.5}$ concentrations are well below the ambient air quality criteria.
	32.71	Chapter 12, Section 12.5.8	PM2.5 emissions estimation. A summary of PM2.5 emissions from the operation phase of the project is presented in Table 12-12. Note the National Pollutant Inventory (NPI) database does not include emission factors for the fine dust particles such as PM2.5. It is stated in Appendix B of Appendix 7 – Air Quality Assessment that the fraction of PM2.5 in TSP was assumed as 75% (based on AP42 Chapter 13.2.5). This is an extremely high fraction for the mining activities and may be a transcription error. It is not clear how the PM2.5 emissions were estimated. Describe how the PM2.5 emissions were estimated in the report. Amend if necessary.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.4.3 and 12.6 and Appendix A7 – Air Quality. As noted 75% was an error, which should have been 7.5%
	32.72	Chapter 12, Section 12.5.8	PM2.5 emissions impact assessment. Fine fugitive dust from the mining activities is the highest source of PM2.5 emissions. According to NPI, diesel combustion is the second highest	No adequacy review comment.	Addressed in Chapter 12, Sections 12.4.3 and

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			source of PM2.5 emissions in the coal mining industries. The PM2.5 emissions from the combustion sources such as those listed in Table 5-2 of Appendix 7 – Air Quality Assessment and their impacts were not included in the EIS. Estimate PM2.5 emissions from the combustion sources such as those listed in Table 5-2 of Appendix 7 – Air Quality Assessment and predict cumulative impact of PM2.5 including these sources on the receiving environment. Based on this information, discuss whether emissions are likely to adversely impact sensitive receptors.		12.6 and Appendix A7 – Air Quality.
	32.73	Chapter 12, Section 12.4.1	Dust suppression. The estimation of air emissions assumed that dust reduction of 75% will be achieved by Level 2 watering of haul roads that requires water provision greater than 2 L/m2/hour (see Table 12-4). However, there was no explanation on how a dust control target of 75% would be achieved in practice. A number of issues should be addressed to clarify how the target can be achieved including: the volume of water needed to achieve dust reduction of 75% whether that much water is readily available for the operations would provision of the volume of water for 75% dust suppression affect the proponent's ability to make-good agreements with local landholders? Is 75% dust reduction achievable by watering alone, or would additives be needed?	No adequacy review comment.	Addressed in Chapter 12, Section 12.9.1.2 and Appendix A7 – Air Quality
	32.74	Chapter 12, Section 12.5.8	Air emissions from the train loadout facility. It is mentioned in Section 5.3.4.2 of Appendix 7 – Air Quality Assessment that the train load out facility was modelled as a volume source. However, the air emissions from this source were not provided in Table 12-12: "Operational Stage 2 emission". Provide air emissions from the train load out facility based on the dumping of product on stockpiles from haul trucks and the probable train loading method by front end loader. Clarify that the train load out facility sources are included in the modelling.	No adequacy review comment.	Addressed in Chapter 12, Section 12.7 and Appendix A7 – Air Quality

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	32.75	Chapter 12, Section 12.6	PM10 concentrations. The predicted 5th highest PM10 concentrations were provided in Table 6.1 and Table 6.2 of Appendix 7 – Air Quality Assessment. The EPP (Air) 2008 objective of 50 µg/m^3 for PM10 allows five days exceedances in any one year. This objective is based on an old NEPM standard which allowed five days exceedance per year based on natural events such as bushfires and dust storm. The revised NEPM (Ambient Air Quality) 2016 standards do not provide reference to any particular days of exceedance per year (TOR also refers to NEPM). For the estimation of impacts from anthropogenic sources, the maximum PM10 concentrations should be provided. Provide the maximum (100th percentile) 24-hour average PM10 concentrations and compare against the EPP (Air) 2008 objectives.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.2 and 12.6 and Appendix 7.
	32.76	Chapter 12, Section 12.6.3	Dust impacts on environmental receptors. The two major watercourses on each side of the project site and the two matters of state environmental significance (MSES) wetlands are potentially subject to dust from mine activities and should be considered as sensitive environmental receptors. The EIS does not provide predicted dust deposition at these environmental receptors. An independent assessment of dust deposition impacts on vegetation for the Gold Coast Quarry may be useful to refer to: http://www.goldcoastquarry.com/assets/Additional-Documents/3.-Attachment-A-Air-Quality.pdf.pdf Provide estimated dust deposition at the nearby watercourses and wetlands (i.e. Deep Creek, Tooloombah Creek and the two MSES mapped wetlands near the western boundary) and compare the results against the most recent best practice standards/studies from the literature.	No adequacy review comment.	Addressed in Chapter 12, Sections 12.2 and 12.8 and Appendix 7 – Air Quality
	32.77	Chapter 12, Section 12.8.3	GHG emissions. The GHG emissions were estimated for year 12 which was assumed to have the maximum open cut throughput and relatively long haul distance. However, no GHG emission inventory data of other years was provided to support this hypothesis. In order to demonstrate that year 12 of the project represents the worst-case emissions, an	No adequacy review comment.	Addressed in Chapter 12, Sections 12.4.3 and 12.6.4 and Appendix A7 – Air Quality

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			emissions inventory should be provided for several other intervals when there is considerable disturbance and activity on site. Using this data, the worst-case GHG emissions that are expected to occur during the life of the project can be identified.		
	32.78	Chapter 13, Section 13.5.3	Sensitive receptors. The EIS Noise Impact Assessment states that the modelling presented in Appendix A8 – Noise and Vibration Technical Report did not account for the sensitive receptor locations named "TSC Res 1" and "TSC Res 2". The Tooloombah Creek Service Station modelling results were applied instead as both TSC1 and TSC2 are in close proximity to the Service Station. However, Table 13-5: titled Sensitive receptor locations within wider Project area identified TSC Res 1 as 300m closer to the open cut mine than the Tooloombah Creek Service Station is. To adequately assess the noise impacts on TSC Res 1 and TSC Res 2, modelling (including low frequency) must be conducted for both the construction and operational phases of the mine taking into account the specific location of these sensitive receptors (300m closer than the Tooloombah Creek Service Station).	The SEIS Noise Impact Assessment does account for sensitive receptors TSC Res 1 and TSC Res 2. Addressed in Section 13.7. The recommendations in the noise impact assessment are to be conditioned appropriately in the EA (e.g. requirement for a noise management plan to be implemented).	Addressed in Chapter 13, Section 13.7
	32.79	Chapter 13, Section 13.5.3	Uninhabited sensitive receptors. Modelling results for noise, blasting and vibration impacts have not taken into account at the BAR H-2 (Uninhabited) and BAR H-3 (Uninhabited) sensitive receptors identified in Figure 13-1. A revised noise and vibration impact assessment must be submitted which considers both BAR H-2 (Uninhabited) and BAR H-3 (Uninhabited) as sensitive receptors. This report must consider noise (including low frequency), blasting and vibration impacts.	This has been addressed – provided that should the house be returned to a habitable state in future – further noise modelling will be completed to address any potential noise exceedances. Addressed in Section 13.5.	Addressed in Chapter 13, Section 13.5.3
	32.80	Chapter 13, Section 13.7.1	Life of mine noise impacts. The noise impact assessment model has only used Year 12 of the mining schedule as mining activities are expected to be at their peak during that year. The EIS does not consider noise impacts for any other years of the mining sequence.	No adequacy review comment.	Addressed in Chapter 13, Section 13.7

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			To adequately assess the noise impacts on sensitive receptors throughout the entire life of the mine, further modelling must be completed which takes into account the location of operational pits - mining sequence, equipment schedule, location of equipment, fixed plant, haul routes and train loading facilities.		
	32.81	Chapter 13, Section 13.7.1.1	Construction noise assessment. The construction equipment and its location are provided in Table 13-13 and Figure 13-6. The equipment mentioned in the construction modelling does not include any equipment for the construction of dams or the haul routes during the construction phase. A revised noise impact assessment is required that considers the location of equipment in worst case scenarios during the construction phase.	Construction phase noise modelling is presented at Section 13.7 of the EIS No update to the EIS is proposed. This is noted by DES. The recommendations in the noise impact assessment are to be conditioned appropriately in the EA (e.g. requirement for a noise management plan to be implemented).	Addressed in Chapter 13, Section 13.7
	32.82	Chapter 13, Section 13.9.2	Noise emission exceedances. It is noted the EPP Acoustic Quality objectives (e.g. 50 dBA noise limit daytime and evening) do not take into consideration the existing background noise levels of an area or background creep following development. The noise levels detailed in the EPP acoustic quality objectives correlate to maximum levels intended to be progressively achieved over time. These levels do not relate to the emission of noise from one particular activity. The report should reference the criteria developed using the Model Mining Condition methodology and identify mitigation measures to be implemented where these criteria are exceeded. A revised noise impact assessment should be prepared that suggests mitigation measures to be implemented when modelling predicts exceedances of the Model Mining Condition criteria and when the monitoring of noise emissions identifies exceedances of the Model Mining Condition criteria.	No adequacy review comment.	Addressed in Chapter 13, Section 13.2
	32.83	Chapter 14, Section 14.5.2, p.14-9	Flora surveys. The EIS states that flora surveys were undertaken over five consecutive days in summer (21 – 25 March 2011). As per the Department of Environment and	Flora survey methodology. The submission sought further justification that the timing of the flora surveys were adequate to detect presence	Addressed in Chapter 14, Section 14.5.2

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			Heritage Protection 'EIS information guideline – Flora and fauna', flora surveys are best carried out during flowering and/or after the wet season. Discuss how the current flora survey effort and timing is adequate to detect presence or absence of flora species on site.	or absence of flora species on site and in line with the department's 'EIS information guideline – flora and fauna'. However, review of the field surveys for flora do not indicate that post-wet season surveys have been conducted e.g. late March to late May. Provide an update in the EIS that demonstrates that flora survey effort is adequate.	A survey was carried out onsite from the 21st to 25th March inclusive in 2011 which is consistent with the requirement for a post-wet survey.
	32.84	Chapter 14, Figure 14-1, p.14-13	Flora survey methodology. Figure 14-1 indicates the flora survey locations by survey method on current DNRM vegetation mapping. From the figure, it appears only quaternary assessments and RE code site assessments were conducted to determine flora species and vegetation communities present on site. The survey sites also appear to be clustered, and missing from areas currently mapped with a conservation status 'Of Concern' or 'Endangered' regional ecosystem (RE). Surveys typically need to be adequate to identify a wide range of ecological communities, species and species habitats. Targeted field surveys are also often necessary to determine the likelihood of occurrence of specific listed threatened species and communities (based on available habitat) and to inform assessment of how the proposed project could impact on them. The EIS does not appear to adequately assess flora potentially present on site. Survey Method: For any listed threatened plant species recorded during a flora survey, the population extent and density should be included in the impact assessment to quantify the potential impact. The proponent is reminded that a plot based assessment is required to determine the species abundance, distribution and habitat associations, as well as to inform management measures. Extent of survey locations:	The location and extent of flora surveys in the amended EIS do not appear adequate - sites are clustered and there is a lack of sites in areas currently mapped as of concern e.g. the 'of concern' remnant vegetation to be impacted by the open cut pits. Further justification on adequacy sought.	Addressed in Chapter 14, Section 14.5

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			Discuss how the current extent of flora surveys is adequate to accurately determine what is present onsite.		
	32.85	Chapter 14, Section 14.5.2.2, p.14-14	Terrestrial fauna survey methods. The EIS does not provide sufficient detail on the survey methods and effort used to determine the terrestrial fauna values for the project. It is important that the survey methods used and effort applied are justified, especially if they are different to that recommended by relevant guidelines. Provide more detail on the survey methods and effort used to determine the terrestrial fauna values for the project.	For terrestrial fauna surveys: - the location and effort used to survey potential presence of bats is unclear (figure 14-2) - justification for lack of fauna survey sites along Deep Creek. Further justification on adequacy sought.	Addressed in Chapter 14, Section 14.5.2.3. There are 6 anabat sites indicated by pale yellow squares on Figure 14-2. There are no fauna trap sites indicated on Figure 14-2 on or along Deep Creek itself. This was due to either, an absence of suitable habitat for trapping (i.e. cleared/degraded narrow riparian strip, and lack of access permission at the time (creek is outside Mamelon boundary). It is noted 'non-trapping' fauna survey effort on multiple occasions has been carried out along Deep Creek including bird surveys, spotlighting surveys (hence sightings of greater glider) and herpetofauna searches. Creeklines (e.g. Deep Creek) were targeted for non-trapping fauna survey effort (spotlighting surveys) on

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					multiple occasions due to potential presence of listed species (Koala, Greater Glider).
	32.86	Chapter 14, Section 14.6.2.1, p.14-31	Regional ecosystem mapping. The EIS states the 2017 field surveys identified several inconsistencies between the current RE mapping and onsite vegetation communities but has not indicated if an application to re-map the RE on site has been submitted to the Queensland Herbarium. This limits the ability to accurately determine any required offsets. Clarify if an application to re-map the RE present onsite has been submitted to the Herbarium and if so ensure the outcome is accurately represented in the EIS.	No adequacy review comment.	Addressed in Chapter 14, Section 14.1 and Appendix A 19 – Vegetation Amendment Application.
	32.87	Chapter 14, Section 14.11.1, p.14-88	RE-mapping. The EIS states that offsets for impacts to MSES are proposed to be based on the ground-truthed vegetation mapping. However, as per the comment above, the project proponent is required to formally apply to the Herbarium for re-mapping of REs. Clarify if an application to re-map the RE present onsite has been submitted to the Herbarium, and if so has this been accepted.	No adequacy review comment.	Addressed in Chapter 14, Section 14.1 and Appendix A 19 – Vegetation Amendment Application.
	32.88	Chapter 14, Section 14.12.5.1, p.14-103	Offsets and species management. The EIS considers potential offset options but the project proponent is required to make a clear commitment to develop and submit the following prior to commencement of mining activities on site and ensure this is reflected in the draft EA conditions: Development and submission of an environmental offset plan Development and submission of specific species and ecological communities' management plans (under the Nature Conservation Act 1992 (NC Act) and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) prior to any interference with the relevant species or communities. Make a clear commitment to develop and submit the following prior to commencement of mining activities on site and ensure this is reflected in the draft EA conditions:	No adequacy review comment.	Addressed in Appendix A18 – Draft Offsets Delivery Plan and Appendix A20 – Significant Species Management Plan. Chapter 24 – Draft EA Conditions (condition H10 and H13)

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			Development and submission of an environmental offset plan. Development and submission of specific species and ecological communities' management plans (under NC Act and EPBC Act) prior to any interference with the relevant species or communities.		
	32.89	Chapter 14, Figure 14-8; Table 14-13 and Chapter 16, Table 16-30; Figure 16-20	Greater Glider habitat. The Greater Glider (Petauroides Volans) is listed as vulnerable under the Nature Conservation (Wildlife) Regulation 2006. Habitat of vulnerable wildlife is a matter of state environmental significance (MSES). The footprint of Waste Dump 1 (WD1) will result in the clearing of approximately 7ha of Greater Glider habitat as per Table 14-13. This southern woodland is a continuous tract that extends in to RE 11.11.15a, where Greater Gliders were recorded. As such it provides an important buffer to the mining activities and is recorded as potential habitat. No avoidance of this remnant vegetation was suggested. However, avoidance could be achievable by re-siting or reducing the extent of WD1 further to the north. Re-site or reduce the extent of WD1 northwards so that the 7ha of Greater Glider habitat is protected.	No adequacy review comment.	Addressed in Chapter 14, Section 14.7.1
	32.90	Chapter 14, Section 14.6.5.3, Table 14-18; and Chapter 15, Section 15.6.3.6	MSES wetlands. No specific wetland surveys were conducted for the aquatic ecology or terrestrial ecology chapters. There was insufficient information provided on the two palustrine wetlands located on the western edge of the project site that are mapped as matters of state environmental significance (MSES). There was insufficient information provided on the existing surface and groundwater hydrology and water quality; the condition and extent of the wetland vegetation; or the habitat values that they provide for fauna. The environmental values for wetlands are described in section 81A of the Environmental Protection Regulation 2008. The Queensland Wetlands Program uses the Queensland herbarium to map wetland regional ecosystem types. Both the Wetland Protection Area (WPA) and the regulated vegetation (wetland) are mapped as regional ecosystem (RE) 11.3.27b.	MSES wetlands. The response to the eight issues raised was inadequate. - The revised Dam 5 (mine dewatering dam) has not been sited to avoid and/or minimise unnecessary impacts on environmental values. - No monitoring bore has been placed close to the WPA to determine whether it is reliant on groundwater from a shallow water table. The 0.1m to > 1m predicted water table drawdown contours bisect the wetland from at least year 5 to between 68 – 118 years after the commencement of mining. The hydrograph for bores BH28 and BH28A indicate a 2m drop in the water table (close to this wetland) persisting for approximately 30 years. It is noted that a decadal disconnection from groundwater will	A description was provided of the two wetlands in the SEIS including a description of extent, vegetation and RE description, and fauna recorded during site visits (Chapter 15, Section 15.6.3.2). Groundwater bores have now been established that are specific to both wetlands (refer

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			The TOR environmental objectives to protect wetlands from impacts needs to be addressed. There was no recognition that the status of wetlands in Great Barrier Reef catchments in national and state policy documents is for their protection and enhancement. Wetlands within Great Barrier Reef catchments are subject to the Reef 2050 Long-Term Sustainability Plan 2015. A stated Water Quality objective of this plan is that there is no net loss of the extent, and an improvement in the ecological processes and environmental values, of natural wetlands. The Draft Reef 2050 Water Quality Improvement Plan 2017-2022 has amended the 'no net loss' and now seeks "no loss of natural wetlands". A portion of the regulated vegetation (wetland) is proposed to be cleared and a 1 hectare offset has been proposed for the loss. The mine dewatering dam (Dam 2) is proposed to be built over this area. There was no discussion as to why this dam has to be located over the wetland and not re-sited to avoid impact. Any partial clearing of the wetland is likely to significantly alter the hydrology of the remaining extent of the wetland. The Significant Residual Impact (SRI) Guideline (DES 2014) should be consulted. Unavoidable impacts require that an offset is provided for the full extent of the wetland. There was insufficient information provided on the potential impacts of groundwater depressurisation to the WPA. A 0.5m depressurisation contour extends into the wetland (Figure 14-10 and Figure 15-9). The period of maximum drawdown post mining is uncertain but may be decadel. A reduction in groundwater of this magnitude over a decadal timeframe may significantly impact the wetland ecosystem especially in times of prolonged drought. As there is no practical mitigation measure to counter the impacts of groundwater	likely result in the loss of this wetland. The EIS state that no significant residual impacts are expected and no offset is proposed. - The VMA wetland and WPA "are not considered connected to groundwater and therefore will not be impacted by groundwater drawdown". They have been classified as Type 3 GDEs (riparian/terrestrial/vegetation) but this conflicts with the Australian GDE Atlas (Fig 16-23) that identifies both wetlands as Type 2 GDEs – high potential for GW interaction. - Dam 1 and dam 2 are proposed to be located over threatened species habitat and endangered/of concern vegetation. The eight issues should be comprehensively addressed. Specific field studies should be undertaken (to a standard acceptable to the Queensland herbarium) to determine the project site's baseline condition and extent of GDEs. There is a need to explain the steps taken to avoid, minimise, or mitigate impacts to regulated vegetation i.e. could the water infrastructure be located elsewhere, if not why not? There is a need to show how to address the environmental objective and performance outcomes for wetlands (schedule 5, part 3 of the EP Regulation). Where a risk of adverse impact is identified, measures to avoid or manage this impact should be defined. If there are unavoidable impacts a detailed offset analysis needs to be presented.	Chapter 16, Figure 16.131 for Project bore locations). Targeted GDE sampling indicates that the regulated vegetation (wetland) is not connected to groundwater at all, and the scattered woody vegetation in the centre of the Wetland Protection Area may have some potential to access groundwater during very dry conditions (Chapter 15, Section 15.6.4.4). The presence of surface water at the WPA is highly ephemeral and is reliant on surface flows. Neither wetland is reliant on groundwater (refer Section 15.6.4.4). The RE description for the regulated vegetation (wetland) (RE 11.3.27) has not been updated as site inspections identified the current designation is correct.

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			depressurisation, an offset for the significant residual impact to the WPA should be provided. The SRI test for a 'wetland in a wetland protection area' is an action that results in: Areas of the wetland being destroyed or artificially modified A measurable change in water quality The habitat or lifecycle of native species dependent on the wetland is seriously affected d A substantial and measurable change in the hydrological regime or recharge zone of the wetland No groundwater monitoring bores have been located adjacent to the WPA. Baseline data should be collected prior to the construction phase to determine whether the wetland is groundwater dependent There was inadequate discussion on dust impacts to the wetlands apart from recognising that a vegetation monitoring program will be implemented (section 15.8.4). Significant dust deposition from mining activities (both soil and coal dust) may reduce photosynthetic efficiency of wetland vegetation. It may also result in adverse impacts to water quality and ecosystem function. Specific mitigation measures should be proposed for the MSES wetlands. A description of both the impacted WPA and regulated vegetation (wetland) in section 14.6.5.3 and section 15.6.3.6 should be amended and include information on: The existing condition and extent (in hectares) of the wetland vegetation The existing surface and groundwater hydrology and water quality. The existing habitat values they provide for fauna. Update the regional ecosystem description linked to the wetlands as per the Queensland herbarium assessment. Or provide evidence from an updated assessment based on a secondary site survey as per the Methodology for survey and mapping of regional ecosystems and vegetation communities		The WPA has been changed to RE 11.3.12 with a habitat quality assessment (or Biocondition) site, which provides evidence comparable to a 'secondary' site, can be found in Appendix A19 (refer Site 14 in Attachment A) Revision of the Project's water storage requirements have now removed Dam 5 entirely from the Project layout. There will no longer be any impact to the MSES wetland in that area (refer Figure 15-26). Targeted GDE investigations indicate neither wetland is reliant on groundwater (refer Chapter 15, Section 15.6.4.4). The only potential impact may be from dust settlement which will be monitored as part of the Project Land Use Management

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			in Queensland, Version 4, 2017. Detail how the project will meet the following TOR environmental objectives: a that the activity will be managed in a way that prevents or minimises adverse effects on wetlands b there will be no potential or actual adverse effect on a wetland as part of carrying out the activity. Provide an updated assessment of the wetlands recognising the high level of protection for GBR wetlands under the Reef 2050 Long-Term Sustainability Plan 2015 and the Draft Reef 2050 Water Quality Improvement Plan 2017-2022. Detail measures to protect them from adverse impacts associated with mining activities. Update the impact assessment section of Chapter 14 and provide, if required, an offset assessment against the Significant Residual Impact Guideline (DES 2014). Update the impact assessment section of Chapter 14 and provide, if required, an offset assessment against the Significant Residual Impact Guideline (DES 2014). A groundwater monitoring bore should be established on the margin of the WPA prior to the construction phase in order to provide baseline data on groundwater dependency, groundwater levels and water quality. Regular monitoring during the operational period should determine the extent and persistence of any dewatering impacts. Describe how dust deposition to the wetlands may be effectively mitigated. A demarcated buffer woodland area outside of the wetland is recommended to intercept dust. The buffer should be fenced off from grazing and managed to create additional woodland either via active rehabilitation and/or natural regeneration.		Plan. Management and mitigation measures applicable to these areas are provided in Chapter 15, Section 15-8 (particularly 15.8.8 and 15.8.10) and Chapter 16, Sections 16.9.3.4 and 16.12 (particularly 16.12.3 and 16.12.4). Central Queensland Coal believes these project changes and updated information show the project meets the TOR objective of management and monitoring actions applied to minimise impacts on wetlands. There is no disputing the recognition of the importance of GBR wetlands under the Reef 2050 Long-Term Sustainability Plan 2015 and the Draft Reef 2050 Water Quality Improvement Plan 2017-2022, however neither of these documents actually provide 'high

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					levels of protection' to these waterbodies. With the revision of the project layout (refer Chapter 15, Figure 15-26) and establishment that surface water in the wetlands is not reliant on groundwater (refer Section 15.6.4.4) then the only potential impact may be from dust settlement which will be monitored as part of the Project Land Use Management Plan. Management and mitigation measures applicable to these areas are provided in Section 15-8 (particularly 15.8.8 and 15.8.10) and Chapter 16, Sections 16.9.4, 16.10.7, 16.11.4 and 16.14 (particularly 16.14.3 and 16.14.4). The impact assessment for MSES has been updated based on the most recent information

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					available (refer Chapter 14, Section 14-11 and Chapter 15, Section 15-11). There will be no significant residual impacts under the guidelines (refer Section 15.11.1.4) and no offsets will be required. Groundwater bores have now been established and are specific to both wetlands (refer Chapter 16, Figure 16.131) for Project bore locations). These bores will remain a part of the projects future groundwater monitoring regime under the REMP (Groundwater bores have now been established and are specific to both wetlands (refer Chapter 16, Figure 16.29 for Project bore locations). Both wetlands are located approximately 500 m away from major project activities and

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					both wetlands will be buffered by extant vegetation (refer Chapter 15, Figure 15-6). The intention is to manage much of the remainder of the property (outside the project footprint) by removing cattle grazing and allowing natural regeneration of native vegetation to occur (refer Chapter 14, Section 14.8.1.1 and Chapter 15, Section 15.8.8). This will in the long-term increase the vegetated buffer between the WPA wetland and Project activities significantly. Dust settlement will be monitored on the wetlands as per the Project Land Use Management Plan (refer Section 15.8.5). Monitoring will allow for adaptive management of project activities in the future to reduce dust emissions should impacts to these areas be detected.

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	32.91	Chapter 14 and Chapter 15	Coastal environment impacts. No specific assessment was provided against the TOR (8.8) that requires an assessment of potential impacts of the project's activities on the coastal zone. It is noted that no activities occur within the coastal zone but potential impacts from both mine site water releases and groundwater drawdown could impact on coastal resources. The DES EIS information guideline on coastal matters requires an assessment of the coastal resources and values that may be affected and any proposed mitigation measures. Address in section's 14.7 and 15.7 the potential impacts on the following mapped State coastal features that are all within 2km of the site: the coastal zone; the coastal management district; the erosion prone area; and the storm tide hazard areas. Address in section's 14.8 and 15.8 any proposed avoidance or mitigation measures to minimise the project's activities on the coastal zone. Discuss potential impacts on coastal ecosystems and marine and migratory fauna from mine site water releases and groundwater drawdown on the coastal values beyond 2km of the site. This requires specific assessment of MSES values including WPAs adjacent to the Styx River in the Broad Sound; the Broad Sound Fish Habitat Area; the mapped HEV waters of the Capricorn Curtis Coastal Waters under the EPP (Water) 2009; and the marine national park zone of the Great Barrier Reef Coast Marine Park.	Coastal environmental impacts. The potential impacts of State coastal features that are within 2km of the site are discussed in section 15.7.11. This section states: a. For the coastal zone, there will be no direct development impacts, impacts from dust deposition and potential downstream marine water quality impacts will be minor and of short duration b. For the coastal management district, that the project is not considered likely to exacerbate impacts resulting from storm tides or coastal erosion c. For erosion prone area, based on hydrological modelling described in Chapter 9, it is considered very unlikely the project activities would have any additive impact. This section fails to describe potential impacts from both mine site water releases and groundwater drawdown that could impact on coastal resources, and how they have come to the conclusion that there will be minimal or no impact for these areas. The storm tide hazard area, hydrologic models and assessments have concluded that there are risks to this area, although the identified risks do not detail specific aquatic ecology. Nevertheless, to manage the risk of flooding, a mine water management system has been developed in Chapter 3. No avoidance or mitigation measures have been detailed in section 15.8 for impacts for State coastal features.	Addressed in Chapter 15. Section 15.7 7 addresses impacts from Project activities and specifically addresses impacts potentially resulting from changed surface hydrology (Section 15.7.9), polluted water releases (Section 15.7.8 and 15.7.7) and groundwater impacts (Section 15.7.10). These are the only conceivable activities that may potentially impact downstream and hence the 'coastal features' of the coastal zone. Section 15.7.11 has been expanded to reiterate the findings in other subsections of Section 15.7. There are no predicted impacts to the coastal zone. Section 15.8 already proposes mitigation measures that will minimise overall Project impacts.

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				Address in section 15.7 the potential direct and indirect impacts on the aquatic ecology on mapped state coastal features for the coastal zone, coastal management district and erosion prone area, that are all within 2km of the site. If no impacts are found, provide details to justify how the assessment came to this conclusion. Address in section 15.8 proposed avoidance or mitigation measures to minimise the project's activities on the coastal zone.	
	32.92	Chapter 14, Section 14.12.4, Table 14-18	MSES Residual Impacts. This section states that the potential impacts to matters of national environmental significance (MNES) are detailed in chapter 16 – MNES. To more clearly separate the assessment of matters of state environmental significance (MSES) from MNES it is suggested that Table 14-18 be re-titled removing the reference to MNES. All the matters of concern in the table are currently MSES, however the use of the terminology from schedule 2 of the Environmental Offsets Regulation 2014 should be used. The 'description' column references 'overlap' with other matters. This is not required here. Note that each prescribed matter should be recognised but will not result in a duplication of an offset where the same matter overlaps. For instance, watercourse vegetation and koala habitat overlap. There are two types of wetlands that will be potentially impacted (see Issue number 1). Amend the area of impact for the regulated vegetation – (wetland). The partial clearance of this wetland for the construction of 'Dam 2' will significantly alter the hydrology of the remaining wetland (that extends outside the project boundary). The Wetland Protection Area needs to be added (see Issue number 1).	No adequacy review comment.	Addressed in Chapter 14, Section 14.12 and Chapter 15, Sections 15.7 and 15.11

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			The "potential residual impacts due to future groundwater drawdown" should be included as an identified residual impact. Amend the MSES to recognise five distinct matters: regulated vegetation (of concern); regulated vegetation (wetland); regulated vegetation (watercourse); high ecological significance wetlands (wetland protection area); and protected wildlife habitat (vulnerable – Koala). The methodology for calculating the area of impact from groundwater drawdown was not provided. There was no field assessment to determine the exact extent of GDEs impacted both on or off site. The duration of impacts post-mining has not been adequately addressed. The modelled impacts are only presented to 100 years. Both Figure 14-10 and Figure 15-9 are incorrectly scaled and do not show the full extent of the predicted groundwater drawdown contours and period of maximum drawdown. No figure has been provided to show where the MSES impacts are located. A new figure should inform a revised Table 14-18. Amend the title of Table 14-18 to: "Identified residual impacts to MSES". Amend the matters of concern to be consistent with the terminology from schedule 2 of the Environmental Offsets Regulation 2014. Remove the references to 'overlap'. State the matters as distinct items. Amend the area of impact for the 'regulated vegetation – (wetland)' to capture the entire extent, if avoidance is not achievable.		

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			Add the Wetland Protection Area and details of the full extent of potential impact, if avoidance is not achievable. Amend the table to recognise the full extent of groundwater drawdown and amend the respective impact area totals for the relevant MSES. A methodology for calculating the stated impact area of 342.4 ha of 'habitat for threatened fauna' due to groundwater drawdown must be presented. As GDEs are predicted to be significantly impacted it is recommended that the impact area is calculated based on all MSES values potentially impacted and verified by field surveys. Note that the post-mining equilibrium impacts should be modelled and not just to the 100 year modelled impacts presented in the EIS Amend both Figure 14-10 and Figure 15-9 by re-scaling to show the full extent of the predicted groundwater drawdown contours and period of maximum drawdown. A new Figure should be provided to inform the impact areas of the MSES listed in Table 14-18. The values displayed should clearly show any MSES overlaps via the use of different colours/ cross-hatching/ or labels. The map should be scaled to indicate the full extent of potential impacts to MSES outside of the project area as a result of modelled groundwater drawdown.		
	32.93	Chapter 15, Section 15.3, p.15-5	Groundwater drawdown and Environmental Values (EVs). The impact of groundwater drawdown on aquatic ecology was not included in the "Performance outcomes for the related aquatic EVs identified within the Project area." Add the impact of groundwater drawdown on aquatic ecology to the Performance Outcomes for the related aquatic EVs identified within the Project area. Update Chapter 15 - Aquatic Ecology and Chapter 16 – MNES where necessary.	No adequacy review comment.	Addressed in Chapter 15, Sections 15.7.10 and 15.8.10.

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	32.94	Chapter 15, Section 15.6.3.3, p.15-34; Table 15-5	Eastern snake-necked turtle. Potential hybrid species One individual of the Eastern snake-necked turtle (*Chelodina longocolis*) was recorded at aquatic ecology survey site To1. No records exist of this species occurring in the Broad Sound catchment. There is however an un-named hybrid species (*C. longicolis x C. canni*) that has a reproductively functional population restricted to the Broad Sound – Shoalwater Bay catchments. The *Chelodina longocolis* record needs validation to determine which species it is. An impact assessment must be undertaken. An assessment of the *Chelodina longocolis* record needs to be presented in Chapter 15. Targeted surveys may be required to determine whether the hybridised species is likely to be present. An impact assessment must then be completed. Particular emphasis should be on the likely impacts to GDEs from changes to the groundwater table. Mitigation measures should examine the proposed supplementary water program that seeks to sustain the ecological function of waterholes.	No adequacy review comment.	The record is from the aquatic ecology survey carried out in 2011 and only poor quality (blurry) photos were collected. CDM Smith has carried out turtle trapping in Deep Creek and Tooloombah Creek on three separate occasions in 2017 and has only caught Saw-shelled Turtle in Tooloombah Creek. There is no public information available regarding the existence of a hybrid species. It is noted *C. longicollis* or *C. canni* are both listed as Least Concern under the NC Act. There is no requirement to complete an impact assessment for this animal. Impacts to GDEs are already included in the chapter and have been updated in the SEIS. No changes included in the SEIS
	32.95	Chapter 15, section 15.6.3.3, p.15-34; Table 15-5	Southern snapping turtle. Photographic evidence was presented to DES outside of the EIS on the survey record of the Southern snapping turtle (*Elseya albagula*) listed as endangered under the Nature Conservation (Wildlife)	No adequacy review comment.	Addressed in Chapter 15, Section 15.6.3.4

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			Regulation. The section on the Southern snapping turtle may require amendment. An assessment needs to be submitted by a suitably qualified person confirming that the photographic evidence of the Southern snapping turtle record from 2011 is a different species. If confirmed, amend relevant sections of the EIS.		
	32.96	Chapter 15, Section 15.7	Wetlands. Section 15.6.2.9 identifies that the riverine wetlands within and surrounding the mining leases and train loadout facility are considered to be within a riverine catchment of high significance. The impact of groundwater drawdown on the riverine and palustrine wetland ecosystems is not adequately identified. The potential area of wetlands (riverine and palustrine) that could be impacted by drawdown should be further defined and discussed in the impact assessment. Where a risk of adverse impact is identified, measures to avoid or manage this impact should be described. Update Chapter 15 - Aquatic Ecology and Chapter 16 – MNES where necessary.	No adequacy review comment.	Addressed in detail in Chapter 15, Sections 15.7.10 and 15.8.10; and Chapter 16, throughout Section 16.11, but specifically Sections 16.11.3.6, and 16.14.4
	32.97	Chapter 15, Section 15.7.9	Fish. The highest fish diversity for individual sites was recorded from the Styx River and at Tooloombah Creek in large pools. The study area is also described as a nursery area for juvenile Barramundi (*Lates calcarifer*) and that there have been successive cohorts utilising the study area. The impact of groundwater drawdown on potential refugia and nursery areas for aquatic species is not adequately discussed. The impact of drawdown on potential refugia and nursery areas for aquatic species should be further described. Include an estimate of the reduction in water level and pool area; and any change in duration of when water is present in the deep pools. Measures to avoid and manage impacts should be described.	Section 15.7.10 discusses the impacts of groundwater drawdown on GDE's Type 1 (Stygofauna), Type 2 (Waterholes) and Type 3 (Riparian and terrestrial vegetation), however impacts of groundwater drawdown on potential refugia and nursery areas of aquatic species has not been addressed. The impact of drawdown on potential refugia and nursery areas for aquatic species should be further discussed. Include an estimate of the reduction in water level and pool area; any change in duration of when water is present in the deep pools.	Addressed in detail in Chapter 15, Sections 15.7.10 and 15.8.10; and Chapter 16, throughout Section 16.11, but specifically Section 16.11.3.6, and 16.14.4 Also addressed in Chapter 10 and Appendix A6. A baseline assessment for in-stream pools is presented in Section 10.6.1 and an analysis of

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			Update Chapter 15 - Aquatic Ecology and Chapter 16 – MNES where necessary.	Measures to avoid and manage impacts should be described.	in-stream pool longevity is presented in Section 4 of Appendix A6. An assessment of possible drawdown impacts arising from the proposed mine is presented in Section 10.7.4 and Monitoring, management and mitigation measures are presented in presented in Section 10.8.
	32.98	Chapter 15, Section 15.7	Saltwater ingress impact. The potential impact of saltwater ingress on freshwater aquatic species or terrestrial groundwater dependent species is not adequately discussed. The potential impact of saltwater ingress on freshwater aquatic or terrestrial groundwater dependent species should be further discussed in the impact assessment. Update Chapter 15 - Aquatic Ecology and Chapter 16 – MNES where necessary.	No adequacy review comment.	Addressed in Chapter 10, Section 10.7, Chapter 15, Sections 15.7 and 15.10 and Chapter 16, Section 16.11. Also see response to submission reference 24.11.
	32.99	Chapter 15, Section 15.8.9.2	Stygofauna. The mitigation measures discussed won't address the potential impacts to stygofauna. The predicted groundwater drawdown will remove stygofauna habitat. The mitigation measures to replace surface water environmental flows will not address removal of stygofauna habitat. Mitigation measures to address the loss of stygofauna habitat should be described in the impact assessment. Update Chapter 15 - Aquatic Ecology and Chapter 16 – MNES where necessary.	The mitigation measures still do not address the potential impacts to stygofauna, as the predicted groundwater drawdown will remove stygofauna habitat. The mitigation measures to replace surface water environmental flows will not address remove of stygofauna habitat. Mitigation measures to address the loss of stygofauna habitat should be discussed in Section 15.8.	Addressed in Chapter 15, Sections 15.6.5, 15.7.10.4, 15.8.10 There are no specific measures to address localised drawdown impacts on stygofauna and there are no known mitigation measures in use elsewhere for other projects with similar impacts. Groundwater drawdown will impact a

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					single location where stygofauna have been identified as present. This taxa is very unlikely to be restricted to the area in which it was identified. A maximum drawdown of around 13 m is predicted at the location of the bore where stygofauna have been identified (STX 093, Figure 15-21) between LOM year 18 (end of mining) and 10 years post-mine. The predicted rate of drawdown at this location is around 1.5 m/year (refer Chapter 16, Figure 16-118). Water is not suddenly removed, possibly allowing stygofauna to move deeper into the alluvium water column Refer Table 10-80 in Chapter 10 - Groundwater. In addition, as this area is an alluvial aquifer, the site (i.e. local aquifer) will be subject to periodic replenishment from flows in Deep Creek. Monitoring of

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					stygofauna presence will continue periodically as part of the Project REMP which will provide information on this taxonomic group in the area that was not previously available. Also addressed in Chapter 10. An analysis of possible drawdown impact arising from the proposed mine is presented in Section 10.7.4 and monitoring, management and mitigation measures are presented in Section 10.8.
	32.100	Chapter 15, Section 15.10, p.15-80	High risk and offsets. It is noted in Table 15-10 that the residual risk to changes in the groundwater table and GDE impacts remains 'high' after control measures are implemented. A high risk level is defined on page 15-79 such that "Works should not proceed until suitable mitigation measures have been adopted to minimise the risk." Works should not proceed with a high residual risk to aquatic EVs. However, recognising that there are no practical measures available to mitigate the impact of depressurisation on aquatic EVs, offset conditions will be required for the significant residual impacts on prescribed environmental matters. The listed control measure of "Implementation of the Project Biodiversity Offsets Delivery Plan" should be removed. The	It is noted in Table 15-11 that the residual risk to vegetation and wetland clearing & changes in the groundwater table and GDE impacts remains 'high' after control measures are implemented. A high risk level is defined on page 15-102 such that "Works should not proceed until suitable mitigation measures have been adopted to minimise the risk." Works should not proceed with a high residual risk to aquatic EVs. Appropriate offsets should be discussed in Chapter's 10 and 15.	Addressed in Chapter 14, Section 14.13 and Chapter 16, Section 16.19 Also addressed in Chapter 10, Sections 10.7 and 10.8. The layout of the Project has been changed and wetland 2 will no longer be subject to clearing for Dam 5. Neither wetland is considered reliant on groundwater (refer Section 15.6.4.4).

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			delivery of offsets under the Queensland Environmental Offsets framework is a separate action despite undertaking all reasonable avoidance and mitigation measures. Appropriate offsets should be discussed in the impact assessment. Update Chapter 15 - Aquatic Ecology and Chapter 16 – MNES where necessary.		Riparian vegetation considered susceptible to groundwater drawdown will be subject to vegetation health monitoring. Information on the Project's potential impacts to aquatic MSES has been expanded (refer Section 15.11). There will be no direct impacts to aquatic MSES. Indirect impacts from groundwater drawdown will be monitored and should irreversible impacts be detected they will be subject to the Project offsets management plan. A detailed offsets strategy covering all potential residual impacts has been provided in Chapter 14 (Section 14.13) as was stated in the text already. A draft Offsets Management Plan is provided in Appendix A18.
	32.101	Draft EA	Draft conditions in Chapter 23 will be subject to change based on the information provided in EIS submissions and in the future supplementary EIS. These draft conditions should be updated consistent with the response to submissions.	No adequacy review comment.	Addressed in Chapter 23 - Draft EA conditions

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33	33.1	Groundwater	The proponent identifies potential impacts to water resources within the EIS documentation provided. However, the consequences, management and mitigation measures have not been comprehensively explored. Baseline data is generally inadequate as it does not characterise seasonal variability and is insufficient to fully calibrate and validate models. This limits confidence in the predicted impacts. The responses to questions 1 and 2 discuss these issues in further detail.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5, 10.6, 10.7 and 10.8 and Appendix A6.
	33.2	Groundwater	Available baseline data for both groundwater quality and head is limited in its coverage of depth, location and time. The proponent is currently expanding their groundwater monitoring network to improve the spatial deficiencies, although additional bores will be needed to target aquifers other than the alluvial aquifer. When these bores are installed, testing should be undertaken to determine the range of hydraulic parameters across the project area. Monthly monitoring of groundwater quality and head over a period of two years, as outlined in ANZECC/ARMCANZ (2000), will be needed to address the temporal data limitations given the highly seasonal climate at the project site. This monitoring should be completed before any mining commences in order to characterise pre-impact condition, and the following issues should be considered. a. Monitoring should include bores in all potential aquifers in the area, with nested bores used to determine the general groundwater behaviour and connectivity between aquifers. This information is needed to refine the hydrogeological conceptualisation and update the groundwater model. b. The data collected will provide important information on pre-impact conditions and seasonal variability. This information is needed to improve hydrogeological conceptualisation, validate the groundwater model, and derive trigger values for both groundwater quality and head for management plans.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5 and 10.8.

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			c. Baseline groundwater quality monitoring should include physicochemical parameters, nutrients, metals and hydrocarbons. d. Monitoring should also include environmental tracers (such as stable isotopes of water and bromide) to investigate groundwater-surface water connectivity and potential mixing with sea-water. This monitoring could occur seasonally. Additional studies are needed to characterise groundwater-surface water connectivity and its temporal variability as discussed in paragraphs 7, 37 and 49.		
	33.3	Groundwater	The proponent acknowledges the limited confidence in the groundwater model and its predicted impacts. The groundwater model requires further development including improved conceptualisation and parameterisation. The proponent should complete the work outlined below. a. Collect site-specific data on a range of hydraulic parameters such as hydraulic conductivity, storativity and recharge to assist with model characterisation and parameterisation. b. Undertake a thorough review of the underlying geological and hydrogeological conceptualisations. There is still uncertainty in these conceptual models which should be addressed through collection of additional site-specific geological and hydrogeological data. c. Update the groundwater model to fully incorporate a range of possible configurations and dimensions of the final voids so the range of impacts on groundwater can be assessed (discussed further in paragraph 29). d. Implement an additional modelling approach which allows investigation of potential seawater intrusion and seawater inundation (groundwater recharge by saline tidal waters). This will require the use of a variable density groundwater flow and solute simulator such as SEAWAT (USGS 2016). e. Undertake further testing and validation of the groundwater model when suitable data becomes available with predictions regularly checked against ongoing	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5 and 10.7 and Appendix A6.

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			groundwater head observations. A robust criterion should be developed to identify when re-calibration and potentially re-conceptualisation is needed. f. Obtain a peer-review of the groundwater model as recommended in the Australian Groundwater Modelling Guidelines (Barnett et al. 2012).		
	33.4	Groundwater	Sensitivity and uncertainty analysis should be used to examine different model parameterisations, model boundary conditions, the effects of applying recharge uniformly versus a more realistic episodic recharge regime, and the likelihood of various impact scenarios. This would assist in understanding and assessing the potential range of changes to the groundwater system and the possible associated ecological impacts. The outputs of these analyses would also be useful to inform management and mitigation options.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.7 and 10.8 and Appendix A6.
	33.5	Groundwater	The timing of maximum groundwater drawdown and the extent and timing of recovery are unclear from the EIS documentation. This information is needed to assess potential long-term impacts and the ability of the system to recover.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Section 10.7 and Appendix A6.
	33.6	Surface Water	The available baseline hydrological data is limited. While some surface water quality sampling has occurred sporadically in 2011 and 2017, further sampling is needed to establish the inter- and intra-annual variability in both water quality and flow regimes. a. Monthly water quality sampling should be undertaken over two years, as outlined in ANZECC/ARMCANZ (2000), and include physicochemical parameters, nutrients, metals and hydrocarbons. This should be done at sites on Tooloombah Creek, Deep Creek, Styx River and in Broad Sound, and occur before mining commences to ensure pre-impact conditions are characterised. b. Flow monitoring data is needed for Tooloombah Creek and Deep Creek. This data should be collected more frequently than monthly using suitable data loggers. c. The data collected in these baseline studies is needed to	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 9, Section 9.5.

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			characterise seasonal variability, to identify all potential impacts, to derive site-specific trigger values and management plans, and to determine appropriate discharge regimes for releases of mine-affected water.		
	33.7	Surface Water	Detailed information on stream morphology and flow regime is lacking. Further studies, including field studies, are required to determine the location of refugial pools; areas of groundwater-surface water connectivity and their exchange dynamics; the upstream extent of the tidal influence in both Tooloombah Creek and Deep Creek; creek substrate and associated aquatic habitats; and to identify exposed geological features.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5 and 10.6, Appendix A6 and Chapter 15, Section 15.6.
	33.8	Surface Water	Further modelling should be undertaken to fully assess the potential impacts of the project as detailed below. a. A hydrodynamic model incorporating all reaches of Tooloombah Creek and Deep Creek which can be tidally impacted and downstream into Broad Sound should be developed. The hydrodynamic model will require collection of data on the tidal regime of the Styx River and Broad Sound. This model should be coupled with water quality modelling to identify how the tidal regime affects flushing and dilution of project discharges. This modelling is needed to: i. ensure that there are no adverse impacts to the ecologically high-value environments downstream; ii. confirm the proponent's assumption that sufficient dilution will occur to meet the varying downstream water quality objectives; iii. determine that adequate flushing occurs throughout the surface water system with no areas of contaminants, suspended or dissolved, in the water column or deposited in sediments; and iv. identify if tidal movements and storm surge can cause contaminated water to be pushed up into parts of Tooloombah Creek and Deep Creek that may become isolated when surface water levels fall. b. Uncertainty and sensitivity analysis of the flood modelling	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 9, Sections 9.5 (for a detailed assessment of existing water quality values including contaminant levels compared to water quality guidelines); 9.6 (for a flooding and stormwater assessment including detailed modelling and sensitivity analysis); 9.7 (for the mine water balance assessment); 9.9 (for the Project approach to water releases); and 9.10 (examines the potential impacts of the Project overall). The potential for storm surges to impact the

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			to examine possible climate conditions beyond the historical climate records should be undertaken. This is needed to understand how climate change and variability could affect legacy management. c. Separate water balances for the CHPPs and the TLF are required to identify the volume and frequency of any discharges or extraction requirements. The updated modelling should include uncertainty and sensitivity analysis for water use and availability. The modelling should also include peak water demand at maximum CHPP processing capacity. d. Salt balances should be calculated for the CHPPs given the large recycled water component. These are needed to determine likely water quality of dam water and the maximum frequency of discharge needed.		Project site are examined in Chapter 15, Section 15.7.11.3 of Chapter 15 - Aquatic Ecology. The Mine footprint is upstream of the State-mapped storm tide extent. The mine water management system has been developed to withstand the flooding impacts of a 0.1% AEP rainfall event. It is therefore considered unlikely that a storm-tide event will have any measurable impact upon concurrent riverine flood levels throughout the Project area. The release limits proposed for the Project are presented in Section 9.5.6 and based on Water Quality Objectives (WQOs) for the Styx Basin and an adopted instream dilution rate for electrical conductivity.
	33.9	Water-dependent Ecosystems	The assessment of wetland, riparian and terrestrial GDEs is based on desktop studies and limited field studies. Further work is needed to identify and characterise GDEs in the area potentially impacted by the project. This is particularly	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5, 10.6 and 10.7, Appendix A6, Chapter 14, Sections

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			important given the proposal to use supplementary surface water flows to manage potential impacts to some GDEs. The further work required is discussed in the response to question 3.		14.7.10, 14.8.11 and Chapter 15, Sections 15.6, 15.7.10 and 15.8.
	33.10	Water-dependent Ecosystems	The assessment of potential impacts arising from groundwater drawdown to wetlands was not always sufficient. The proponent often assumed that these features were supported by surface water inputs only. The Wetland Protection Area (WPA) located near the western boundary of the project is an example. For this wetland, the assumption was based on two field observations and groundwater levels at an unspecified bore possibly several hundred metres from the wetland. This information is insufficient for concluding that the WPA is not a GDE. Further work is needed at all wetland sites to determine groundwater dependency. This work could include the installation and monitoring of bores located at the edge of the wetland area, development of reference sites, the use of satellite and aerial imagery to identify potential groundwater use (e.g. Eamus et al. 2015), hydrogeochemical sampling and development of criteria to determine groundwater connectivity and dependency.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5, 10.6 and 10.7, Appendix A6, and Chapter 15, Sections 15.6, 15.7.10 and 15.8.
	33.11	Water-dependent Ecosystems	Two aquatic ecology surveys were undertaken for this project, both under sub-optimal climatic conditions (i.e. water temperatures were cold or weather conditions were described as very hot and dry). Further site-specific reference surveys are needed to assess the baseline conditions and were suggested by the proponent's consultant (EIS, App. 9e, p. 49). These surveys should focus on areas both onsite and off-site that may be impacted by the project. The surveys should be conducted under favourable conditions such as when water temperatures are likely to result in faunal activity. The proponent notes the likely occurrence of aquatic EPBC-listed taxa including the Estuarine Crocodile (*Crocodylus porosus*).	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 15, Section 15.5.2

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	33.12	Water-dependent Ecosystems	Stygofauna sampling has been undertaken at several sites with some sites sampled twice; however, additional stygofauna sampling is needed. This sampling should target the alluvial aquifers of Tooloombah Creek and Deep Creek which may be affected by groundwater drawdown and where limited sampling has occurred thus far. Stygofauna sampling should be repeated annually during operational and closure phases of the project, as suggested by the proponent's consultant (EIS, App. 9f, p. 30).	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 15, Sections 15.5.2.2 and 15.13.
	33.13	Water-dependent Ecosystems	There is limited consideration in the EIS of the potential for fresh groundwater from the Styx River catchment to discharge into the marine environments of Broad Sound and Shoalwater Bay. Discharge of fresh groundwater into these saline environments could be ecologically important to coastal vegetation, such as mangroves. Further work is needed to identify if the Styx River catchment could be a source of fresh groundwater discharges and, if so, what impacts could result from any groundwater drawdown associated with the project.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5 and 10.7
	33.14	Water-dependent Ecosystems	No attempt to determine the location and movements of the seawater intrusion interface in aquifers is reported in the EIS. Groundwater drawdown from the project could allow the seawater intrusion interface to move inland which would affect groundwater quality and may impact groundwater accessibility (due to increased salinity) for GDEs. Further work is required to characterise this potential impact as outlined in the responses to questions 1 and 2. It is noted that determining the location and complexity of the seawater intrusion interface may be a difficult task as the location, shape and thickness of the interface may vary between aquifers.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5 and 10.7 and Chapter 15, Sections 15.7.10 and 15.8.10
	33.15	Geochemistry	The potential impacts from ASS have not been assessed in detail. Given that the project is located within 10 km of an estuary, potential ASS could be present. Groundwater	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 5, Section 5.10, Chapter 10, Sections 10.5, 10.7

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			drawdown from the project could cause ASS impacts to properties within and outside the project site. Further field studies are needed to identify the potential for ASS and, if present, assess possible impacts.		and 10.8, and Chapter 11, Section 11.9
	33.16	Geochemistry	Geochemical analyses, although limited in their application, have identified a small volume of PAF material. Further work is needed, as outlined below to assess the potential impacts of this material. a. Further geochemical analysis such as additional kinetic testing should be undertaken. Leach tests should be conducted on a more representative selection of samples that includes some with properties similar to the expected tailings and for longer periods to identify any potential legacy management issues. b. The assessment of potential impacts from reactive materials, such as PAF material, should consider the characteristics of more extreme samples and not just the median values. While the median values are representative of the bulk of the material sampled, the characteristics of the extreme samples indicate that these materials are likely to require more specialised management. c. Additional work should be completed to determine potential correlations between geology and reactive materials as this may assist in refining estimates of the volumes of material requiring additional management.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 8, Sections 8.9, 8.10 and 8.11 and Chapter 10, Section 10.5 and 10.7
	33.17	Geochemistry	The proponent is considering the use of chemical dust suppressants. No information is provided in the EIS documentation on the nature of the dust suppressants or the circumstances under which they will be used. This information should be provided along with a risk assessment for water resources.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 9, Section 9.11.1.3 and Chapter 12, Section 12.6.2 Only non-saline or brackish water will be used wherever practicable, particularly in the vicinity of topsoil stockpiles; however saline water is expected

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					to be used along the main haul roads due to the sheer volume of water and frequency to which dust suppression will likely occur.
	33.18	Geochemistry	Hydrogeochemical analysis to characterise potential groundwater-surface water connectivity and mixing with ocean water, as was outlined in paragraph 2d should be undertaken.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Section 10.5
	33.19	Final Landforms	Proposed final landforms and final voids will significantly modify drainage across the floodplain. Structures such as bunds, levees and drains are proposed to be left in place and elevations in some areas of the floodplain will be raised from 30m AHD to 90m AHD, although the stated rehabilitation goals include a landform that blends with the surrounding landscape (EIS, Ch. 11, p.16). Further information and assessment is needed as outlined below. a. Hydrodynamic modelling of drainage under the proposed final landform should be undertaken. This should include an assessment of drainage and isolation of the floodplain, and changes to groundwater recharge. b. Information on the depth to groundwater in the final landforms is needed to determine risks related to saline intrusion and perched water tables. c. Modelling should include all foreseeable scenarios where the proposed permanent dams become full and then overflow. This is of concern if water quality within a dam is compromised (such as by contact with PAF material).	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.1, Chapter 10, Section 10.5, Chapter 11, Sections 11.3 and 11.11 and Appendix A6 - Groundwater. Modelling of the final rehabilitation landforms will be undertaken in developing the Mine Closure Plan. This will include modelling potential risks of adverse impacts from any proposed retained water storages.
	33.20		The IESC agrees that the issues identified in this question include the key risks and impacts of the proposed project. The response to this question addresses the specific issues raised in the sub-questions. Further commentary on other key	See Section 1.3 for IESC SEIS adequacy review comments.	No action required. Responses to Question 2 are addressed below

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			potential risks and impacts is provided within the responses to questions 1 and 3.		
	33.21	Mining Impacts	The project will cause groundwater drawdown both at the project site and in the wider area based on the predictions of the current groundwater model. This will result in key potential impacts as outlined below. a. Groundwater drawdown is likely to affect riparian vegetation, surface water connectivity, aquatic ecosystems (especially permanent waterholes), stygofauna, wetlands which could be GDEs and surface water quality. Many of these potential impacts have not been fully assessed (see the response to question 1) and proposed management and mitigation measures are limited (see the response to question 3). b. The likely reduction in surface water flows from the Styx River due to groundwater drawdown could increase the length of waterways with a tidal influence and allow increased recharge to the alluvial aquifers by saline and brackish water associated with tidal flows. The area over which this could occur cannot be determined until connectivity between surface water and groundwater has been more fully characterised. c. Drawdown could impact an unspecified number of landholder bores. The proponent proposes to manage these impacts through deepening bores, moving pumping infrastructure, constructing new bores or providing alternative water supplies.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5, 10.6 and 10.7.
	33.22	Mining Impacts	The project plans indicate the modification of riparian habitat (including instream modifications) for a conveyor passing under Deep Creek Bridge (discussed in paragraphs 31-32) and three causeways across Deep Creek. This will cause fragmentation of riparian habitat and potentially induce impacts to surface water quality from dust generated from the roadway. Floods may mobilise coal dust deposited in riparian areas as discussed in the response to question 2b.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.2

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	33.23	Waste Rock Dumps	The proponent states that weathered material will be put at the base of the waste rock dumps along with tailings (EIS, Ch. 8, pp. 8-34 to 8-36). This material will be covered with unweathered material to reduce the erosion risk associated with the high sodicity of the weathered material. However, this produces a water quality risk. Rainfall is likely to infiltrate the broken rock (unweathered material) rapidly but then be retained above finer-grained weathered material which could also have water-repellent properties due to its high sodicity. This could cause a perched aquifer containing potentially contaminated water to develop. The perched aquifer could enhance leaching of contaminants from the weathered material and the tailings if these are saturated. The perched aquifer could also result in lateral groundwater flow and potentially contaminated discharge at the edges of the waste rock dumps. In the out-of-pit waste rock dumps, it is unclear if this could affect the stability of the waste rock dump.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5 and 10.7.
	33.24	Waste Rock Dumps	The proponent identifies the potential for waste rock dumps to affect groundwater flow by creating a barrier through hydraulic loading (EIS, Ch. 10, p. 10-45). It is suggested that this could affect groundwater discharges to creeks. There is also the potential for this to affect groundwater flows into the final voids particularly given the position of the waste rock dumps adjacent to the open cut pits. Further information is needed about this potential impact and an assessment should be undertaken to determine if this can affect the functioning of the final voids as groundwater sinks.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Section 10.7.
	33.25	Dams	No clear commitments are provided in the EIS documentation to line any of the proposed dams. As a result, it is likely that there will be some leakage from the dams, particularly those located in existing watercourses and wetlands where groundwater-surface water connectivity may already exist. Groundwater modelling shows that Dam 2 especially is likely to have a large amount of groundwater mounding beneath it, implying it will leak (EIS, App. 6, Figure 19). This dam will contain mine-affected water, thus leakage could affect	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 9, Sections 9.7 and 9.8, and Chapter 10, Section 10.7.

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			groundwater quality. Some leakage will also enter the adjacent open cut pits and thus will have to be managed within the mine water management system, meaning it will be pumped back to Dam 2, possibly with a lower water quality than when it leaked out of Dam 2.		
	33.26	Waste Product Disposal	It is possible that waste streams from the water treatment facility and the wastewater treatment plant (if constructed as part of the proposed accommodation camp which is not included in the current project proposal) will be disposed of in-pit. Although the proponent states that these waste streams will be adequately treated, no details of the proposed treatment are provided. If these waste streams were disposed of in this manner, they could leach and enter the surface water or groundwater – a scenario not considered by the proponent. These waste streams should be disposed of through a suitably licenced waste contractor.	See Section 1.3 for IESC SEIS adequacy review comments.	Accommodation camp addressed in Chapter 3, Sections 3.4.6 and 3.4.7 and Chapter 7, Section 7.15
	33.27	TLF	Coal will be stockpiled at the TLF and will be transferred onto trains via a front-end loader (EIS, Ch. 3, p. 3-46). a. The facility is located next to a drainage line and riparian habitat, so it is likely that coal dust will be deposited in this area. b. The dam supplying the TLF will contain runoff from the stockpiles and surrounding areas. Insufficient information on water reuse, treatment or requirement to discharge from this dam was provided.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.4 and Chapter 12, Section 12.9.2 The TLF dam (Dam 4) is discussed in Chapter 9, Sections 9.7 and 9.8 and 9.9.
	33.28	Residual Final Voids	The EIS provided considers the situation of two final voids but notes that this could be reduced to one. No discussion is provided of how this alternative scenario would affect the groundwater and surface water modelling results or the impact assessment. The number, location, depth, surface area and shape of the proposed final voids need to be confirmed so that they can be accurately depicted in modelling to enable a full impact assessment.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.1.4
	33.29	Residual Final Voids	Currently it is unclear whether the final void or voids will be permanent or temporary groundwater sinks.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.1.4.

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			In order to determine this and hence the potential impacts arising from the final voids, they must be incorporated into the groundwater model fully and the following information provided. a. The number, location, depth, surface area and shape (level-volume) of the proposed final void or voids. b. The expected range of water levels in the final void or voids over time. This should be determined by considering not only inflows from rainfall and outflows to evaporation but inflows and potential outflows to groundwater. c. The modelled salinity of the final void or voids. To achieve this, any potential saline aquifer inflows need to be identified. Saline aquifer inflows could cause the water quality within the final void or voids to deteriorate. d. The timing and extent of groundwater recovery around the final void or voids and the potential for interaction depending on relative hydraulic gradients and permeability of void walls.		
	33.30	Residual Final Voids	If the final void or voids overtop during rainfall events, they may contribute to changes in flood behaviour, through reservoir outflow, potentially modifying flood timing and extent. This should be incorporated into the flood modelling.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.1.4.
	33.31	Water Resources	Potential impacts to Deep Creek from flooding of the conveyor and the conveyor corridor (which is likely to contain accumulated coal dust) are likely to include an increase in the suspended sediment load and potentially higher dissolved metal concentrations. The distance downstream over which these impacts may be experienced was not assessed by the proponent, and will depend on the volume of the flood (e.g. its dilution capacity) and the amount of accumulated coal dust. Overtime, and with successive floods there is a risk that dissolved and sediment-bound contaminants may travel down the Styx River to the GBRWHA.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.2
	33.32	Water Resources	Alternative design options for the coal conveyor have not been adequately considered. These options should include a	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.2

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			flyover of the Bruce Highway and locating the conveyor outside of the riparian corridor. The coal conveyor will flood as it is located adjacent to Deep Creek. The proposed management options will not stop flooding of the conveyor corridor and may not be practical (i.e. conveyor removal prior to large rain events) given the project's location in the catchment headwaters which may mean that there is minimal warning of flooding. Additionally, riparian vegetation and the aquatic environment are likely to be affected by coal dust during normal operation of the conveyor (e.g. dust deposition) and during minor rain events (e.g. coal dust entrained in overland flow).		
	33.33	Water Resources	The proponent does not assess the potential for releases to impact the GBRWHA. Impacts from releases, both controlled and uncontrolled, could occur in the water column, within the sediments, or both. a. Within the water column, contaminants could accumulate if insufficient dilution occurs due to releases being too large a proportion of total flows. Additionally, accumulation could occur in parts of the waterways where flushing does not occur frequently or where disconnection from the main waterway happens. This would result in diminished water quality which could adversely affect flora and fauna that utilise the water. b. Accumulation of metals within the sediment is also a possibility, particularly in the estuarine and marine parts of the system. This is because the pH of ocean water is generally higher than that of fresh water and at higher pH values many metals have decreased solubilities and begin to precipitate. This would affect benthic organisms, and potentially enter the food chain to fish and birds in the GBRWHA.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 16, Section 16.11
	33.34	Water Resources	The assessment of potential impacts from releases is further limited by the lack of information provided about the mine water management system. The proponent should: a. specify the water source for each water storage. b. clearly identify the likely water quality of each water	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 9, Sections 9.7, 9.8 and 9.9.

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			storage and the worst possible water quality that could occur under extreme climate conditions. c. identify all receiving environments for all water storages. This includes where uncontrolled discharges will flow to and other dams if water can be transferred. d. identify the flood and extreme rainfall events that each water storage is designed to contain before an uncontrolled release occurs. e. identify the amount of freeboard that will be maintained.		
	33.35	Water Resources	Water which has been in contact with coal and overburden stockpiles and the mine industrial areas (mine-affected water) may be collected in dams where the only treatment is settlement for 48 hours before release to the environment. Best-practice mine water management requires the complete separation of runoff diverted from disturbed areas (generally treated with short-term settlement) and mine-affected water. Mine-affected water requires additional treatment such as longer residence times for increased sediment removal and potentially treatment to remove dissolved contaminants. Improved clarity is needed around the functions of the proposed dams and mine-affected water should be separated from other water streams to ensure this water is appropriately managed to reduce potential impacts to surface water quality and aquatic ecosystem health.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 9, Sections 9.7, 9.8 and 9.9.
	33.36	Water Resources	Although the proponent states that groundwater drawdown from the project could result in seawater intrusion, no further discussion is provided. The following investigations should be undertaken and information provided to allow a full analysis of potential impacts. a. Field studies are required to identify where the seawater intrusion interface is currently located. These investigations need to examine all significant aquifers near the coast, not only the alluvial aquifer. b. Potential seawater intrusion and inundation (e.g. during king tides or cyclones) should be modelled using a new	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5 and 10.7.

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			variable density groundwater flow and solute transport model developed to compliment the updated groundwater model (as discussed in paragraph 3d). c. Information on the location of the seawater intrusion interface needs to be incorporated into the variable density flow and solute transport model. Further model calibration and validation are likely to be needed at this time. d. The variable density groundwater flow and solute transport model should be run to determine the maximum possible inland extent of seawater intrusion. The potential for the seawater intrusion interface to interact with the final void or voids must be assessed. If the seawater intrusion interface were to reach a final void this would create additional water quality management issues. e. Use the new modelling results to support an analysis and discussion of the potential ecological impacts. This needs to consider the direct impacts of seawater intrusion or inundation on ecosystems plus indirect effects that could arise such as changes to water quality if riparian vegetation is lost. f. An analysis and discussion should be provided detailing how any predicted changes in the location of the seawater intrusion interface could affect the extent of the tidal influence and hence surface water flows and quality. Potential impacts on estuarine and marine ecosystems, including those of the GBRWHA, should be specified and mitigation strategies should be proposed.		
	33.37	Water Resources	It is possible that a larger stream length could be disconnected from groundwater.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5, 10.6 and 10.7 and Appendix A6.
	33.38	Water Resources	The location of the pit dewatering dam should be reconsidered. The proposed location will destroy a wetland identified as a matter of state environmental significance by the Queensland Government. The proposal to destroy this wetland is incompatible with the objectives of the Draft Reef 2050 Water Quality Improvement Plan 2017-2022 (The State	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4, Table 3-4.

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			of Queensland 2017). This plan, if approved and finalised, includes a wetland target of "no loss of natural wetlands". The currently operating plan (Commonwealth of Australia 2015) has a target of "no net loss". Additionally, based on the groundwater modelling results, this dam may also provide a source of contaminated (mine-affected water) groundwater recharge.		
	33.39	Water Resources	The raw water dam is proposed to be located within an existing watercourse to the north of the site. The watercourse is an unnamed, ephemeral, 2nd order tributary of Deep Creek, in an area where vegetation is identified as modified pasture or remnant vegetation of least concern (EIS, Ch. 14, Fig. 14-1). If possible, the dam should be sized to reduce the need for surface water extraction from Tooloombah Creek and appropriately control erosion and flood risk downstream from overflowing.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.5.1.
	33.40	GDEs	The proponent provides limited information regarding proposed mitigation and management actions in the EIS documentation. Management plans cannot be finalised because the location and design of all infrastructure have not been finalised. A full impact assessment has not been completed and baseline environmental data and current modelling is insufficient, meaning suitable management and mitigation measures, including impact management trigger values cannot be derived.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5, 10.7 and 10.9 and Appendix A6 – Groundwater, Chapter 14, Sections 14.7, 14.8.11 and 14.11 and Chapter 15, Sections 15.6, 15.7.10 and 15.8.10.
	33.41	Groundwater	The management of potential groundwater impacts is not discussed in detail in the EIS documentation. There appears to be a reliance on the final void or voids operating as groundwater sinks. There is currently considerable uncertainty around this as discussed in the responses for questions 1 and 2. The proponent needs to undertake the additional work and provide further information about the final void or voids as previously discussed to confirm that the final voids will act as	See Section 1.3 for IESC SEIS adequacy review comments.	There will be no retained voids – see Chapter 3, Section 3.4.14. Chapter 10, Sections 10.7 and 10.8 discuss the potential effects, risk assessment and

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			long-term groundwater sinks and hence restrict potential groundwater quality impacts to the mine site.		proposed management of effects.
	33.42	Groundwater	The proposed groundwater monitoring network as shown in Figure 10-27 (EIS, Ch. 10, p. 10-74) provides a reasonable spatial coverage close to the project site. However: a. it is unclear that groundwater level and quality will be monitored at these bores as the proponent's proposed environmental authority conditions (see EIS, Ch. 23) use different bore identifiers for proposed groundwater level monitoring bores. b. at least some of the proposed monitoring bores would need to be nested installations to ensure that all aquifers are being monitored. c. the groundwater modelling results suggest that most of the monitoring bores are likely to be impacted by drawdown by the end of the mine life (approximately 20 years). Additional monitoring bores are required near and beyond the spatial limit of predicted impact to ensure the full extent of impacts is captured and that reference bores outside the area of impact persist to provide a baseline for comparison after mining. d. the bores near the Styx River downstream of the site should be monitored for electrical conductivity (EC) regularly (up to monthly) to identify potential seawater intrusion or inundation. e. the proponent indicates that some bores may be equipped with water-level loggers to provide higher-frequency observations. The bores identified as MB-6 to MB-14 in Figure 10-27 (EIS, Ch. 10, p. 10-74) should be equipped in this manner. These loggers should be downloaded frequently (at least every three months) or telemetered to provide enhanced early warning capabilities. f. groundwater quality monitoring may need to occur more frequently than currently proposed. The frequency of monitoring should be informed by the results of baseline monitoring. The range of analytes monitored should be	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5, 10.7 and 10.8, and Chapter 23, Section 23.1.7.

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			informed by the results of the further geochemical analysis suggested in this advice. g. given that groundwater mounding has been predicted beneath the dams, a monitoring bore to the northeast of the TLF should be considered.		
I	33.43		When the groundwater management plan is developed, groundwater level and quality trigger values will need to be derived. To do this, the proponent will need to collect baseline data as outlined in the response to question 1. Derivation of suitable trigger values should be based on the process outlined in ANZECC/ARMCANZ (2000). The management responses associated with these trigger values should be clearly articulated and allow a rapid response to implement the needed changes to prevent or limit potential impacts. Additionally, the plan should include a commitment to regularly update the groundwater model (e.g. on a five-yearly basis).	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5, 10.8 and 10.9. Once sufficient data is collected the Proponent will seek to adjust the EA trigger levels - see Chapter 23, Section 23.1.7.
	33.44	Surface Water	The management of potential surface water quality changes from mine discharges is reliant on dilution. However, appropriate hydrodynamic and water quality modelling has not been undertaken to confirm that the discharge regime proposed in the proponent's draft environmental authority will achieve sufficient dilution to meet the applicable catchment water quality objectives (see EHP 2014). As the proposed discharge conditions are linked to flow in the receiving creeks, gauging stations will need to be installed on both Tooloombah Creek and Deep Creek. Discharge should not be permitted at low creek flows (as is currently proposed) as this may not allow sufficient dilution.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 9, Section 9.9 and Chapter 23, Section 23.1.8.
	33.45	Surface Water	The proponent's draft environmental authority (EIS, Ch. 23) is overly complex and quite unclear. This document needs considerable revision and should: a. clearly identify water quality objectives and water quality management trigger values for both discharge and non-	See Section 1.3 for IESC SEIS adequacy review comments.	Outside of EIS Scope. DES matter to consider.

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			discharge conditions (i.e. for routine monitoring). Water quality trigger values should be based on the results of the baseline monitoring that is discussed in the response to question 1, or relevant local water quality objectives and the ANZECC/ARMCANZ (2000) guideline values. If other trigger values are suggested, the reasons for using those values should be clearly explained. b. clearly identify when and where monitoring will occur for the discharge and routine scenarios. i. Monitoring of physicochemical parameters such as pH, electrical conductivity, dissolved oxygen and turbidity or total suspended solids can be done continuously with multi-parameter probes. During discharges, these parameters should be monitored at least daily. ii. Routine monitoring during non-discharge periods should occur at least monthly in order to allow detection of potential leakages which can impact water quality. This monitoring should occur at the upstream and downstream monitoring sites and within all water storages. c. include commitments to monitor sediments due to the potential for metal accumulation to occur as discussed in the response to question 2.		
	33.46	Surface Water	The proposed upstream and downstream monitoring sites on both Tooloombah Creek and Deep Creek need to be moved. The upstream sites must be moved further upstream to ensure that there is no potential for impacts from the project. The downstream sites should be moved further downstream to ensure that all runoff from the project site has entered the creeks, but should be located before other tributaries enter the creeks.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 9, Section 9.9 and Chapter 23, Section 23.1.8.
	33.47	Surface Water	When the surface water management plan is developed, water quality trigger values will need to be derived. The process outlined in paragraph 43 for groundwater trigger values should be followed.	See Section 1.3 for IESC SEIS adequacy review comments.	Noted.

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	33.48	Surface Water	The proponent does not provide a clear commitment to monitor seepage from all dams. This commitment is needed to ensure that this potential impact is appropriately monitored and managed.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 9, Section 9.11.13
	33.49	GDEs	Insufficient information is provided in the EIS documentation to determine whether supplementary flows are likely to be a successful management and mitigation option to reduce the impacts of groundwater drawdown on aquatic and riparian ecosystems. The proponent recognises that further work is required. This work should include: a. mapping of the permanent pools and riparian vegetation that could require the use of supplementary flows. The results of this mapping should also be used to inform the selection of suitable monitoring points (discussed further in paragraph 49f). b. studies to determine the current dynamics of the groundwater-surface water connectivity at potentially impacted sites; the proportions of groundwater and surface water utilised and the seasonality of use by the ecosystems; any source preferences; and the current quality of the water used by different ecosystems. These studies should include field-based work and could incorporate analysis of satellite and aerial imagery (e.g. Eamus et al. 2015). c. an analysis of whether the project will have water available at the times when it will be needed for supplementary flows, and whether this water will be of a suitable quality or will require mixing with fresher water that may need to be imported to the project site. If water will need to be brought onto the site, then an assessment is required of availability and potential sources. d. an assessment of how the supplementary flows which are expected to be primarily sourced from groundwater could affect the quality of the alluvial aquifer. While the proponent does commit to treating the water to meet the relevant water quality objectives, the resulting quality could be lower than	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.5.6, 10.6.1, 10.7.4.8 and 10.8. and Appendix A6 (particularly Section 4). Also addressed in Chapter 9, Sections 9.9, and 9.11.4. Also refer summaries in Chapter 14 , Sections 14.7.10 and 14.8.11 and Chapter 15, Sections 15.710 and 15.8.10.

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			natural recharge water. e. studies to determine the volumes and discharge rates of the supplementary flows required to achieve sufficient recharge to the alluvial aquifer to maintain or improve the condition of affected ecosystems. These studies will need to consider that once drawdown commences, recharge dynamics will change so the flows required could increase considerably. f. investigations to identify appropriate monitoring variables in order to trigger supplementary flows and to measure their effectiveness. Ecological measures of vegetation health should be monitored; however, response in these can be lagged. Therefore, variables that respond more rapidly to change such as the water table in the alluvial aquifer and soil moisture may also be useful. Consideration should also be given to the use of reference sites.		
	33.50	GDEs	Once the above suggested work has been completed, a more detailed assessment of the likelihood of success of the proposed supplementary flows scheme can be made. This assessment needs to occur prior to the project commencing as other mitigation and management options may need to be considered. Prior ecological work at the project site has highlighted the good condition of the aquatic and riparian ecosystems, the likely occurrence of listed aquatic taxa (e.g. the Estuarine Crocodile) and that there may not be suitable offsets available in the area (EIS, App. 9e, pp. 49-51). Additionally, the riparian vegetation is important for maintaining surface water quality and for habitat connectivity. Therefore, loss of these ecosystems should be avoided.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.7, 10.8 and 10.9 and Chapters 14 – Terrestrial Ecology, 15 – Aquatic Ecology and 16 - MNES.
	33.51	GDEs	The proponent notes that groundwater drawdown is likely to impact some stygofauna. However, no mitigation or management options are discussed. Further consideration of mitigation and management options is needed as is continued monitoring of stygofauna to confirm the success of mitigation.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Sections 10.7 and 10.8 and Chapter 15, Sections 15.8.10.2 and 15.13.
	33.52	GDEs	Adaptive management is proposed, although no details of what this could include are provided. An assessment of the	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 10, Section 10.8 and

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			effectiveness of proposed adaptive management measures is therefore not possible at this time.		Chapter 15, Sections 15.8.10.2 and 15.13.
	33.53	Geochemistry	No details are provided in the EIS about how ASS would be managed. There is the potential for these to occur at the project site, and for groundwater drawdown to contribute to the generation of impacts. The proponent needs to further investigate the likely occurrence through soil profile testing and mapping of ASS, and provide details of proposed management options.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 5, Section 5.10
	33.54	Geochemistry	Limited information has been provided in the EIS documentation as to how PAF material and sodic material will be managed. Further sampling and analysis are needed as discussed in the response to question 1. Development of an appropriate management plan for these materials needs to consider: a. that sodic soils are highly dispersive and prone to erosion when disturbed. Increased sediment loads will impact high-value ecosystems downstream. b. the total possible volume of these materials and the uncertainty in these calculations. c. whether encapsulation of some material may be needed. If this is the case, then the location of the encapsulated material within the waste dumps will need to be carefully considered as will the amount and source of material with which to encapsulate. d. contingencies in case more of these materials are identified than currently predicted.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 5, Section 5.11, Chapter 8, Section 8.9, 8.10 and Chapter 11, Sections 11.9, 11.10 and 11.11.
	33.55	Geochemistry	There is a lack of clarity in the EIS documentation around the total volume of waste rock predicted to be produced. Successful management of this material necessitates accurate estimates of produced volumes.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.5.5.5

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	33.56	Geochemistry	While the proponent suggests that some monitoring of leachate, tailings and waste rock dumps will be undertaken, very little detail is provided. Without details as to the location and frequency of monitoring and variables to be monitored, the adequacy of proposed monitoring cannot be assessed.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 8, Section 8.10.4, Chapter 9, Sections 9.5 and 9.9, Chapter 10, Section 10.8 and Chapter 23, Sections 23.7 and 23.8.
	33.57	Final Landforms	The mine areas are proposed to be returned to grazing with a similar extent as prior to mining. Baseline ecosystem condition assessments are proposed as a way to compare rehabilitation to pre-disturbance condition. Mine closure and rehabilitation management plans are not available. Baseline assessments, mine closure plans and rehabilitation plans are required to establish detailed triggers for management measures and minimise impacts.	See Section 1.3 for IESC SEIS adequacy review comments.	The site is no longer being returned to grazing. Central Queensland Coal is destocking the property other than a section outside of the mining lease. The property will be managed for conservation purposes post mining. This is discussed variously throughout the SEIS.
	33.58	Final Landforms	The information provided regarding the monitoring and management of water held in the final voids is inadequate to determine potential impacts to water resources from the site. This is primarily due to the uncertainty in the predicted volume and quality of water, and the characteristics of the final void or voids as discussed in paragraph 29.	See Section 1.3 for IESC SEIS adequacy review comments.	Addressed in Chapter 3, Section 3.4.1.4
34			No Comment		No update to EIS

1.2 Additional Clarifications Arising From SEIS Adequacy Review

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S7	S7.1	General Comment	The exemption of the Fisheries Act from the ML is recognised. It is recommended that within the ML area that the State Code 18: Constructing or raising waterway barrier works in fish habitat areas be adhered to. Where it is not possible to adhere to the code, best-practise should be applied. Outside the ML further approvals will be required for Waterways Barrier Works. Outside the ML further approvals will be required for Waterways Barrier Works. This includes for Deep Creek and Tooloombah Creeks. It is important for fish stocks and their habitat that environmental flows are maintained.	Addressed in Chapter 9, Section 9.6.3.4 and Table 9-85 and Chapter 22 – Key Commitments.
S7	S7.2	Chapter 1 – Introduction, Section 1.11.3.9 and Chapter 3 – Project Description, Section 3.5.4.	Proponent states: Both MLs are located on freehold land with no forest products or quarry material reserves to the State. As such, it is not anticipated that any State owned quarry material administered under the Forestry Act 1959 will possibly be sterilised or restricted from utilisation (including offsets and loss of access for existing operations authorised under the Forestry Act 1959). This statement is inconsistent with the current tenure situation which includes, in addition to the freehold land, parcels of State land (e.g. ML80187 includes Lot 1 on RL3001 and ML700022 includes segment/parcel 42132/64). OAF Forestry previously advised the Proponent of this inconsistency. It is noted in Section 3.3.3.1 Real Property Description, that the Proponent intends to apply for a realignment of the Mt Bison Road. There is no mention of intentions regarding the other parcels of State land. The Proponent is advised to mention the current existence of other State land in the statement on page 3-42, and in other sections throughout the documentation where it is stated that the Project is located only on freehold land (e.g. section 1.11.3.9). The Proponent is also advised to explain intentions to realign or convert these tenures, or other reasons why these tenures are not included in the Project documentation. The Proponent is advised to note that while these tenures remain, any sterilisation or removal and use of forest products and quarry material which is not authorised under other legislation (e.g. the Mineral Resources Act 1989) will require an authority under the Forestry Act 1959. The Proponent is also advised that the requirements of the Forestry Act will continue to apply to land converted to freehold where there is an issued deed of grant for the State's continued ownership or reservation of quarry material.	Addressed in Chapter 1, Section 1.11.3.9 and Chapter 3, Sections 3.3.3.1 and 3.5.4.1
S7	S7.3	Chapter 9 – Surface Water, Section 9.2	No reference to the Environmental Offsets Act 2014 for waterways providing fish passage. Include the Environmental Offsets Act 2014 as legislation.	Addressed in Chapter 9, Section 9.2.7

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S7	S7.4	Chapter 9 - Surface Water, Section 9.2.6	Statement is incorrect "An approval is not required for waterway barrier works within waterways as mining activities are exempt from the Fisheries Act". Exemption is only for areas within a mining lease not for mining activities. Remove incorrect statement. Add section "Approvals for waterway barrier works within waterways are not required for works within a mining lease area. The Mineral Resources Act 1989 states that the Planning Act 2016 does not apply to development authorised under the Mineral Resources Act 1989. The Fisheries Act 1994 is administered for development in a waterway through the Planning Act 2016.	Addressed in Chapter 9, Section 9.2.6
S7	S7.5	Chapter 9 – Surface Water, Section 9.2.6, Figure 9-1.	This section suggests that the project has exemption from approval for waterway barrier works. This is true where the project works are within the area of the ML. Works for this proposal include areas outside the lease area. These works will require water way barrier works approval. For example Refer 9.4.4.2 "Both Deep Creek and Tooloombah Creek are located outside the ML, but the Project area occurs within their catchments (Figure 9-1)". Reword the section. "An approval is not required for waterway barrier works within the Mining Lease area. Mining activities within lease boundaries are exempt from approvals under the Planning Act 2016. Approval under the Planning Act 2016 is required for waterway barrier works that are off-lease".	Addressed in Chapter 9, Section 9.2.6
S7	S7.6	Chapter 9 – Surface Water, Section 9.3.2	No reference for infrastructure to meet best practise standards to avoid the creation of waterway barriers and provide for fish passage. Include: Construct infrastructure and waterway crossings using best practise design features to facilitate the passage of all fish species, on all flows as per consultation with DAF	Addressed in Chapter 9, Sections 9.2.10, 9.6.3.4, Table 9-85 and 9.15 and Chapter 15, Section 15.8.2.
S7	S7.7	Chapter 9 – Surface Water, Section 9.4.1	Fails to reference the - Queensland's waterways for waterway barrier works spatial layer. Note that this layer is referenced and used in the SEIS documents eg. Figure 15-11. Include: Reference to the waterway barrier works mapping layer.	Addressed in Chapter 9, Section 9.6.3 and Figure 9-89.
S7	S7.8	Chapter 9 - Surface Water, Sections 9.45, 9.4.5.4, 9.6.3, 9.10.2 and 9.10.4	Diversions of eleven first order and two second order drainage lines is proposed. Although these diversions are within the ML they will re-join the two primary waterways (downstream of existing connection). These diversions, are waterway barrier works and require assessment where components are outside of the ML area. Condition: Waterway diversion works should be undertaken in a fish appropriate manner (eg. dry season). Condition: The completed works to provide habitat that simulates natural fish habitat. Note: This approach will enhance post-mining closure rehabilitation.	Addressed in Chapter 9, Section 9.6.3.4 and Table 9-85.

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S7	S7.9	Chapter 9 – Surface Water, Section 9.6.2.5	Water velocities at Deep Creek will increase due to flow contraction through the culverts. Increased velocities through and due to, manmade structures may be a significant barrier to small fish. This impediment to upstream movement can impact on the species lifecycles. A bridge is the preferred option to reduce impacts on fish passage. Alternatively, the construction of culverts with best practice design features will minimise the impact on fish passage. The SEIS states that the roughening of culverts may breach material standards. In Queensland all culverts that are proposed through a development approval are required to comply with this roughening. Note a broom finish may be sufficient to meet the required roughening. Deep Creek is mapped as a Major Impact waterway (Queensland's waterways for waterway barrier works mapping layer). Culverts on a Major Impact waterway will not be supported unless they meet the design requirements specified in the state development assessment provisions State Code 18. Condition: Culverts on Major Impact waterways will meet all of the relevant conditions of State Code 18. Condition: All culverts crossings, not required to comply with State Code 18, adhere to best-practise design for fish passage.	Addressed in Chapter 9, Sections 9.2.10, 9.6.3.4, Table 9-85 and 9.15 and Chapter 15, Section 15.8.2.
S7	S7.10	Chapter 9- Surface Water, Section 9.6.3.4	The proposal states that the culvert floor will not be roughened to simulate natural bed conditions. Condition: The roughening of the culvert base is not required unless the culvert base is buried. The base to be a minimum of 300 mm below bed level. The structure to allow natural material to deposit on the culvert base.	Refer to additional condition added to Chapter 23 – Draft EA Conditions F29 to F31.
S7	S7.11	Chapter 9 – Surface Water, Section 9.6.3.4	Modelled stream flow figures for Deep Creek suggest a flood water velocity significantly higher than 0.3 m/s. It is important to provide slower water flow to enable fish passage. It is important to note • The flow model is for flood periods and is an average across the stream profile. The goal is to enable fish passage most of the possible time not necessarily all the time. • The natural stream banks will create a boundary layer effect. • Slower flow can readily be created by using rough sides and base to create a boundary layer. • Roughening elements may include culvert side baffles. Condition: Culverts on Major Impact waterways will meet all of the relevant conditions of State Code 18. Condition: Culvert side roughening elements to provide a contiguous lower velocity zone (no greater than 0.3 metres/ second). This lower velocity zone to extend for at least 100 millimetres width from the wall. Lower velocity zone required through the length of the culvert and wingwalls.	Refer to additional condition added to Chapter 23 – Draft EA Conditions F29 to F31.

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S7	S7.12	Chapter 9 – Surface Water, Section 9.10	The construction activities have a range of impacts including the proposed internal roads and access tracks. In the previous EIS these impacts were attributed to the access road loops. These impacts are now only attributed to the Haul Road. It is considered that these impacts will still occur on the access tracks. Recommendation: To mitigate the direct impacts on waterways from the alteration of flow all crossings to be designed to meet the Accepted Development Requirements for operational work that is constructing or raising waterway barrier works. This should be undertaken for waterways mapped in the waterway barrier mapping layers as green, amber or red. Waterways mapped as purple should have crossings that comply with the SDAP Code 18. Note: Certain structures, such as bridges, are not considered waterway barriers when designed according to the Fisheries fact sheets: What is a waterway barrier work? and What is not a waterway barrier work?	Addressed in Chapter 9, Sections 9.2, 9.6.3.4, Table 9-85 and Chapter 15, Section 15.8.2.
S7	S7.13	Chapter 9- Surface Water, Section 9.10.2	Haul road crossings will impact Deep Creek, Barrack Creek and an unnamed tributary of Deep Creek. These impacts are predicted to alter hydrological flows. Condition: Crossing designs to comply with State Code 18. Construction or raising waterway barrier works in fish habitats. Condition: Construction of culverts and watercourse/drainage feature crossings to be undertaken during no-flow/low-flow periods. Condition: Project design to ensure surface water flow is maintained as close to natural conditions as practical. Advice: Crossings within the ML are recommended to adhere to State Code 18: Constructing or raising waterway barrier works in fish habitats. Where this is not possible best-practise should be applied.	Addressed in Chapter 9, Sections 9.2, 9.6.3.4, Table 9-85 and Chapter 15, Section 15.8.2.
S7	S7.14	Chapter 9- Surface Water, Section 9.11	Potential impacts from a variety of sources are discussed in 9.10. No commitment to create Action Plans to rapidly, appropriately and accountably respond to any of the Potential Impacts on Environmental Values is presented. Condition: Commit to the creation and maintenance of an Action Plan for the Environmental Impacts. This should include but not be limited to; excess sedimentation, direct disturbance to waterways, accidental release of pollutants, hydrology and water flows.	Addressed in Chapter 9, Section 9.11.4.3 Trigger Action Response Plans. Sedimentation is managed in the Erosion and Sediment Control Plan and the Receiving Environment Monitoring Program. Direct disturbance to waterways is addressed in the Receiving Environment Monitoring Program. The accidental release of pollutants will be managed in the Standard Operating Procedures document.

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				Impacts to hydrology and water flows will be addressed in the Water Management Plan. These management plans include monitoring and trigger values and response actions should triggers be exceeded.
S7	S7.15	Chapter 10 – Groundwater, Section 10.6.1.1	GDE reliant on surface expression of groundwater having significant risk with a moderate to high threat. These Type 2 GDEs are important in ephemeral waterways and wetland areas. They create refuge pools for many species of fish. The document states that the ground water drawdown that a change in tidal regime downstream is likely. Condition: To maintain a natural pattern of environmental flows, permanent or ephemeral pools, and their associated flora and fauna, produce and implement a supplementing surface water plan.	The flora associated with permanent and ephemeral pools will be managed via the Project Land Use Management Plan and the REMP. A mitigation measure for sustaining permanent and ephemeral pools is to supplement environmental flows (sourced from mine dewatering, for example). The implementation of the REMP will include the management of permanent and ephemeral pools. Refer to amended condition F25 in Chapter 23 – Draft EA Conditions.
S7	S7.16	Chapter 10 – Groundwater, Section 10.7.4, Figure 10-49, Table 10-65 and Table 10-66	The impact of ground water drawdown on Deep and Tooloombah creeks (Purple- major impact waterway) will significantly change the hydrology of these systems. Without suitable intervention this will significantly impact fish habitat. Condition: Produce and implement a supplementing surface water plan. The goals being to maintain a natural pattern of environmental flows, permanent or ephemeral pools and associated flora and fauna.	The flora associated with permanent and ephemeral pools will be managed via the Project Land Use Management Plan and the REMP. A mitigation measure for sustaining permanent and ephemeral pools is to supplement environmental flows (sourced from mine dewatering, for example). The implementation of the REMP will include the management of permanent and ephemeral pools. Refer to amended condition F25 in Chapter 23 – Draft EA Conditions.

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S7	S7.17	Chapter 10 – Groundwater, Section 10.7.4, Figures 10-49 to 10-62 and Table 10-65	Text, Figures and Tables throughout the chapter suggest that the groundwater-surface water interactions will be altered for 100 years. Condition: Document how the ecological function of Deep Creek and Tooloombah Creek will be restored under changed groundwater-surface water interactions.	Refer to Chapter 10, Table 10-82 for an assessment of threats associated with the changed groundwater-surface water interactions and Table 10-84 for an outline of mitigation measures available to address these threats. These measures have also been added to the commitments table in Table 10-94.
S7	S7.18	Chapter 10 – Groundwater, Section 10.11	Prepare and implement a water management plan. Include: An alert action plan within the water management plan to be able to rapidly respond to and mitigate significant, impacts.	Environmental impacts and associated management and mitigation measures are addressed in a range of management plans that hinge on monitoring and the Trigger Action Response Plan process.
S7	S7.19	Chapter 11-Rehabilitation, Section 11.3.1.1	No reference to re-establishing fish passage. Add dot point: re-establish fish passage opportunities.	Addressed in Chapter 11, Section 11.3.1.1
S7	S7.20	Chapter 15 - Aquatic Ecology, Section 15.7.2 and Figure 15-11	Deep Creek adjacent to the Project site and impacted by the haul road is mapped as Major (purple). Works on this stream are waterway barrier works. Condition: Ensure that Deep Creek and Barrack Creek crossings and other works comply with State Code 18: Constructing or raising waterway barrier works in fish habitats.	Chapter 9, Sections 9.2.10, 9.6.3.4, Table 9-85 and 9.15 and Chapter 15, Section 15.8.2.
S7	S7.21	Chapter 15 - Aquatic Ecology, Section 15.7.3	Although Deep Creek is noted as seasonally going into pools. These waterbodies still retain value to fisheries resources and their continued connectivity is important. Condition: Ensure that Deep Creek and Barrack Creek crossings and other works comply with State Code 18: Constructing or raising waterway barrier works in fish habitats.	Chapter 9, Sections 9.2.10, 9.6.3.4, Table 9-85 and 9.15 and Chapter 15, Section 15.8.2.

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S7	S7.22	Chapter 15 – Aquatic Ecology, Section 15.7.4	Works may isolate or trap fish populations. Condition: Utilise the 'Fish salvage guidelines' if works are undertaken during periods of flowing or standing water at the work site. Note: Guidelines available on request. Condition: Instream work to be scheduled to be undertaken in the dry season to minimise the likelihood of fish mortality events. Note: Waterway diversion works should be undertaken to provide habitat that simulates natural fish habitat.	Addressed in Chapter 9, Section 9.15 and Chapter 15, Sections 15.8.4 and 15.13.
S7	S7.23	Chapter 15 - Aquatic Ecology, Section 15.8.2	Waterway classification discussions with DAF and DES representatives may be required to clearly identify areas of fish habitat. Note that the proposed culvert design, other than the points highlighted above will comply with State Code 18. Condition: Post waterway classification discussions with DAF and DES representatives any waterways considered to be suitable for fish passage will be subject to the Project Offset Delivery Plan. Waterway barrier works and stream diversions unless compliant with the ADR may represent significant residual impacts to the MSES which will require an offset. Condition: Ensure that Deep Creek and Barrack Creek crossings and other works comply with State Code 18: Constructing or raising waterway barrier works in fish habitats.	Addressed in Chapter 9, Sections 9.2.10 and 9.15 and Chapter 15, Section 15.8.2.
S7	S7.24	Chapter 15 - Aquatic Ecology, Section 15.8.4	There is a likelihood of encountering fish during the clearing of artificial and natural wetlands on the site. Condition: Utilise the 'Fish salvage guidelines' if works are undertaken during periods of flowing or standing water at the work site. Note: Guidelines available on request.	Addressed in Chapter 15, Sections 15.8.4 and 15.13.
S7	S7.25	Chapter 17- Biosecurity, Section 17.9, Table 17-3	The Land Protection Act is cited in this table several times and it has been superseded by the Biosecurity Act 2014. Replace references to the Land Protection Act with the Biosecurity Act 2014.	Updated Chapter 17, Table 17-3 accordingly.
S7	S7.26	Chapter 17- Biosecurity, Section 17.11	Point 5 refers to ensuring that vehicles, machinery, plant equipment or materials imported from overseas be inspected for plant material prior to arriving at the Project area. There are two issues: 1. Materials, vehicles, machinery, equipment coming from elsewhere - not just overseas - carry a biosecurity risk and should be inspected before coming onto the project site. 2. The action of inspecting for plant material is too narrow and does not provide for a broader range of biosecurity matter, such as animals, including invertebrates (e.g. fire ants, key hole wasp or other pests or diseases). Suggest amending point 5 in the Table to " ... ensure that any vehicles machinery, plant equipment or materials arriving onto the project site, including those arriving from overseas, are thoroughly inspected to biosecurity matter being introduced onto the site"(or similar wording).	Addressed in Chapter 17, Section 17.11, Table 17-4 and Chapter 22.

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S7	S7.27	Chapter 17 – Biosecurity, Section 17.11	There is no mention of obligations to report prohibited or restricted species to Biosecurity Queensland (see Schedule 1 Prohibited matter) and Schedule 1 Restricted matter and categories). Category 1 restricted matter includes red imported fire ants, electric ants, Asian honey bees, and certain animal diseases, aquatic diseases and pathogens. Biosecurity Queensland needs to be made aware of this restricted matter to take action to contain and eradicate it. • Category 1 restricted matter needs to be reported to a Department of Agriculture and Fisheries inspector within 24 hours of becoming aware of its presence. • Category 2 restricted matter includes certain noxious fish, weeds and pest animals such as spotted gar and red-eared slider turtle. Biosecurity Queensland needs to be aware of this restricted matter to commence appropriate actions to reduce, control or contain the biosecurity matter. This restricted matter must be reported to an inspector or authorised person within 24 hours of you becoming aware of its presence. Prohibited matter is biosecurity matter that is not found in Queensland. Prohibited matter needs to be reported to Biosecurity Queensland within 24 hours. Suggest inclusion of requirement of proponent to report suspected prohibited species to Biosecurity Queensland within 24 hours. Restricted species category 1 to a Department of Agriculture inspector within 24 hours; and category 2 restricted matter to an inspector or authorised person within 24 hours.	Addressed in Chapter 17, Table 17-4 and Chapter 22
S7	S7.28	Appendix A9C - Ecological desktop search results and general comments	MNES - The EPBC Act Vulnerable Green Sawfish *Pristis zijsron* has been noted as occurring in the vicinity of the proposed development (Appendix 9c). The potential presence of this species highlights the importance of fish passage in this area. This species is known to use dry season waterholes and lagoons within ephemeral waterways. Condition: Crossing Designs to comply with State Code 18. Constructing or raising waterway barrier works in fish habitats. To manage risks around the provision of unimpeded fish passage. Condition: Construction of culverts and watercourse/ drainage feature crossings to be undertaken during no-flow/low-flow periods	Addressed in Chapter 9, Sections 9.2.10, 9.6.3.4, 9.13 and 9.15.
S7	S7.29	Appendix A9e - Aquatic Ecology report 2011 and general comments	Thirteen (of 27) species recorded in the EIS were noted to move seasonally within waterways (Appendix A9e). Note that barramundi Lates calcarifer were recorded at many of the sampled sites. The range of size classes suggesting that the area is a nursery for this commercially and recreationally important species. Condition: Crossing Designs to comply with State Code 18. Constructing or raising waterway barrier works in fish habitats. To manage risks around the provision of unimpeded fish passage. Condition: Construction of culverts and watercourse/ drainage feature crossings to be undertaken during no-flow/low-flow periods.	Addressed in Chapter 9, Sections 9.2.10, 9.6.3.4, 9.13 and 9.15.

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S7	S7.30	Environmental Offsets Act 2014 Additional comments	Offsets may be a requirement for Significant Residual Impacts to waterways providing for fish passage. The total offset can be calculated the Environmental Offsets calculator. Using the total surface area of waterway resulting in a significant residual impact. The total area includes the area of waterway impacted by groundwater drawdown and areas affected outside the mining lease area (e.g. removal of upstream habitat due to removing or diverting waterways and ground water effects seen outside of the mining lease area).	Addressed in Chapter 14, Sections 14.11 and 14.12 and Chapter 15, Section 15.11.
S10	S10.1	Chapter 6, Section 6.3.2.3	The RMP should be prepared in accordance with TMR's "Guideline for preparing a Road-use Management Plan" and "RMP Commitments Table". A copy of TMR's "Guideline for preparing a Road-use Management Plan", including an example of an RMP Commitments Table, can be obtained by contacting: MDP@tmr.qld.gov.au	Addressed in Chapter 6, Sections 6.3.2.3 and 6.10.1 and Appendix A4c – Draft Road-Use Management Plan.
S10	S10.2	Chapter 6, Section 6.2.2	The list of performance criteria is not ordered to reflect road safety as the #1 priority, as reflected in the GTIA. The list of performance criteria should be ordered to reflect road safety as the #1 priority as reflected in the GTIA.	Addressed in Chapter 6, Section 6.2.2
S10	S10.3	Chapter 6, Section 6.5.3, Table 6.5	The list of factors impacting on air quality should be improved. • Add "coal dust generation during rail haul"; • Clarify reference to "coal dust from constructing / upgrading roads" onsite (is this a public nuisance to road-users or do you mean: conventional dust from constructing / upgrading roads)?	Addressed in Chapter 6, Section 6.5.3, Table 6.5
S10	S10.4	Chapter 6, Section 6.7.2	The second paragraph commits to assessing impacts of increased traffic generated at the Marlborough Caravan Park, but does not specify when or how this will be ensured. Specify how and when assessing impacts of increased traffic generated at the Marlborough Caravan Park will be ensured.	Addressed in Chapter 6, Section 6.7.2
S10	S10.5	Chapter 6, Section 6.7.4	The first paragraph advises that the conveyor arrangement has been redesigned and repositioned and will now pass beneath the Bruce Highway at a location that is yet to be determined. Staged lane closures are proposed to enable the construction of the culvert. The proponent states that details of this proposal is yet to be finalised. As previously advised, TMR is concerned about proposed lane or whole closure of the Bruce Hwy. Provide an assessment of the potential impacts of the construction and operation of any conveyors (refer to EHP's EIS information guideline—Transport). The assessment should demonstrate that the Bruce Highway can continue to operate safely and continuously during both the construction and operation of the conveyor.	Addressed in Chapter 6, Section 6.7.4
S10	S10.6	Chapter 6, Section 6.7.4	The third paragraph advises the Traffic Management Plan (TMP) will be prepared in accordance with the GTIA. The GTIA does not provide guidance about preparing TMPs. Consult the district officers about requirements for a TMP as part of s33 approval for works.	Text clarified in Chapter 6, Section 6.7.4
S10	S10.7	Chapter 6, Section 6.7.5	The second paragraph advises that a Blast Management Plan (BMP) will be prepared prior to blast commencement. This commitment is too indefinite. TMR requires the BMP to be submitted for TMR's review a minimum of 3 months prior to blasting commencing.	Addressed in Chapter 6, Section 6.7.5

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S10	S10.8	Chapter 6, Section 6.8.2	The last paragraph asserts 3 QTRIP-proposed works will increase road link capacity without correlating project traffic generation on specific road links with expected QTRIP project commencement dates. Demonstrate the link between proposed timing of proposed QTRIP works and timing of project traffic impacts.	Addressed in Chapter 6, Section 6.5.1
S10	S10.9	Chapter 6, Section 6.12.2	The second last paragraph in this section details the practices that will be implemented by CQC. The list of practices identified by CQC are inconsistent with the Aurizon 2010 Coal Dust Management Plan (CDMP) and its required Coal Producer Sector Coal Dust Mitigation Activities, per the Aurizon CDMP (2010) Appendix B (Pages 32-34). The components that are missing from the list of practices in S6.12.2 include: •Implementing coal type testing for dustiness •Implementing a coal moisture regulating system •Implementing a batch weighing load out system. •Implementing wagon sill brushing •Conducting internal communication to ensure that all staff understand that coal rail dust mitigation is an integrated system that requires all parts of the stockpiling and out-loading system and staff to work together in a coordinated manner. TMR recommends that the list of practices in the second last paragraph S6.12.2 be expanded to be consistent with the Aurizon 2010 (CDMP) - Coal Producer Sector Coal Dust Mitigation Activities, per the Aurizon CDMP (2010) Appendix B (Pages 32-34). The following list of practices should be added to the current list: • Implementing coal type testing for dustiness • Implementing a coal moisture regulating system • Implementing a batch weighing load out system. • Implementing wagon sill brushing • Conducting internal communication to ensure that all staff understand that coal rail dust mitigation is an integrated system that requires all parts of the stockpiling and out-loading system and staff to work together in a coordinated manner. If the CQCP does not accept these Recommendations, then the requirement to implement these measures should be made a Condition of Final EIS approval.	Addressed in Chapter 6, Section 6.12.2
S10	S10.10	Appendix 4b—Geotechnical Assessment, Section 5.4.2.2, Table 5-2	A factor of safety of 1.02 is estimated for the RHS cut slopes for lower bound strength parameters. This factor of safety is not acceptable. The lower bound strength parameters to be confirmed by an adequate number of geotechnical boreholes and testing to demonstrate that the slope will have the required minimum factor of safety for the worst credible geological conditions.	Addressed in Chapter 6, Sections 6.9, 6.10.10 and 6.15.

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S10	S10.11	Chapter 12 – Air Quality, Section 12.9.1.1	Consistent with TMR comments on Section 12.9.2 (below) this section should be expanded to include further explanation. Recommendation: Add the following Engineering Control Measures to S12.9.1.1: • Implement a coal moisture regulating system at the product coal stockpile and train loadout facility (TLF). • Install sill brushing of loaded wagons prior to leaving the TLF. The first dot-point (above) should be inserted before the "Install load profiling dot-point". Coal that is not provided with the correct coal-surface water content reduces the effectiveness of the veneering chemicals to adhere coal particles within the surface layer of the loaded coal wagon. The "Install sill brushing dot-point" (above) should be inserted before the "Implement veneering dot-point". Sill brushing has to occur as part of wagon-loading and before the application of veneering spray, otherwise the veneering system will adhere parasitic coal dust deposits on the sills of loaded wagons	Addressed in Chapter 12, Sections 12.9.1 and 12.9.2.
S10	S10.12	Chapter 12 – Air Quality, Section 12.9.1.2	TMR noted dot-point 7 appears to be about dust mitigation treatment of ROM stockpiles before they enter the CHPP. The first sentence in Dot-point 9 reads, "Maintain high moisture content of product coal and reject material as they leave the CHPP which avoids the need for supplementary watering". This first sentence in Dot-point 9 is not factually correct, and indicates a lack of understanding of the need for an integrated Coal Moisture Regulating System as stipulated in the Aurizon CDMP (2010) - Coal Producer Sector Coal Dust Mitigation Activities (Appendix B), and in TMR's comments on S12.9.1.1 above. The second sentence states: "Immediately after the coal is dewatered in the coal handling and preparation plant, the coal will be above the dust extinction moisture limit (the lower limit at which dust-prone materials no longer create dust) and so will not be a source of dust." This again is not factually correct. Coal surface water-content above a certain level (the dust extinction measure (DEM)) assists the adherence of coal dust and particles to the surface of lump coal. Typically a coal surface water-content level broadly around 7% will adhere coal dust and fine particles. This adherence however is only effective for a relatively short period of time while it retains a coal-surface water content at or above the DEM limit. Once coal is dewatered in the CHPP it is transferred to the Product Stockpile for storage and in readiness for loading for rail transport. The dewatered product coal forms part of a large product stockpile that is stored for days and weeks at a time. Under normal warm dry atmospheric conditions the coal on the outer surface of the stockpile will dry out within a day, so the coal-surface water content rapidly returns to a level below the DEM level, losing its ability to adhere coal dust. The product coal stockpile therefore will be a source of dust lift-off from the stockpile and during rail transport unless properly treated. In recognition of this, Aurizon CDMP (2010) - Coal Producer Sector Coal Dust Mitigation Activities	Addressed in Chapter 6, Section 6.12.3 Central Queensland Coal will continue to consult with QR and Aurizon in respect of implementing appropriate coal surface moisture content prior to loading trains so as to ensure effective application of veneering chemicals.

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			(Appendix B) requires the implementation of a Coal Moisture Regulating System. Such a Coal Moisture Regulating System – "measures the moisture content of coal and automatically adds water to maintain an optimum moisture level (whilst not attracting moisture penalties from customers"- Aurizon CDMP (2010) (Page 33). Measurement of the Moisture Content of coal involves three elements conducted at two stages: 1. Measuring the inherent internal (locked-in) water-content of the coal; 2. Measuring the dustiness characteristics of the mine's product coal; 3. Measuring the coal-surface water content of product coal in the product stockpile and prior to train-loading (to ensure effective application of veneering chemicals). Elements 1 & 2, are conducted during the mine project development stage. Element 3 is conducted during operations at the coal product stockpile during storage and prior to train-loading. An appropriate Coal Moisture Regulating System also needs to provide a supplementary watering system to ensure the coal delivered for train-loading has an optimum coal-surface water content. This is essential to ensure that product coal is supplied for loading with an optimum coal-surface water content, which may be at or above the DEM (or indeed at a lower level depending upon the Assessed Dustiness of CQCP Coal and veneering requirements). The application of veneering chemicals is only effective if the loaded coal has an appropriate/optimum coal-surface water content. Recommendation: Amend Dot-point 9 to read: • Maintain a high coal-surface moisture content of product coal and reject material as they leave the CHPP to minimise the need for supplementary watering. The second sentence in Dot-point 9 to be deleted as it is not factually correct and is misleading. Add a New Dot-point after current Dot-point 9 to read: • Implement an Integrated Coal Moisture Regulating System to minimise dust emissions from the product coal stockpile and to ensure that product coal delivered for train-loading has a coal-surface water content at the optimum level to ensure the effectiveness of veneering of loaded coal. The Integrated Coal Moisture Regulating System will include the measurement of coal-surface water content of coal in the product stockpile and the use of water spray or fogging systems to apply optimum levels of supplementary coal watering.	

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S10	S10.13	Chapter 12, Section 12.9.2	Paragraph 1 indicates that the proponent will implement: "Dust suppression measures specific to the haulage of coal will be consistent with Aurizon's 2010 Coal Dust Management Plan (CDMP). However in Paragraph 3, the proponent sets out more specifically what he actually proposes to implement in Table 12-18 Coal producer sector coal dust mitigation activities. However the CQCP Table 12-18 leaves out critical components contained in Coal Producer Sector Coal Dust Mitigation Activities, per the Aurizon CDMP (2010) Appendix B (Pages 32-34). The critical activities left out include implementation of: • Coal moisture regulating system; • Sill brushes; and • Internal communications. Leaving these activities out means the CQCP commitment is Not Consistent with the Aurizon 2010 Coal Dust Management Plan (CDMP). The Aurizon CDMP is an Integrated System that depends on each element of the CDMP mitigation measures being implemented. It is not a plan that allows individual producers to select only some of the mitigation elements to suit themselves. If critical elements are left out the effectiveness of veneering is undermined. It is strongly recommended that the CQCP implement the full suite Coal Producer Sector Coal Dust Mitigation Activities, per the Aurizon CDMP (2010) Appendix B (Pages 32-34), and also implement the critically important activities of: • Coal moisture regulating system; • Sill brushes; and • Internal communications. TMR therefore Recommends that Table 12-18 be amended to include the following components under the Activity and Description columns in the Table: Coal moisture regulating system – A system that measures the moisture content of coal and automatically adds water to maintain an optimum moisture level (whilst not attracting moisture penalties from customers). Sill brushes – Brushes located at a suitable position to remove excess coal on wagon sills immediately after the coal is loaded. Internal communications – The project will raise general awareness of the initiatives being undertaken to reduce coal dust with the organisation. Awareness of the issue will enable staff at all levels to understand and conceive of new initiatives (including improved operating procedures) to help minimise coal dust. If the CQCP does not accept these Recommendations, then the requirement to implement these measures should be made a Condition of Final EIS approval.	Addressed in Chapter 6, Section 6.12.3 Central Queensland Coal will continue to consult with QR and Aurizon in respect of implementing appropriate coal surface moisture content prior to loading trains so as to ensure effective application of veneering chemicals.

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S25	S25.1	Chapter 1, Section 1.5, Chapter 5, Section 5.4.6 and Chapter 6, Section 6.5.1.4	There are a number of road reserves intersecting the property. Whilst the amended EIS notes that the realignment of Mount Bison Road will not occur for some 10 years following commencement of mining, and will be sought outside of the EIS, the operations also fall within Tooloombah Road and several other un-named road reserves on the western side of the Highway which may be impacted earlier. The following information should be provided to the proponent: **State Land** The proponent is required to identify all instances where the project will impact on lands administered by the State of Queensland (via its various government departments and agencies) and/or Local Government, collectively referred to as State lands. This will include impacts of the project to roads (including stock routes), unallocated state land, state leases, reserves and state forests. It may also include impacts to the non-tidal and/or tidal environments. Prior to the commencement of any activity, occupation or construction on State lands, the proponent is required to secure all appropriate tenure and gain all necessary approvals and/or consents from all parties holding a lawful interest in the lands. The proponent may also be required to develop sufficient mitigation strategies to address all identified impacts to State land. It should also be noted that, in accordance to the Native Title Act (Cwth) 1993, Native Title must be adequately addressed prior to the granting of any tenure interests over State lands. The proponent is encouraged to engage with DNRM early to ascertain likely implications of Native Title to the project area. It should be noted that it is not uncommon for dealings requiring the resolution of native title issues over State land to take in excess of 2 years, should the native title parties agree to negotiate. **Land administered by the Department of Natural Resources Mines and Energy (DNRME)** The proponent is required to identify all land administered by the Department of Natural Resources Mines and Energy (DNRME) that will be impacted by the project and engage with DNRME to develop a strategy to resolve all associated land tenure and/or consent requirements, including Native Title, prior to any activity, occupation or construction. **Decommissioning & Rehabilitation** The proponent is required to develop an acceptable tenure management plan that clearly details the extent of the areas impacted by the project and the future tenure, management and ownership of the project site. The tenure management plan should also include the landform and rehabilitation outcomes impacting State lands at the decommissioning of the project. **Engagement with the Department of Natural Resources Mines and Energy** State land tenure dealings may take an extended period of time to negotiate and resolve hence early engagement by the proponent is highly recommended to minimise the risk of any delays to the project. It should be noted that it is not uncommon for complex land tenure dealings to extend beyond 2 years prior to resolution.	Additional text added in Chapter 1, Section 1.5

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S25	S25.2	Chapter 10, Section 10.6.1.2	The proponent has identified the presence of stygofauna in the amended EIS. Where the pilot survey confirms the presence of subterranean aquatic fauna a comprehensive survey is required in accordance with the guideline for the Environmental Assessment of Subterranean Aquatic Fauna. It is recommended that, as part of the approval conditions, the proponent complete a comprehensive stygofaunal survey in accordance with the guideline: https://publications.qld.gov.au/dataset/subterranean-aquaticfauna	Refer to additional condition added to Chapter 23 – Draft EA Conditions (Condition E18). Additional text has been added to Chapter 15 – Aquatic Ecology (refer to Table 15-11) and Chapter 10 – Groundwater (refer to Table 10-72).
S30	S30.1	Chapter 3, Section 3.6.1	Workforce numbers are integral in determining the potential social impacts on housing and accommodation, and social infrastructure and services. Table 3-17 shows a peak construction workforce of 350 people for the year 2018. This is inconsistent with the peak workforce numbers provided in Chapters 3.6.1 and 19, which states that a peak construction workforce of 200 people will be required for the project. If the reference to 350 workers in Table 3-17 is a typo, this should be amended accordingly. However, if the peak construction workforce is anticipated to be in the order of 350 workers, the EIS and SIA should be updated to reflect the increased workforce numbers.	Updates made to all relevant Chapters.
S30	S30.2	Chapter 19, Section 19.2.2.2	The AEIS has referenced the Coordinator-General's SIA Guideline (March 2018), and has stated that the SIA has adopted the core principles of Section 2.2 of the SIA Guideline. However, the SIA is not consistent with these principles in various key areas, including (but not limited to): • Reasonable: the defined study area is not commensurate with the nature and scale of the project as it does not capture the sensitivity of the social environment and likely scope and significant of social impacts at a community-level. • Participatory: engagement for the SIA/EIS is limited to the statutory notification required for the EIS process. There is no evidence of consultation being undertaken with key stakeholders and potentially affected communities to specifically inform the development of the SIA report, or validate the findings. • Rigorous: the impact assessment does not sufficiently identify and assess the scope of impacts including the probability, scale, duration and intensity of potential impacts on potentially affected communities. Further, the lack of participative primary data limits understanding of the existing social and economic conditions and trends, which adversely affects the rigour and accuracy of the impact analysis. • Effective management: the management measures provided in the SIA are limited in detail, and do not include defined outcomes and performance indicators or an appropriate monitoring and reporting framework. It is also unclear how these proposed social management frameworks will be embedded within the	Addressed in Chapter 19b and Appendix A14 – Stakeholder Engagement Plan and Appendix A17, Social Impact Assessment.

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			proponent's internal management systems. Measures to enhance the potential benefits have not been considered. As the proponent has stated that the core principles outlined in the Coordinator-General's SIA guideline (March 2018) have been adopted, then the SIA should be revised to be consistent with these principles. Feedback on various specific matters has been provided in other comments in this submission, however this is not exhaustive.	
S30	S30.3	Chapter 19, Sections 19.5 and 19.7	The proponent proposes to utilise existing accommodation options, including the Marlborough Caravan Park, to house non-local workers while on roster. However, the uptake of short-term accommodation by non resident workers has the potential to impact the local tourism industry. Given the project's proposed accommodation strategy is reliant upon the availability of short-term accommodation in the local study area, further information is required to understand the existing demand for short-term accommodation servicing the tourism industry, and any peak periods which may affect the capacity of establishments to accommodate non-local workers. The social and economic baselines and impact assessment (Chapters 19.5, 19.6 and 19.7) should be updated to include community-level information on the tourism industry and short term accommodation in the local study area including (but not limited to): • Tourism activities in the study area noting peak visitor periods and or events, noting the potential number of short-term accommodation establishments in the local area (community-level data) • Number and type of short-term accommodation establishments that could potentially be used by non-local workers, including the level of services and facilities provided by each establishment (suggest this be supported by consultation with accommodation providers to understand their capacity and interest in accommodation non-local construction workforces) • Current / potential capacity of accommodation establishments and occupancy rates • The existing demand for short-term accommodation servicing the tourism industry, and any peak periods which may affect the capacity of establishments to accommodate non-local workers • Other construction projects in the region noting timeframes for construction, potential number of non-local workers and potential short-term accommodation requirements (where information is publicly available). Consultation with tourism industry representatives and local accommodation providers should be undertaken to inform and validate the above information, in accordance with the requirements of Appendix 4, Clause 4 of the ToR.	Addressed in Chapter 19b, Sections 19.5 and 19.6 and Appendix A17 – Social Impact Assessment, Chapters 5 and 8 and updated Appendix A14 Stakeholder Engagement Plan.

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S30	S30.4	Chapter 19, Sections 19.5 and 19.7	The information presented in Chapters 19.5 and 19.7 is limited to the potential impacts of the project on social infrastructure and health and emergency services. Other relevant information (outlined in the ToR and the Draft Social Impact Assessment Guideline 2016), such as environmental factors (including air quality, noise and water), livelihoods, economic wellbeing, access to resources, community lifestyles and cultural values, has not been incorporated or considered in the SIA. Further, the SIA does not consider whether the social dimensions of the impacts identified in other sections of the EIS. For example, Chapter 20 identifies the potential for the project to impact water entitlements that are held by nearby landholders for stock and irrigation use. Impacts to water entitlements result in social consequences for landholders as changes in water use or quality may affect their stock or crops, which subsequently impacts the landholders' economic livelihood. The social baseline (Chapter 19.5), together with the impact assessment presented in Chapter 19.7, should be updated to include information on other indicators of community health and wellbeing including (but not limited to) lifestyles, amenity, community values, health and social cultural wellbeing, access to resources, and environmental factors (including air quality, noise and water). It is not expected that the SIA will reiterate all the potential impacts on community health and wellbeing in detail if they have been addressed in other sections of the EIS (for example, water or noise), but rather address the social dimensions of those impacts, and cross-reference to other sections as required.	Addressed in Chapter 19b, Sections 19.5 and 19.6 and Appendix A17 – Social Impact Assessment, Chapter 8 and updated Appendix A14 Stakeholder Engagement Plan.
S30	S30.5	Chapter19, Section 19.8	The social impact management framework does not include any clear mechanisms or processes for monitoring and reviewing the effectiveness of the proposed management measures, which is not consistent with the requirements of Appendix 4, Clause 9(f). The proponent's commitment to review the management strategies in consultation with stakeholders every five years in line with the release of ABS Census data is not considered sufficient. More frequent periodic reviews (typically undertaken no less frequently than annually) enable proponents to assess the appropriateness of the management strategies, as well as capture any emerging issues that should be included in ongoing management and monitoring of social impacts. It is recommended that the proponent update Chapter 19.8 to include: • a description of how management measures will be monitored and reported • the party responsible for monitoring • timing and frequency of monitoring • key performance indicators • mechanisms to update management measures if required. It is also recommended that the proponent undertake a detailed review of the social management strategies at least annually.	Addressed in Chapter 19b, Sections 19.8 and 19.11 and Appendix A17 – Social Impact Assessment, Chapter 12 and updated Appendix A14 Stakeholder Engagement Plan.

Submitter No.	Submission Reference No.	Relevant EIS Section	Issue Detail	Central Queensland Coal Response/Cross-reference Location
S30	S30.6	Appendix 14, Section 4.1	Appendix 14 (SEP), Chapter 4.1 outlines the proponent's proposed stakeholder engagement schedule including engagement activities and indicative timeframes. The proposed engagement activities are currently intended to inform the development of a comprehensive engagement activity plan that will be designed once the mining leases have been granted. However, this is not consistent with Appendix 4, Clause 4 of the ToR, as a significant portion of the proposed engagement should be undertaken prior to (not subsequent to) finalisation of the SIA report. Appendix 4, Clause 4 of the ToR requires engagement with stakeholders and the community to commence early in the EIS process to ensure the baseline study, assessment of potential impacts and development of appropriate mitigation measures and management plans are informed by an inclusive and collaborative engagement process. It is therefore recommended that the engagement schedule outlined in the SEP be brought forward to commence immediately to ensure stakeholder and community feedback is adequately captured and considered prior to the finalisation of the SIA report.	Addressed in Chapter 19b, Section 19.4.2 and Appendix A17 – Social Impact Assessment, Chapter 6 and updated Appendix A14 Stakeholder Engagement Plan.
S30	S30.7	Appendix 14, Section 1.5.1	Chapter 1.5.1 of the SEP defines the study area as follows: • Local – including the towns of Marlborough, Ogmore and Clairview • Regional – including the council areas of LSC, RRC and Mackay Regional Council (MRC) areas. These study areas are inconsistent with the social and economic study areas as defined in Chapters 19.4.2.4 and 19.4.3.1. As stated in Table 1, comment no.4 above, the study area should reflect the social, economic and geographic boundaries for the impact assessment, and should be determined in a manner consistent with the requirements of Appendix 4, Clause 2 of the ToR. It is suggested that study areas defined in the SIA, economic assessment and SEP (Appendix 14) be revised and updated to include a study area (or combination of local and regional study areas) that is consistent across all studies, and accurately captures the potential social and economic impacts including key stakeholders and communities, at different geographic scales.	Addressed in Chapter 19b, Section 19.4.2 and Appendix A17 – Social Impact Assessment, Chapter 1.4 and updated Appendix A14 Stakeholder Engagement Plan.

Submitter No.	Submission Reference No.	Relevant EIS Section	Issue Detail	Central Queensland Coal Response/Cross-reference Location
S30	S30.8	Appendix 14, Section 3.1	Chapter 3.1 of the SEP states that the potential perceived impacts and benefits outlined in Table 3-1 have been informed by consultation. However, there is an apparent contradiction with the SEP later stating that these same impacts and benefits will be discussed throughout engagement with stakeholders to gain their feedback. This is also inconsistent with Appendix 4, Clause 4 of the ToR, as a significant portion of the proposed engagement in the SEP should have already been undertaken to inform the SIA report. The report also states that 'all the potential perceived impacts have been assessed by the EIS and shown not to be significant'. However, only a limited number of potential adverse and beneficial impacts have been identified in the SIA. For example, Table 3-1 identifies a number of impacts to surrounding property owners and landholders including impacts to quality of living, stress, changes to agricultural uses and amenity impacts. Chapter 19.7.1.4 has noted these same potential impacts to surrounding property owners and landholders but no information is given to further quantify this (e.g. the number of properties that may be impacted, the location of the properties in relation to the project etc). Further, Table 19-87 rates impacts to landholders and disruption to community cohesion as 'medium' impact however, no data has been provided to validate these findings. Chapter 3.1 states that the potential impacts and benefits will be 'updated based on feedback received from stakeholder during engagement'. However, this is not consistent with Appendix 4, Clause 4 of the ToR, as a significant portion of the proposed engagement should be undertaken prior to (not subsequent to) finalisation of the SIA report. Appendix 4, Clause 4 of the ToR requires engagement with stakeholders and the community to commence early in the EIS process to ensure the baseline study, assessment of potential impacts and development of appropriate mitigation measures and management plans are informed by an inclusive and collaborative engagement process. The proponent should undertake further engagement to confirm and validate the potential perceived impact and benefits outlined in Table 3-1. This information should be used to inform the impact assessment in Chapter 19.7, with a particularly focus on the community-level impacts, including those impacts to local landholders. This engagement should be undertaken prior to (not subsequent to) finalisation of the SIA report.	Addressed in Chapter 19b, Section 19.6 and Appendix A17 – Social Impact Assessment, Chapter 6 and updated Appendix A14 Stakeholder Engagement Plan.

Submitter No.	Submission Reference No.	Relevant EIS Section	Issue Detail	Central Queensland Coal Response/Cross-reference Location
S30	S30.9	Appendix 14, Section 3.2	The stakeholder values outlined in Chapter 3.2, Table 3-2 have been identified based on the potential adverse and beneficial impacts identified in Table 3-1. Participative primary data collection is required to better understand relevant community characteristics and their values. However, there is no evidence that consultation has been undertaken to inform this list of social, environmental and economic values. Chapter 3.2 states that the stakeholder values will be 'updated based on feedback received from stakeholder during engagement'. This is not consistent with Appendix 4, Clause 4 of the ToR, as a significant portion of the proposed engagement should be undertaken prior to (not subsequent to) finalisation of the SIA report. Chapter 3.2 also states that the values have been developed based on the potential adverse and beneficial impacts identified in Table 3-1. This rationale appears contradictory as activities or change processes that affect stakeholder values typically result in potential impacts and benefits. Understanding community and stakeholder values is integral in identifying the potential impact and benefits of the project on key stakeholders and communities. Appendix 4, Clause 4 of the ToR requires engagement with stakeholders and the community to commence early in the EIS process to ensure the baseline study, assessment of potential impacts and development of appropriate mitigation measures and management plans are informed by an inclusive and collaborative engagement process. Appendix 4, Clause 7 of the ToR requires consideration of potential impacts to community values. Consultation with potentially impacted stakeholders is required to understand community characteristics and values, and the manner in which these may be impacted by the proposed project.	Addressed in Chapter 19b, Section 19.4.2 and Appendix A17 – Social Impact Assessment, Chapter 6 and updated Appendix A14 Stakeholder Engagement Plan.
S30	S30.10	Appendix 14, Sections 1.6, 4.1 and Appendix A	The stakeholder lists provided in Chapters 1.6, 4.1 and Appendix A of the SEP identify broad stakeholder groups. However, this level of information is considered insufficient at this stage of the project, as key stakeholders should be known to the proponent and identified accordingly. Additionally, further detail regarding matters such as level of participation and engagement strategies should be available. The SEP (Appendix 14) should be updated to include specific stakeholders including (but not limited to): • Non-government organisations (including community and interest groups) • Local and district disaster management groups • Local and regional business representatives (e.g. Chambers of Commerce) • Park industry bodies • Accommodation providers The information provided in Appendix A should be updated based on the outcomes of engagement.	Addressed in Chapter 19b, Section 19.4.2 and Appendix A17 – Social Impact Assessment, Chapter 6 and updated Appendix A14 Stakeholder Engagement Plan.

Submitter No.	Submission Reference No.	Relevant EIS Section	Issue Detail	Central Queensland Coal Response/Cross-reference Location
S32	S32.1	Chapter 5, Section 5.11.4	In section 5.11.1, it is stated that "Waste rock stockpile catchments will likely require sediment basins to capture and treat stormwater runoff during operations. Sediment basins will be appropriately sized, designed and constructed for the anticipated stormwater volumes. Several environmental dams/sediment ponds are proposed to capture rainfall runoff from the CHPP / MIA areas, TLF and waste rock stockpile areas. Runoff from these areas should be classes as mine affect water and the environmental dams should be appropriately designed and managed as Mine affected Water Dams. The terms "Sediment ponds" /"environmental dams" are not clearly defined and seem to be used interchangeably. Environmental dams which capture rainfall runoff from the CHPP / MIA areas, TLF and waste rock stockpile areas should be appropriately designed and managed as Mine affected Water Dams. This should be updated throughout the EIS.	Chapter 5 updated and discussed further in Chapter 9, Section 9.7, Section 9.8 and Section 9.9.
S32	S32.2	Chapter 9, Section 9.5.2	Water quality sampling method for 2011-2012 is not included. The water sampling method for sampling event 2011 -2012 should be included.	The 2011-2012 sampling method has been added to Section 9.5.2.1.
S32	S32.3	Chapter 9, Section 9.5	When assessing water quality and comparing to WQOs, the values provided in the Fitzroy Model Mining Conditions should not be included. The reference to the Fitzroy Model Mining Conditions should be removed from the Summary of compliance with WQOs Tables 9-11, 9-12, 9-13, 9-14.	Addressed
S32	S32.4	Chapter 9, Section 9.5	Table 9-25 – Surface water quality results during February 2017 sample events has negative values. Data that do not meet the quality control checks should be excluded from the analysis. Do these values represent the <LOR? The negative value presented in Table 9-25 should be reviewed and excluded from the analysis.	Addressed
S32	S32.5	Chapter 9, Section 9.5	In Table 9-35 – Stream water quality (June 2011- April 2018), to assess the dissolved metal concentration to the WQOs, the 95th percentile to WQOs should be used. 95th percentile should be added to Table 9-35 Stream water quality (June 2011- April 2018).	Addressed in Chapter 9, Table 9-42
S32	S32.6	Chapter 9, Section 9.9.2	The tidal transitional zone should also be included on Figure 9-78 - Proposed release and monitoring points. This is needed to assess the proposed release location and monitoring plan locations. The tidal transitional zone should be included in relation to the proposed current monitoring locations on Figure 9-78.	Addressed in Chapter 9, Figure 9-8 has been amended to show the tidal transition zone.

Submitter No.	Submission Reference No.	Relevant EIS Section	Issue Detail	Central Queensland Coal Response/Cross-reference Location
S32	S32.7	Chapters 9, 10, 15 and 16	The potential impact on surface water quality from the reduction in riparian vegetation due to the predicted groundwater drawdown has not been discussed. A reduction in riparian vegetation may increase bank erosion and sediment loads to the GBR. The potential impact from increased sediment due to a reduction in riparian vegetation due to the predicted groundwater drawdown should be included in Chapters 9, 10, 15 and 16.	Riparian vegetation that may be impacted by groundwater drawdown are those emergent trees with potentially deep tapping roots (i.e. Forest Red Gum). The mid-canopy/understorey community including SEVT is not accessing groundwater and as such will not be impacted. Refer to the following: Chapter 10, Sections 10.6.1, 10.7.4 and 10.8, Chapter 15, Sections 15.6.4, 15.7.10 and 15.8.10, Chapter 16, Sections 16.9 (for erosion and sediment control approach), 16.11, 16.14.4 and 16.15.4.
S32	S32.8	Chapter 10, Section 10.8	The mitigation measure to supplement surface water flow to maintain aquatic ecosystems and riparian vegetation has not been adequately described in Section 10.8. Information on the source of the water to supplement surface water flows has not been adequately described. Where will the water come from? Environmental Dams are mine affected, groundwater will increase drawdown, external source? Will supplementary water continue for 50 years post mining until the groundwater level is back to pre-mining? The mitigation measure to supplement surface water flow to maintain aquatic ecosystems and riparian vegetation needs to be further described in Section 10.8. Evidence regarding the success of providing supplement surface water flow to maintain aquatic ecosystems and riparian vegetation should be provided in Section 10.8.	The supplementary flows mitigation approach is discussed further in Chapter 10, Section 10.8.4.5. The groundwater model has been used to simulate abstraction from the Styx Coal Measures to provide the source of water for supplementary flows and has shown no material additional supply water to GDEs. The modelling has shown the Styx Coal Measures is capable of supplying between 0.55 to 0.7 L/s in the long-term, which could sustain around 13,000 to 17,000 m^2 of pools over a dry season, with little additional effect to the predicted drawdown and therefore may be a viable option for managing unacceptable

Submitter No.	Submission Reference No.	Relevant EIS Section	Issue Detail	Central Queensland Coal Response/Cross-reference Location
				impacts to GDEs post mine closure when mine produced water is no longer available for this purpose (see Section 3.6.2.4 of Appendix A6) and Chapter 10, Section 10.8.4.5. Examples of the application of the practice of supplementary flows are also provided in Section 10.8.4.5.
S32	S32.9	Chapter 10, Section 10.9	Filling the residual voids post mining will not necessarily guarantee that the surface water and groundwater interaction that existed premining will be re-established. Further details regarding the material that will be used to fill the residual voids and how the interaction between the surface and groundwater will be re-established. Further information is required supporting the reestablishment of the surface and groundwater interaction once the residual voids have been filled to pre-mining levels.	Addressed in Chapter 10, Section 10.7. Back-filling of mine voids will allow the baseline groundwater system to re-establish.
S32	S32.10	Chapter 15, Section 15.7.1	Section 15.7.1, page 15-70 states "The second wetland is located on the western boundary of the ML encompassing an area of approximately 1 ha. This wetland will be adversely impacted by clearing for Dam 5." The impact of physical disruption from the construction of Dam 5 on the wetland and the impact of the loss of the wetland have not been adequately discussed and should be included in Chapter 15 Aquatic Ecology.	Addressed in Chapter 3, Section 3.4.13 and Chapter 15, Section 15.7.1.
S32	S32.11	Chapter 12, Section 12.6.4 – Emission Estimation for Operational Activities	Wheel generated dust emissions. Based on the measured data from the site, soil and coal moisture content and silt content were revised and information provided in Appendix B of Appendix 7. Based on the equation, dust emissions from the haul road increases as the silt content increases. It is noted in the amended EIS that silt content increased from 5% to 16.4% (Appendix B of Appendix 7). This means that the dust generation should be increased. However, wheel generated dust data presented in the amended EIS (Chapter 12, Table 12-11) indicates that it has actually decreased. For example, it is not clear why TSP emissions decrease from 64.4 g/s (EIS Table 12-12) to 49.58 g/s (amended EIS, Table 12-11). Discuss why the wheel generated dust presented in the amended EIS (Chapter 12, Table 12-11) decreased as a result of increase in silt content that is contrary to the real world conditions, or provide a corrected table.	Addressed in Chapter 12, Section 12.6.4.

Submitter No.	Submission Reference No.	Relevant EIS Section	Issue Detail	Central Queensland Coal Response/Cross-reference Location
S32	S32.12	Chapter 12, Section 12.6.5 – Emission estimation for blasting activities	Air emissions from blasting activities. It is stated in amended EIS that gaseous emissions (NO2, CO and SO2) from blasting activities were estimated using the emission factors specified in Table 7 of the NPI "Emission estimation technique manual for Explosives detonation and firing ranges", Version 3.1. Some of the substances, specifically carbon monoxide and oxides of nitrogen, are emitted at different levels depending on the characteristics of the explosion. The characteristics of an explosion are dependent on the explosive product, priming methods, hole characteristics (soil moisture, rock type, hole size) and level of additives. For the estimation of air emissions, Table 8 of the above NPI document outlines adjustment factors that need to be considered in conjunction with the emissions factors in Table 7. The estimated air emissions data used in the modelling was not provided in the amended EIS. Provide estimated air emissions from the blasting activities used in the impact assessment modelling. Clarify if/that the emission factors specified in Table 7 were adjusted using the factors provided in Table 8 of the NPI document.	Addressed in Chapter 12, Section 12.6.5
S32	S32.13	Chapter 14, Section 14.12.4	The EIS presents potential significant residual impacts to MSES due to groundwater drawdown (RE 11.3.4; RE11.3.25); and states the impact will be monitored under the Project LUMP, WMP and wetland health monitoring and management under the REMP. There is a need to ensure this commitment to offset any impacts to MSES due to groundwater drawdown during mine operation is adequately conditioned in the EA.	Addressed in Chapter 23, Section 23.1.9.
	S32.14	Appendix A6 – Groundwater, Section 1-3	The report concludes that a Class 1 groundwater model is fit for purpose; however, as per the NWC Australian groundwater modelling guidelines June 2012 a Class 1 model is a starting point to develop coarse relationships. A Class 2 or higher model is required to assess the estimates of dewatering requirements for mines and associated impacts. Request model calibration and a Class 2 or higher model to assess impacts. Class 2 or higher model is required to assess dewatering impacts.	See response to submission reference 24.21
	S32.15	Chapter 23, Section 23.1.8	In the Draft EA conditions, RP2 and RP4 are listed in Table 23-7: Mine affected water release points, sources and receiving waters. What does "no control releases" mean? Water released from these points must not exceed the limits stated in the EA. If no control release is stated then why are they listed? Will there be a continuous release from these points. Further information should be provided on how release from RP2 and RP4 will meet the limits (EC, flow, etc...).	Addressed in Chapter 23, Section 23.1.8
	S32.16	Chapter 23, Section 23.1.8	In the Chapters 5, 9 and 23 (draft EA) the definition of environmental dam/sediment ponds is unclear. The release points RP6, RP7, RP8, RP8, RP10 and RP11 are from dams with contaminated water and should not be separated in Table 23-7 Mine affected water release point, sources and receiving waters. The "Environmental dam release points" row should be removed from Table 23-7 Mine affected water release point, sources and receiving waters.	Environment dam has been used to be consistent throughout the EIS and SEIS.

Submitter No.	Submission Reference No.	Relevant EIS Section	Issue Detail	Central Queensland Coal Response/Cross-reference Location
	S32.17	Chapter 23, Section 23.1.8	The release trigger investigation levels applied to the dissolved concentrations for metals. A note should be added to Table 23-9 specifying that the release triggers apply to the dissolved metal concentrations.	A table footer has been added to Chapter 23, Table 23-9 stating that 'Release triggers apply to the dissolved metal concentrations.'
	S32.18	Chapter 23, Section 23.1.8	In Table 23-9, specify the form of nitrate monitored. Nitrate as N or Nitrate as Nitrate. The trigger level in the Model water conditions for coal mines in the Fitzroy Basin is 1100 µg/L for Nitrate as nitrate which equates to 250 µg/L of Nitrate as N. The form of nitrate should be included in the quality characteristic column in table 23-9.	Chapter 23, Table 23-9 has been amended to demonstrate that Nitrate as N will be used as per the ANZECC Guidelines.
	S32.19	Chapter 23, Section 23.1.8	Table 23-10 Mine affected water release during flow events. A water strategy based on the management of the water quality and maximum flow rate for 11 combined release points seems very complicated to manage. Further information on the location of the gauging station is essential to discuss receiving environment. There is insufficient information on how the in stream categories were established and how the maximum flow rate and EC limit value were determined. The water release strategy should be reviewed to manage the release on creek catchment basis as a minimum. Information regarding the determination of the receiving water flow categories, the maximum release rate and EC release limits should be provided.	Addressed in Chapter 9, Section 9.9 and Chapter 23, Section 23.1.8.
	S32.20	Chapter 23, Section 23.1.8	F13 – Notification of release event - the expected cessation date and the expected volume to be discharged from each point should be included in the notification of a start of a release. Expected cessation date and expected volume to be discharged should be added to condition F13.	Condition F13 of Chapter 23 – Draft EA Conditions has been amended.
	S32.21	Chapter 23, Section 23.1.8	It is not specified how far MP3 is from the release point. From Figure 9-78, it seems that MP3 is too close to RP10 to assess if the downstream water quality has been affected by a discharge from the mine. Consider moving MP3 downstream, before the confluence with other tributaries.	Addressed in Chapter 23.MP3 has been moved downstream, before the confluence with Styx River
	S32.22	Chapter 23, Section 23.1.8	The draft EA conditions should include a condition for the proponent to submit REMP design document on request. The following REMP condition should be included in the Draft EA: "A REMP Design Document that addresses the requirements of the REMP must be prepared and made available to the administrating authority upon request."	Addressed in Chapter 23. Condition F20 has been amended to address this comment.

1.3 SEIS IESC Submission

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
1	Advice is sought on: - the adequacy of the revised groundwater model and its predictions, including the predicted drawdown in each hydrogeological unit, given it is rated as a Class 1 model. - whether the limited time-series data from site monitoring bores is adequate to inform the model and predict the duration, extent and magnitude of groundwater contours for the life of the mine.	1	The revised groundwater model is inadequate for predicting potential impacts with the required degree of confidence. The revised conceptualisations are a significant improvement on those previously presented. However, their translation into, and the subsequent parameterisation of, the groundwater model appear to be non-systematic and poorly justified. A high degree of confidence in groundwater modelling and modelling results, including rigorous modelling uncertainty analysis, is required to enable an assessment of the materiality of risks posed by the project. Without an adequate groundwater model, the magnitude, duration and extent of potential impacts cannot be determined and adequate mitigation and management measures cannot be identified and implemented. This is essential for assessment of this project as it is located next to sensitive and high value environmental assets.	Additional uncertainty analysis has been undertaken, including extending the range of hydraulic properties simulated. The uncertainty analysis has explored the model predicted outcomes that may arise if the calibrated parameters are not representative of reality, and has assessed the outcomes of the "worst case" hydraulic properties. The system has not been stressed to a sufficient magnitude to enable an improved degree of confidence in the model predictions. This would only be possible once mining has commenced (and dewatering stresses are realised). Therefore, the model is still classified as a Class 1 model, but it does incorporate some elements of a Class 2 or 3 model.	Addressed in Appendix A6 - Groundwater technical report, Section 3.7 and Chapter 10, Section 10.7.4.7.
		2	The proponent's Class 1 model (as defined in Barnett et al. 2012) is not sufficient for impact prediction for such a high-risk project located within close proximity to a World Heritage Area. As discussed in IESC 2017 (paragraph 3) and below, modelling needs to be based on representative site-specific data for hydraulic parameters (such as hydraulic conductivity and specific storage), including in deeper layers. The groundwater model needs to be calibrated with additional data that capture the spatial and temporal variability in hydraulic head.	Additional site specific data have been obtained (additional K and S estimates for Alluvium and Styx Coal Measures, to below the base of mining), which are in agreement with the K properties adopted in the model. The calculated storage parameters are higher than that simulated in the model and the predictions are therefore conservative (over estimate of drawdown). Hydraulic head data obtained from newly installed bores does not affect the model calibration.	Addressed in Appendix A6 - Groundwater technical report, Section 2 and Chapter 10, Sections 10.5.6.3 and 10.7.4.7.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		3	The IESC also notes that most of the concerns raised in IESC 2017 (Attachment A) relating to the limitations of the groundwater impact assessment and modelling (see IESC 2017 paragraphs 3 and 4 in particular) have not been adequately addressed: The proponent has collected information and data to inform the Environmental Impact Statement for this project. The IESC considers that a greater level of detail in the information and analysis is required to determine the full range of potential impacts to water resources. Information to support the proposal must have finer geographical resolution and be collected more frequently to improve confidence in predictions. There is not enough information to assess risks or to determine whether risk mitigation measures are likely to be effective. Furthermore, existing land use such as grazing and cropping must be considered to understand the baseline condition of the Styx River Catchment before development. There is uncertainty in the assessment of surface water and groundwater impacts as the mine design has not been finalised and may be varied from that presented in the current Environmental Impact Statement. It is not possible to assess, from the information provided, whether alternative mine layouts would result in lower impacts and risks to the receiving environment, much of which is of high environmental value. More detailed information is required to fully assess the relationship between mine design and potential impacts and to inform a comprehensive risk assessment.	An alternative mine plan has been simulated and shows that there is no material change to the predicted impacts. The uncertainty in the mine schedule is not significant compared to the uncertainty in the hydrualic properties of the Styx Coal Measures, which has been addressed as part of sensitivity and uncertainty testing. The assessment incorporates backfilling of pits as mining progresses. Comprehensive studies have been completed to assess the level of dependence of ecological and commercial groundwater receptors on groundwater, including water potentials, stable isotopes, radon sampling / measurements. The most conservative assessment assumes pristine conditions, as a result we have not considered the impact that existing anthropological activities have had on the ecological function of ecosystems or nutrient loadings, for example.	Addressed in Appendix A6 - Groundwater technical report, Section 3.7 and Chapter 10, Sections 10.6 and 10.7
		4	The major factors that contribute to the low degree of confidence in the revised model are discussed below.	-	-

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		4a	There are limited time-series data available with which to calibrate and validate the model. Time-series data are available at 18 locations spread across the six layers of the groundwater model according to the calibration hydrographs provided in the Groundwater Technical Report (SEIS, App. 6, Figures 24a, 24b and 24c). Of the available sites, 16 have less than 12 months of data. Most of these sites have five observations made between November 2017 and March 2018. These data are inadequate to characterise the likely seasonal variations in groundwater levels. Additionally, this lack of appropriate seasonal data compromises the model's ability to predict future variability. A baseline dataset of at least two years of contiguous monthly sampling is required and given the seasonal nature of rainfall and the high likelihood of extreme events such as cyclones, even this may not be sufficient. The requirements for baseline data were discussed in IESC 2017.	Approximately 18 to 20 months of data are available at the time of the AEIS (Dec 2018) to help inform the conceptual understanding of the influence of climate variability on recharge and potentiometric responses. 20 3rd party bores have been used to assist in establishing a baseline, along with 46 Project monitoring bores. The number of observation bores used for model calibration are as follows – alluvium (layers 1 and 2; 28 bores), Styx Coal Measures (Layers 3, 4 and 5; 18 bores), Basement (layer 6; 20 bores). A number of the monitoring points now have more than 2 years of data, and a larger number have between 10 and 24 months of data. A review of the newly available data (less than 6 months) has not warranted a change to the model calibration (i.e. the recent data fits with the conceptualisation and validates the model, i.e. heads predicted for the new data are consistent with the newly acquired data at locations of newly installed bores). The lack of monitoring points having more than 2 years of head data is compensated for by uncertainty analysis, particularly in regard to testing the 'breaking point' for calibration and the overall hydrogeological conceptualisation.	Addressed in Chapter 10, Section 10.5 and Appendix A6, Section 3.5.2 Appendix A6, Section 3.5.4 Chapter 10, Section 10.7.4.8 and Appendix A6, Section 3.7.3

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		4b	Despite the completion and testing of several new bores to determine some hydraulic parameters spatial coverage is limited and the groundwater model is mostly constrained by information derived from the shallow aquifers. Further data, preferably from long-term pump tests, are needed for realistic and justifiable model parameterisation (for all parameters and layers). This will improve confidence in model predictions.	There are now 19 bores installed in SCM overburden, 4 in SCM interburden and 8 in the SCM underburden, with coverage across much of the model domain. This comment has been addressed to the extent possible by hydrogeological setting. The Coal Measures have insufficient yield and K to support effective pumping tests. As a result, slug testing has been conducted. A limited number of short-term airlift pumping tests have been conducted, with observations recorded from near-by observation bores but in most cases pumping yields (much less than 1L/s) could not be sustained for more than a few minutes. This work demonstrates the low K of the Coal Measures. While the sensitivity analysis has shown that the calibration (to hydraulic head) is sensitive to deeper layer hydraulic properties/parameterisation, the predicted outcomes (i.e drawdown magnitude and propogation) is not overly sensitive/dependent on these parameters. Therefore, additional site specific data for the deeper layers will have limited bearing on predicted outcomes.	Addressed in Appendix A6 - Groundwater technical report, Section 2. Appendix A6 - Groundwater technical report, section 3.7 Appendix A6 - Groundwater technical report, Appendix A Chapter 10, Section 10.5.6

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		4c	The number of bores at which baseline data are collected should also be increased as currently there is insufficient spatial and depth coverage across the groundwater model domain. Monitoring in the Basement aquifer is discussed further in the response to Question 3. When these bores are installed, testing (e.g. pump tests) should be undertaken to provide site-specific measurements of hydraulic parameters which can be used to parameterise the groundwater model.	See response to Point 4b. Basement will not be mined, but depressurisation will occur. Uncertainty analysis shows that varying the basement aquifer properties by at least 2 orders of magnitude above the calibrated values does not have any bearing on predicted outcomes.	Addressed in Appendix A6 - Groundwater technical report, section 3.7 and Chapter 10, Section 10.5.6
		4d	Several features and processes that should be incorporated in the groundwater model are either not included or inadequately incorporated. The following need to be included to improve confidence in model predictions. i. The backfilled voids require appropriate and realistic parameterisation of their hydraulic properties (e.g. hydraulic conductivity of backfilled material will be greater than the undisturbed material). Changes to permeability and specific storage which may occur with consolidation of the waste rock and tailings should also be considered and incorporated into the groundwater model. ii. All surface water features must be included, whether natural or constructed for the project (e.g. dams and leakage from these). Surface water-groundwater connectivity is a key component of the hydrological, hydrogeological and ecological systems at the project site. There is large uncertainty on the influence of groundwater discharge on surface water flows as no site-specific information has been derived for streamflows in the catchment (see paragraph 6 below). iii. Potential hydraulic loading impacts from the waste rock dumps must be considered. Understanding how this process could affect groundwater discharges to GDEs and alter groundwater flow paths and groundwater quality, including within the backfilled voids, is important for characterising potential impacts to GDEs and long-	The approach to modelling for effects assessment provides a conservative analysis of groundwater system response to mine water affecting activities. i. A backfill scenario has been simulated which considers higher hydraulic conductivity and storage than insitu materials. The results are similar to those predicted for the basecase and indicate that the extent of the drawdown cone is mainly controlled by the properties of the coal seams and interburden. ii. Water storages if lined will not leak significantly, and if unlined will serve to some extent mitigate drawdown effects due to dewatering. The approach to exclude surface water storages from the modelling is therefore conservative. iii. A hydraulic loading scenario has been simulated which considers a reduction in hydraulic conductivity and storage. The results are similar to those predicted for the basecase and indicate that the extent of the drawdown cone is mainly controlled by the properties of the coal seams and interburden.	Addressed in Appendix A6 - Groundwater technical report, Section 3.7 Chapter 10, Section 10.7.4.7 Chapter 10, Section 10.7.4.7 Appendix A6 - Groundwater technical report, *Table 3-8* Chapter 10, Section

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
			term surface water quality. iv. Current modelling does not predict that groundwater drawdown will occur in areas where seawater may be present. However, given the limitations of the modelling this possibility should be investigated further. This should include collecting further information to inform additional modelling approaches such as field studies to identify the location of the seawater-freshwater interface. Further discussion of monitoring relating to potential seawater intrusion is provided in the response to Question 3. These data are needed to implement the additional modelling approaches (e.g. using SEAWAT) discussed in paragraph 3d of IESC 2017.	iv. Nested monitoring bores have been installed near Ogmore to attempt to locate the seawater-freshwater interface. The bores screen the Alluvium (x2), Coal Measures overburden (x1), Coal Measures interburden (x1) and Coal Measures underburden (x1). The presence of a seawater -freshwater interface is not indicated at this location, which is beyond the northerly extent of predicted drawdown influence.	10.7.4.7 Chapter 10, Section 10.5.6 and Section 10.7.3.6
		4e	While sensitivity and uncertainty analysis has been undertaken it is inadequate given the high risks associated with the project. The analysis is primarily a sensitivity analysis. The analysis was not undertaken in a rigorous and systematic manner and there is insufficient justification provided for the range of parameter values examined. Further model improvements as outlined above are required and then a rigorous sensitivity and uncertainty analysis will be needed. Given the high risks from the project, this analysis should objectively quantify uncertainty and examine the correlation between parameters, likelihoods and parameterisations that are representative of the natural variability. Additionally, as discussed in paragraph 4 of IESC 2017, this analysis should examine a broader range of model parameterisations, model boundary conditions and episodic versus periodic recharge.	The latest modelling work has included a rigorous and systematic analysis of model sensitivity and uncertainty in regard to parameterisation, that is considered appropriate for the study area. This testing involved assessing the impact of a broader range of hydraulic properties on calibration and drawdown extent. Recharge rates were assessed as part of the Model Calibration uncertainty analysis, but not as part of the Alternative Conceptualisation uncertainty analysis. It is noted that where Ks are adjusted there is a need to adjust recharge by a similar amount, which has been tested as part of sensitivity assessment. However, Boundary Conditions associated with the model domain interaction with the Coral Sea and Broad Sound have not be assessed as these boundaries are essentially static.	Addressed in Appendix A6 - Groundwater technical report, Section 3.7 Chapter 10, Section 10.7.3.7.
		4f	An independent peer review of the groundwater model has not been reported. This review should be undertaken as recommended by the Australian Groundwater Modelling Guidelines (Barnett et al. 2012). This was highlighted in paragraph 3f of IESC 2017.	Glen Walker has undertaken a review of the adequacy of our modeling approach, but whilst this has not constituted an independent review it has assisted in adjusting our approach for the latest model development / revision. An additional third	Addressed at Appendix A22 – Independent Groundwater Model Peer Review

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
				party has been engaged to conduct an independent review.	
2	The amended EIS proposes changes to the mine plan (specifically no final voids, reduction from three pits to two pits and relocation of the coal overland conveyor) and mining sequences. Noting this, what does the IESC consider to be the key risks and impacts of the project?	5	The key risks identified in IESC 2017 (paragraphs 20-39) remain inadequately addressed with the exception of risks related to the location of the coal conveyor (moved in the current plan) and the pit lakes (backfilled in the current plan). Changes in the mine plan have altered the magnitude and nature of key risks and potential impacts associated with surface water and the final landform, and are described below.	Noted	
		6	The surface water modelling of streamflow yields and floods are not supported by any period of local gauging and no consideration is given to the uncertainty in the regional parameterisation. The estimates are considered to have a weak level of defensibility and are insufficient for evaluating impacts on sensitive and high value environmental assets. No advice is provided on the implications of the streamflow yields being towards the lower limits of their associated confidence limits, or flood estimates being towards their upper limits. No attempt has been made to make use of streamflow gauging records in adjacent river basins, either to confirm the applicability of the regional parameters, or to correlate with short-term surface water gauging in the catchments of interest. Given the large uncertainty involved in relying solely on regional information, it is essential that more than one method be used to derive single best estimates of hydrological characteristics (Ball et al. 2016; Nathan and McMahon 2017).	The relevant Project catchment is ungauged. However even if a local gauge were to be installed for the purpose of this project, it is unlikely that a streamflow record of sufficient length could be obtained to adequately capture and describe the rainfall and flow characteristics of the catchment, particularly as it relates to extreme floods. The upper confidence limit, lower confidence limit and best estimate of RFFE results are plotted against the XP-RAFTS runoff model results for those AEP's under consideration. Following this analysis, a regional comparison is undertaken in which the performance of the XP-RAFTS model (which, it should be recalled, were shown to broadly agree with the RFFE results) is compared to gauged rainfall and streamflow data from the adjacent Water Park catchment. A sensitivity analysis of XP-RAFTS modelling parameters was then undertaken and described in detail.	Addressed in Chapter 9, Section 9.6.1.2, and Figures 9-49, 9-50, 9-51, 9-52 and 9-53 and Tables 9-49, 9-50 and 9-51.

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				Uncertainty in the regional parameterization (which we take to mean the input data that forms the basis of the RFFE estimates) is not ours to consider. The RFFE tool was developed during the Australian Rainfall and Runoff 2016 Revision Project and is provided as a complete tool that does not allow for any type of user-supplied adjustments.	
		7	The coal conveyor location has been revised. It will now follow the Bruce Highway corridor and pass under the highway. The conveyor has not been explicitly included in the flood model. The proponent states that they will undertake assessment of flood immunity at the time of final design (SEIS, Ch. 9, p. 9-150). From maps of flood modelling, the proposed location appears to be subject to flooding that connects to Deep Creek downstream in a 9.5% annual exceedance probability (AEP) event. The risks to downstream water quality from flooding the coal conveyor (or at least around the coal conveyor) must be assessed.	The new coal conveyor location has been included in updated flood modelling for the site. Water from the culvert in which the conveyor is located will report to Dam 2, which forms part of the Projects dirty water management system. Mine affected water management has been updated as has the mine affected water release strategy. Impacts associated with the unauthorized release of mine affected water has been updated.	Addressed in Chapter 9 Sections 9.6.2, 9.6.3, 9.7, 9.9. and 9.10.3.
		8	One of the key surface water risks is release of sediment to the downstream environment, including the Great Barrier Reef World Heritage Area and Marine Park, the Broad Sound Fish Habitat Area, the Styx River Estuary and the riparian habitat of Tooloombah Creek and Deep Creek. The proponent has stated that they will develop an Erosion and Sediment Control Plan (ESCP) (SEIS, Ch. 5, Section 5.11) to manage this potential risk. Given the high likelihood of erosion (and hence sediment release from the project site) due to the prevalence of sodic soils, and the high value and sensitivity of the downstream environment, this plan should be provided before the project progresses to allow an assessment of the adequacy of potential mitigation and management options. The plan should include estimates of the total sediment load (in tonnes) attributable	The sediment load assessment and erosion and sediment control sections of Chapter 5 have been updated. The combination of engineered sediment controls and the removal of grazing from within the vast majority of the Mamelon property will result in a significant reduction in the volume of sediment being mobilised during the wet season. This is consistent with the Reef 2050 Plan in that the proposed project will result in a net benefit.	Addressed in Chapter 5, Sections 5.6, 5.7 and 5.11.

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			to the project with and without mitigation measures encompassing both typical and flood conditions. Additionally, the seasonal timing and frequency of sediment-laden flows and the characteristics of the entrained sediments (e.g. particle size and chemical composition) should be considered with regards to light and sediment sensitive ecological processes which may be occurring simultaneously (e.g. laying of demersal eggs or recruitment of seedlings).		
		9	The proponent does not adequately assess the risks arising from erosion either within waterways or across the landscape during high-flow events, even though the high potential risk from land erosion is acknowledged (SEIS, Ch. 5, Table 5-48). Factors contributing to erosion risks and associated water quality impacts that require further consideration are discussed below.		
		9a	Soils in the area are highly dispersive, leading to a high erosion risk for any exposed soil. This is a risk for the site overall, but is likely to be particularly acute in areas where water flow is concentrated such as flow diversion structures. The proponent plans to install a number of bunds and diversion drains to manage water flow. It appears that bunds will be constructed from local, possibly dispersive material, since the proponent states that they do not anticipate the need for new borrow pits outside the mining lease (SEIS, Ch. 3, p. 3¬ 42). No mitigation measures have been described in the current documentation to manage erosion in these structures and at their outflow locations.	The management of erosion and sediment mobilisation have been discussed in terms of permanent infrastructure and temporary infrastructure which is associated with construction works or landscape management works.	Addressed in Chapter 5, Section 5.11 and Chapter 9, Sections 9.10 and 9.11.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		9b	Water infrastructure at the site will be ineffective in containing sediment-laden water during most flood events. This means that there will be no opportunity for sediment to settle or to receive treatment with flocculants prior to discharge. i. Environment dams (where sedimentation is the main treatment) have been sized to capture a 9.5% AEP rain event. There is more than an 80% chance that one or more floods of at least this magnitude will occur over the 18-year life of the mine; however no assessment is provided on how release of sediment-laden water will impact high value and sensitive downstream environments. Similarly Dams 1 and 2 are subject to flooding during a 9.5% AEP flood. These dams contain water from open-cut dewatering and from the mine infrastructure area (MIA). There has been no assessment of the potential impacts from this flooding. An assessment of the potential impacts to sensitive and high value downstream environments from uncontrolled discharges from these structures is needed. ii. Flood and hydrodynamic modelling does not incorporate the proposed diversion bunds beside the Bruce Highway, or the structure in which the conveyor will be located beneath the Bruce Highway. The bunds will channel water from rainfall events towards Deep Creek and possibly into the conveyor structure. Flows are likely to be high-velocity, causing large shear stresses. Given the highly erosive nature of the soils, there is a significant risk of scour along the bunds, particularly where they discharge into Deep Creek and possibly within the conveyor structure.	The management of erosion and sediment mobilisation have been discussed in terms of permanent infrastructure and temporary infrastructure which is associated with construction works or landscape management works. Flood modelling has been updated to include the new waste dump and infrastructure layouts, including the mine affected water drainage system.	Addressed in Chapter 5, Section 5.11 and Chapter 9, Sections 9.10 and 9.11. Addressed in Chapter 9, Section 9.6

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		9c	The factors described above will lead to higher erosion during high flows. Additionally, when environment dams overtop, they cannot function to remove sediment from runoff. Water quality targets for the Great Barrier Reef are defined in terms of sediment flux. The proponent does not calculate – nor have targets for – the total sediment flux expected from the project. Total sediment flux from the project should be estimated for typical and high-flow conditions. The Reef 2050 Water Quality Improvement Plan (State of Queensland 2018) contains a target for no net increase in sediment transport in the Styx River catchment.	This has been updated since the original SEIS	Addressed in Chapter 5, Section 5.6.
		10	Given the large uncertainty involved in characterising flood (and hence related erosion and water quality) risks, an assessment should be included that 'stress tests' the proposed flood protection of mine infrastructure on the basis of flood loading estimates that approach the upper bounds of the associated confidence limits. If the consequences of failure differ materially over this range, or there is a threshold effect above which there is an important change in the impacts, then it may be appropriate to adopt a design which accommodates a level of flood risk above the best estimate.	Please see our commentary above regarding the upper confidence limits. We would not consider it appropriate to use the upper limits as a basis for assessing mine flood risk, as (by definition) the confidence of the upper limit is very low and modelling it would simply create an unrealistically large flood for the associated AEP probability tag. Fortunately, we have already the largest flood that can be probably conceived – the PMF - and have used it to set bund levels to the mine pits, waste rock stockpiles, and the rail load-out facility. Figure 9 62, Figure 9 68, Figure 9-74, Figure 9-80, Figure 9 86, and Table 9-57 document the PMF modelling results. As such, we do not believe that any further stress testing is necessary.	Addressed in Chapter 9, Figures 9-62, 9-68, 9-74, 9-80 and 9-86, and Table 9-57

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		11	The IESC's previous concerns regarding controlled discharges (IESC 2017 paragraphs 33-35) have not been addressed. The proponent continues to propose dry weather discharges which could have significant impacts on the flow regime, ecology and water quality of the receiving creeks and further downstream. The IESC additionally notes that some of the proposed water quality objectives exceed the default ANZECC/ARMCANZ (2000) guideline values. Analytical limits of reporting are cited as the reason for this (e.g. for copper). The IESC does not consider this is an appropriate justification for adoption of less stringent guideline values.	This has been updated in Chapter 9 – Surface Water and also Chapter 23 – Draft Environmental Authority.	Addressed in Chapter 9, Sections 9.5 and 9.9 and Chapter 23, Section 23.1.8.
		12	It is unclear whether the proponent will need to extract surface water for operational activities. If they do, this may affect the downstream environment, particularly if extraction occurs during periods of low flow. Discussion of the updated water balance implies that harvesting water from Tooloombah Creek will no longer be required (SEIS, Ch. 9, p. 9-49). However, the proponent states elsewhere that 'a reliable source of water is required for years 10–12 of the construction and operation of the project' (SEIS, Ch. 3, p. 3 33). Additionally, the results of the water balance are contingent on uncertain model inputs, including groundwater inflows. To clarify whether water will need to be extracted from Tooloombah Creek the proponent should provide an input-output statement following the Water Accounting Framework for the Minerals Industry as suggested in the IESC Information Guidelines (IESC 2018). This statement should include whether the data are measured, estimated or simulated and must specifically examine the dry season water balance. In the event that extraction will be required, the proponent should clarify where the water can be sourced from and if sufficient water is available considering existing users. They should also explain how they plan to minimise potential environmental impacts from this extraction.	The EIS reported water permits will be sought to take water from Tooloombah Creek during construction. Since the EIS, further water demand assessment has been undertaken. This assessment has confirmed that there will be adequate water availability through using existing farm dam water supplies until the Raw Water Dam becomes operational. Should make-up water be required during construction, this will be trucked to site. The operational water requirement will be supplied from catchment of on-lease stormwater runoff, mine affected water from pit dewatering activities and water reuse within the CHPP. Consequently, permits to harvest water from Tooloombah Creek will not be required. The Mine water balance has been updated following the methodology described in the Water Accounting Framework for the Minerals Industry User Guide (Minerals Council of Australia, 2014).	Addressed in Chapter 3, Section 3.4.5.1. Addressed in Chapter 9, Section 9.7.1.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		13	Given the risks associated with the final landform, the proponent should describe, design and provide evidence of how they propose to construct and manage the final landform so that it does not pose an ongoing risk to the downstream environment. Evidence should include examples of successful cover design and restoration from similar sites. Information should be provided at the assessment stage that: i) justifies the choice of plan for the final landform and, ii) provides a monitoring program to measure the effectiveness of site restoration. For successful remediation of mine sites with dispersive material a recent ACARP report (Dale et al. 2018) found that seven factors need to be addressed (outlined below). The proponent should explain how they plan to address each of these factors (from Dale et al. 2018, p. 152): a. soil and spoil characterisation: critical to inform design, treatment management and monitoring of dispersive sites; b. soil and spoil amelioration: practices that ameliorate dispersive or erosive soil and spoil properties; c. landform design: design factors that minimise concentration of the erosive force of incident rainfall; d. practice control factors: soil design and management factors to reduce erosive energy; e. crop management factors: vegetation management practices to reduce erosive energy; f. tunnel initiation factors: site and management factors contributing to reduced tunnel development; and, g. monitoring and maintenance: monitoring requirements to guide timely and targeted remedial treatment.	Since the release of the EIS the Queensland Government has introduced the Mineral and Energy Resources (Financial Provisioning) Bill 2017.The Bill: • Establishes a new financial assurance system for resource activities in Queensland, including a pooled fund for resource entities that meet the criteria; and • Reforms the mine rehabilitation process, including requirements for upfront commitments to progressive rehabilitation and mine closure though a Progressive Rehabilitation and Closure Plan (PRCP). The new requirements for financial assurance and rehabilitation for resources activities is expected to commence on 1 July 2019. The primary change introduced by the Financial Provisioning Bill is that plans of operations for mining projects with site-specific environmental authorities will be replaced with PRCPs, that will: • Provide the plan for the mining activity; • Identify the post mining land use; and • Detail progressive rehabilitation, including milestones and timeframes. Land will be available for rehabilitation generally if it is not being used for mining, does not contain permanent infrastructure and will not be mined within the next 10 years. A PRCP guideline will be developed, to assist with the preparation of PRCPs. The detail required for the progressive rehabilitation requirements will not be known until the guideline is released. Central Queensland Coal will, once appropriate guidance is developed and disseminated by the Queensland Government, prepare a PRCP. Central	Addressed in Chapter 11, Sections 11.6 and 11.20.

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				Queensland Coal commits to addressing the seven factors reported in Dale et a., 2018) in the PRCP.	
		14	The change to backfilling the voids provides the proponent with an opportunity to reduce the risk of acid mine drainage (AMD) and other contaminant-bearing material entering the downstream environment. While the IESC considers the proposed backfilling of the voids is the best option to reduce long-term legacy risks from the proposed project, the changed final landform poses a number of new risks that do not appear to have been assessed.		
		14a	Potentially acid-forming (PAF) material in rejects will initially still be stored in above-ground waste rock dumps (SEIS, Ch. 8, p. 8-39 and p. 8-41). While this is unavoidable for short-term storage, the material is proposed to be stored in waste stockpiles close to Deep Creek and Tooloombah Creek and is not proposed to be placed in the pits. These above-ground stockpiles will therefore potentially pose long-term leachate contamination risks to both watercourses.	Geochemical characterisation was undertaken for a total of 195 samples (including overburden, potential rejects, and fine coal reject samples) from 15 bore holes covering a range of depths from 11.6 meters below ground level (mbgl) to 147 mbgl in various lithologies. The majority of samples were classifiable as NAF. A total of four samples had positive NAPP, two of which were classifiable as PAF (with ANC / MPA ratio <2 and NAPP >10 kg H_2SO_4/t), two as low capacity PAF (with Sulphide-sulphur (SCR) >0.2 % and NAPP between 0 and 10 kg H_2SO_4/t) and one sample was classified as uncertain (UC; with ANC / MPA ratio <2 and NAPP <0 kg H_2SO_4/t). There was no discernible trend for which type of materials (waste rock or potential coal reject) would be more likely to contain PAF. As such fine coal rejects (21 samples) were also	Addressed variously in Chapter 8 and Chapter 9, Section 9.6.3.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
				analysed to provide an indication of the acid potential and composition of the coal processing waste stream. Similar to the potential rejects and waste rock results the fine rejects were largely classifiable as NAF with ANC/MPA ratios indicative of negligible risk. The acid potential for the fine rejects (tested to date) were summarised as follows: • One sample was potentially acid forming (PAF-low capacity) (with NAPP 4.2 kg H_2SO_4/t); • All other samples were non-acid forming (NAF) (most with relatively high buffering capacity); and • Seven samples were acid consuming with acid neutralization capacity greater than 100 kg H_2SO_4/t. The elemental composition of fine rejects was also similar to the potential rejects and waste rock samples which would suggest that components (in feed stocks) do not concentrate as a result of processing. Based on works to date, the waste rock and coarse / fine rejects generated during the extraction and processing of the resource have limited potential to impact upon Deep Creek and Tooloombah Creek. Furthermore, the site drainage system, which includes run off from the waste rock stockpiles, will capture mine affected water further limiting the potential for impacts to Deep Creek and Tooloombah Creek.	

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		14b	The final landform is proposed to be covered in subsoil and topsoil removed from the pit area prior to mining (SEIS, Ch. 11, p. 11-30). Given much of the local soil is highly dispersive and any sodic material will be disposed of within waste rock 'cells', it is possible that insufficient locally sourced topsoil or subsoil will be available to fully cover and rehabilitate the disturbed site. Re spreading of any sodic or erosive soils would not be appropriate given it would represent a significant water quality and sedimentation risk to the high value and sensitive downstream environments, including the Great Barrier Reef World Heritage Area and the Broad Sound Fish Habitat Area.	Noted. This will be addressed in the PRCP.	
		14c	The potential impacts to both groundwater and surface water quality from the backfilled voids have not been fully considered. The proponent expects that groundwater will recover post-mining and flow through the backfilled voids where mobilisation of contaminants (e.g. metals, acids, salts) could occur over a long period of time. Based on the hydrogeological conceptualisation (see SEIS, Ch. 10, Figure 10 43) this potentially contaminated groundwater would then flow north (depending on potential hydraulic loading due to the waste rock emplacements – see paragraph 4d(iii)) and discharge to Tooloombah Creek, Deep Creek and the Styx River, potentially adversely affecting these and other sensitive environments downstream.	The geochemical assessment for waste materials indicates the potential for generation of acidic leachate is low to negligible. A deterioration of groundwater quality in response to waste materials management is considered very unlikely to occur. Geochemical testing indicates waste materials have some neutralising capacity. Back filling of mine pits with materials having neutralising capacity will provide adequate management of the risk of mobilisation of 'metals, acids and salts'.	Addressed in Chapter 10, Sections 10.5.5.3 and 10.7.4.5 and Chapter 8, Section 8.9.2
		14d	There is also the potential for infiltration through the cover and backfilled voids (minus losses to vegetation) to cause localised groundwater mounding and to mobilise contaminants.	The issue of potential generation of contaminants is addressed in response 14c. Sensitivity modelling has involved testing of the conceptual hydrogeological model risk to mobilisation of 'metals, acids and salts'. Part of this has involved assessing the potential for water table mounding (due to enhance seepage and hydraulic loading) post-mine and the mobilisation of contaminants. Seepage from site facilities is unlikely a long-term issue (water storage dams will be decommissioned, waste landforms will be reduced in size due to backfilling).	Addressed in Chapter 10, Section 10.7.4.8.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
				Sensitivity analysis indicates mounding is also not likely to be an issue. This outcome also needs to be viewed in terms of the response to 14c.	
		14e	Coarse and fine coal rejects are proposed to be mixed with waste rock prior to being disposed of within the open cut pits and waste rock stockpiles. Disposing of coal rejects in the open cut pit and backfilling will provide an additional source of contaminants that could be mobilised in groundwater that flows through the final landform following groundwater recovery. This potential contaminant loading should be evaluated and the long-term loads quantified.	See response to 14c and 14d. Coal rejects will be mixed with overburden materials, which all have been shown to have low to negligible potential for acid generation and neutralizing capacity. In addition, if there is the potential for mobilisation of contaminants, it wont occur until after the groundwater system has fully recovered, at which time the most of the backfilled will be sub-aqueous, which will mitigate ongoing oxidation and potential for acid generation.	Addressed in Chapter 10, Sections 10.5.5.3 and 10.7.4.5 and Chapter 8, Section 8.9.2
		15	No flood or hydrodynamic modelling incorporating the final landform has been undertaken. The IESC notes that the highly dispersive soils and seasonally high-intensity rainfall in the project area make design and restoration of an environmentally acceptable final landform challenging. The final landform will need to minimise the risks from erosion, contaminant release and invasive species, plus be aesthetically suitable given it is located in a greenfield area. If not appropriately designed and implemented, the final landform could present a long-term hazard. The IESC considers that the final landform should be modelled and its potential influence on flood extent and flow velocity assessed.	Flood modelling of the indicative final landform has been updated to reflect the new mine layout. As discussed above new legislation coming into effect in Queensland in 2019 requires the preparation of a PRCP. Further flood modelling will be undertaken as part of preparing the PRCP and ongoing throughout the project as part of the progressive rehabilitation program that has been committed to by Central Queensland Coal.	Addressed in Chapter 11, Section 11.11.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		16	Construction of post-mining landforms in areas with sodic soil is acknowledged to be a significant issue that poses challenges for successful restoration. Avoiding placement of sodic material at the surface is recognised as best practice, though not always feasible (Vacher et al. 2004; Dale et al. 2018). It is imperative that sodic materials in the final landform are carefully managed, as remediation of tunnel erosion is difficult and not always possible (Vacher et al. 2004). The high value and sensitivity of the downstream environment makes management of this issue particularly important.	Noted. This will be addressed as part of the PRCP that Central Queensland Coal will prepare once the guidelines are issued by the Queensland Government.	Addressed in variously in Chapter 11.
		17	Given the high erodibility of soils at the site and the sensitive downstream environments, landscape evolution modelling of final landform options should be undertaken (e.g. with models such as CAESAR and SIBERIA, see Section 2.2.1 of Lowry et al. 2015). This is needed to identify the most environmentally acceptable final landform and to assess the potential long-term impact of erosion on the downstream environment, including the Great Barrier Reef World Heritage Area and Marine Park, the Broad Sound Fish Habitat Area, the Styx River Estuary and the riparian habitat of Tooloombah Creek and Deep Creek.	The mine plan incorporates backfill of both Open Cut 1 and Open Cut 2 such that there will be minimal external above ground landform after closure. Landform evolution modelling using models such as CAESAR and SIBERIA require significant parameter input from site data, including measurements of current gully formations. The models are currently not able to capture complex vegetation interactions. The project site has limited historical gully formation present with which to determine appropriate parameters, let alone provide sufficient data for calibration and validation of the models. It is thus considered that well-tested methods of assessing relative catchment erosion due to land use changes such as RUSLE are most suitable for this site at this time.	Comment noted but not addressed.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
3	Advice is sought on whether the measures and commitments proposed in the amended EIS are appropriate to effectively manage impacts to water resources and water-related assets, including: - the proposed use of supplementary water to maintain refuge pools for aquatic species and GDEs, noting that recovery of the water table is expected approximately 80 years after mining commences.	18	Responses to Questions 1 and 2 in this advice cover a number of inadequacies in the assessment of impacts. Additionally, many of the inadequacies in the impact assessment noted in the response to Question 1 of IESC 2017 remain unaddressed. As potential impacts have not been adequately characterised, it is not possible to fully evaluate the effectiveness of potential monitoring and mitigation measures. This is further hampered by the general lack of detailed descriptions of proposed management and mitigation measures (e.g. management plans) and the absence of evidence to support an assessment of their likely effectiveness.	Noted	
		19	Any significant groundwater drawdown beneath Deep Creek or Tooloombah Creek would be highly detrimental to GDEs. For example the loss of groundwater discharge to permanent pools will adversely impact likely important refugia for aquatic species during the dry season. These refugia would provide crucial sources of colonists when flows resume, as has been observed in other dryland rivers (e.g. Perkin et al. 2015). Additionally, drawdown in the alluvial aquifer will reduce the vertical extent of known stygofauna habitat by approximately 90% (SEIS, Ch. 10, Table 10-66). The IESC has little confidence in the proponent's predictions of the magnitude of expected groundwater drawdown impacts, due to deficiencies in groundwater modelling discussed in the response to Question 1.	See response to comment 1.	See response to comment 1.
		20	The proponent has proposed to manage these impacts through supplementary flows. Insufficient information about supplementary flows has been provided.	Additional information has been provided including examples of supplementary flow programs and assessment of possible sources.	Chapter 10, Section 10.8.4.5.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
	- whether the proposed monitoring framework (in conjunction with the current level of site-specific baseline data) in the amended EIS is adequate to identify and monitor the impacts of the proposed project and to trigger suitable additional management measures to avoid and minimise identified impacts. - whether the proposed bore monitoring network in the amended EIS is adequate to identify water-related impacts and inform suitable management measures.	20a	The potential use of supplementary flows was discussed in detail in paragraphs 49-52 of IESC 2017. Work that would need to be undertaken prior to an assessment of the feasibility of the proposed management measure includes (see IESC 2017 paragraph 49 for further details): i. mapping of GDEs that may require supplementary flows for ongoing survival; ii. studies to characterise the dynamics of surface water-groundwater connectivity, the preferred sources of water for different GDEs and the seasonal characteristics of groundwater used by GDEs; iii. an analysis of water availability, potential sources and the suitability of water quality of potential sources for use as supplementary flows; iv. an assessment of potential impacts to the quality of water in the alluvial aquifer due to recharge from the supplementary flows; v. studies to determine the volumes and discharge rates of supplementary flows needed to maintain GDEs; and, vi. investigations to identify suitable variables that would be monitored to identify when supplementary flows were needed and the effectiveness of flows.	i. Mapping of Type 2 GDEs and Type 3 GDEs has been undertaken, with dry season sampling. ii. Isotope studies have been undertaken to improve understanding of surface water-groundwater connectivity, in addition other studies have been undertaken to assess preferred water sources of identified GDEs. iii. Options for the source of supplementary water has been assessed, including mine produced water and groundwater extracted from the Coal Measures. iv. The quality of the water sourced for supplementary flows is expected to be similar to that of existing water if treated mine produced water is used. v. Have undertaken a preliminary water balance to determine the water demand of Type 2 GDEs. vi. Supplementary flows will be needed during dry seasons and during drier than usual wet seasons. This will be looked at further as part of the TARP and REMP.	i. Chapter 10, Section 10.8.2.2 ii. Appendix A6 - Groundwater technical report, Section 5 and Section 6 iii. Chapter 10, Section 10.8.4.5 v. Appendix A6 - Groundwater technical report, Section 4 and Chapter 10, Section 10.8.4.5.
		20b	While the proponent has provided some discussion indicating that this work is needed in the future, none of the work has commenced and no indication of when this will occur has been provided.	i. Mapping of Type 2 GDEs and Type 3 GDEs has been undertaken, with dry season sampling. ii. Isotope studies have been undertaken to improve understanding of surface water-groundwater connectivity, in addition other studies have been undertaken to assess preferred water sources of identified GDEs. iii. Options for the source of supplementary water has	i. Chapter 10, Section 10.8.2.2 ii. Appendix A6 - Groundwater technical report, Section 5 and Section 6

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
				been assessed, including mine produced water and groundwater extracted from the Coal Measures. iv. The quality of the water sourced for supplementary flows is expected to be similar to that of existing water if treated mine produced water is used. v. Have undertaken a preliminary water balance to determine the water demand of Type 2 GDEs. vi. Supplementary flows will be needed during dry seasons and during drier than usual wet seasons. This will be looked at further as part of the TARP and REMP.	iii. Chapter 10, Section 10.8.4.5 v. Appendix A6 - Groundwater technical report, Section 4 and Chapter 10, Section 10.8.4.5.
		20c	Without undertaking the suggested field work and providing the associated analyses, an assessment of whether this is a feasible management option which can adequately address potential impacts cannot be made. The proponent's own risk assessments have highlighted that if this management measure were not successful, there would be high risks of adverse impacts to GDEs (SEIS, Ch. 15, pp. 15-102 to 15-105; SEIS, Ch. 10, pp. 10-223 to 10-226).	i. Mapping of Type 2 GDEs and Type 3 GDEs has been undertaken, with dry season sampling. ii. Isotope studies have been undertaken to improve understanding of surface water-groundwater connectivity, in addition other studies have been undertaken to assess preferred water sources of identified GDEs. iii. Options for the source of supplementary water has been assessed, including mine produced water and groundwater extracted from the Coal Measures. iv. The quality of the water sourced for supplementary flows is expected to be similar to that of existing water if treated mine produced water is used. v. Have undertaken a preliminary water balance to determine the water demand of Type 2 GDEs. vi. Supplementary flows will be needed during dry seasons and during drier than usual wet seasons. This will be looked at further as part of the TARP and REMP.	i. Chapter 10, Section 10.8.2.2 ii. Appendix A6 - Groundwater technical report, Section 5 and Section 6 iii. Chapter 10, Section 10.8.4.5 v. Appendix A6 - Groundwater technical report, Section 4 and Chapter 10, Section 10.8.4.5.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		20d	The IESC also notes that there are inherent risks in reliance on a single mitigation measure that requires ongoing maintenance for several decades after a project's closure, especially as the mine site is proposed to become a conservation area that could support a diverse vegetation community including deep-rooted plants. Consideration of potential alternative measures is needed.	i. Mapping of Type 2 GDEs and Type 3 GDEs has been undertaken, with dry season sampling. ii. Isotope studies have been undertaken to improve understanding of surface water-groundwater connectivity, in addition other studies have been undertaken to assess preferred water sources of identified GDEs. iii. Options for the source of supplementary water has been assessed, including mine produced water and groundwater extracted from the Coal Measures. iv. The quality of the water sourced for supplementary flows is expected to be similar to that of existing water if treated mine produced water is used. v. Have undertaken a preliminary water balance to determine the water demand of Type 2 GDEs. vi. Supplementary flows will be needed during dry seasons and during drier than usual wet seasons. This will be looked at further as part of the TARP and REMP.	i. Chapter 10, Section 10.8.2.2 ii. Appendix A6 - Groundwater technical report, Sections 5 and 6 iii. Chapter 10, Section 10.8.4.5 v. Appendix A6 - Groundwater technical report, Section 4 and Addressed in Chapter 10, Section 10.8.4.5.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		20e	Detailed information has not been provided on what monitoring would be undertaken during the period in which supplementary flows are used. Monitoring to determine when supplementary flows are required and for determining their success would be extensive. This program would need to consider monitoring of groundwater levels and quality, surface water flows and quality, and the ecological condition of riparian vegetation, permanent pools and stygofauna. The proponent will need to install gauging stations on Deep Creek and Tooloombah Creek preferably in the vicinity of permanent pools to quantify our understanding of surface water-groundwater interactions. Monitoring bores should be installed in the vicinity of these gauging stations to allow more detailed investigation of the relationship between groundwater levels and permanent pools.	Monitoring bores have been installed adjacent to mapped GDEs. The monitoring program will be detailed in the REMP, however monitoring locations, purpose, data and frequency is presented in the EIS.	Addressed in Chapter 10, Section 10.8.5.
		20f	The use of supplementary flows to manage these impacts would have to continue well beyond the end of mining based on these predictions. It does not appear that the proponent has fully considered the time over which this active management would be required or where the water for the supplementary flows will be obtained once pit dewatering ceases.	Options such as water sourced from groundwater pumping have been considered and will be reviewed as part of the future works related to the GDEs.	Addressed in Chapter 10, Section 10.8.4.5.
		21	The proposed monitoring framework as presented in the supplementary EIS is not adequate to identify and monitor impacts, or to trigger suitable management measures. IESC 2017 discussed a number of improvements to monitoring and management which require implementation during operational and post-closure phases (see IESC 2017 paragraphs 42d-f, 44-48 and 54-56). These have not been adequately addressed.	Discussion regarding monitoring, management and mitigation measures has been expanded in the EIS	Addressed in Chapter 10, Section 10.8.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		22	Plans that detail monitoring and management measures for both operational and post-closure phases, including restoration and final landform monitoring and management, are critical. These plans provide the information needed to ensure appropriate management measures are available, identified and implemented and should cover both short-term and potential legacy risks. Given the high risks associated with this project, such plans (which have not been provided) are needed during the assessment phase of this project so it can be determined if potential risks from the project can be adequately mitigated.	A range of management plans will be required as conditions to the Project approval (see Chapter 23 – Draft Environmental Authority). These plans will require consultation and approval from the State Government, and in some cases the Federal Government. It is expected that approval of these plans will be a condition precedent to the commencement of construction activities. With regard to restoration and final landform monitoring and management since the release of the EIS the Queensland Government has introduced the Mineral and Energy Resources (Financial Provisioning) Bill 2017.The Bill: • Establishes a new financial assurance system for resource activities in Queensland, including a pooled fund for resource entities that meet the criteria; and • Reforms the mine rehabilitation process, including requirements for upfront commitments to progressive rehabilitation and mine closure though a Progressive Rehabilitation and Closure Plan (PRCP). The new requirements for financial assurance and rehabilitation for resources activities is expected to commence on 1 July 2019. The primary change introduced by the Financial Provisioning Bill is that plans of operations for mining projects with site-specific environmental authorities will be replaced with PRCPs, that will: • Provide the plan for the mining activity; • Identify the post mining land use; and • Detail progressive rehabilitation, including milestones and timeframes. Land will be available for rehabilitation generally if it is not being used for	Addressed in Chapter 5 and Chapter 10, Section 10.8.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
				mining, does not contain permanent infrastructure and will not be mined within the next 10 years. A PRCP guideline will be developed, to assist with the preparation of PRCPs. The detail required for the progressive rehabilitation requirements will not be known until the guideline is released. Central Queensland Coal will, once appropriate guidance is developed and disseminated by the Queensland Government, prepare a PRCP.	
		23	As was discussed in paragraphs 40, 43 and 47 of IESC 2017, no detail has been provided about any potential trigger action response plans (TARPs) or similar adaptive management approaches for managing impacts on groundwater, surface water, GDEs or the final landform. Due to the high risks associated with the proposed project's location next to sensitive and high-value ecological assets, these plans should be presented during the assessment phase.	Draft TARPs are discussed in the AEIS and will be provided in detail as part of the REMP.	Addressed in Chapter 9, Section 9.11.4.3 and Chapter 10, Section 10.8.4.4
		24	The proposed locations of the upstream monitoring sites (reference sites) are not appropriate. Only one site is proposed on each of Tooloombah Creek and Deep Creek. As stated in paragraph 46 of IESC 2017, these sites may be affected by runoff from the mine and should be relocated further upstream. Given the high value and sensitivity of the receiving environments, having only one reference site on each stream is not considered leading practice; at least three reference sites per creek should be established to provide reliable estimates of spatial variance in water quality and compensate for any losses of a reference site.	The existing upstream/reference bore locations are nested sites (2 reference monitoring bores per creek) and are not expected to be affected by mine runoff. Additional monitoring locations will be considered.	Addressed in Chapter 10, Section 10.8.5 and Figure 10-102 Groundwater monitoring bore location plan

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		25	The proponent has collected additional baseline water quality data in 2017 and 2018. A longer time-series is required to capture seasonality and interannual variability and needs to include baseline data at all reference sites (noting comments in the above paragraph regarding their location and number). These data will assist in the development of site-specific water quality guideline values (WQGVs). Site-specific WQGVs should be developed separately for both wet and dry seasons.	Additional monitoring occurred in 2018 and is reported in the AEIS. Approximately 18 to 20 months of data are available at the time of the AEIS (Dec 2018). Water quality guideline values (triggers and thresholds will be developed as part of the REMP. National guidelines will be used as a basis for deriving these for analytes of concern, and control chart methods may be employed to develop these as well (DSITI, 2017).	Addressed in Chapter 10, Section 10.8
		26	Surface water quality monitoring will need to continue post-closure to monitor for potential impacts from erosion of the final landform. This monitoring plan should consider event-based telemetered surface water quality and continuous flow monitoring in Deep Creek and Tooloombah Creek to identify if changes in water quality are occurring compared to upstream reference sites and during flow events. This should be supplemented with grab samples analysed for a wider suite of parameters (e.g. metals and organics). All of this monitoring should continue post-mining to capture the effectiveness of restoration.	It is expected that the approval conditions for the project will require post closure groundwater and surface water monitoring.	Addressed in Chapter 23, Sections 23.1.7 and 23.1.8 outline indicative monitoring locations and likely monitoring frequencies.
		27	While the proponent has committed to sediment monitoring (SEIS, Ch. 9, p. 9-78), as the IESC noted previously (IESC 2017 paragraphs 33 and 45c), the proponent should undertake sediment monitoring that is suitable to assess the potential for metal and organics accumulation. No details of parameters proposed to be monitored are currently provided.	Physico-chemical analytical parameters selected for analysis will be aligned with the DES Monitoring and Sampling Manual 2009 (Version 2, July 2013) and the more recent guidance by CSIRO (Simpson and Batley 2016). All results will be compared against the most recent sediment guidelines which are currently represented in Table A.1 of the CSIRO publication.	Addressed in Chapter 9, Section 9.5.4.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		28	The exposure of Acid Sulfate Soils (ASS) poses a risk to the sensitive and high ecological value downstream environments. The proponent's assessment of risks from ASS is based upon national mapping (SEIS, Ch. 5, p. 5-108). The assessment of risks from potential acid sulfate soils (PASS) or ASS generation within the area of groundwater drawdown needs to be informed by a site-specific investigation undertaken prior to dewatering activities.	The analysis indicates the potential for ASS exposure in response to mine dewatering is low. The areas most at risk of exposure of ASS occurs within the ML where drawdowns of more than 10 m are predicted, and any development of acid drainage in this area will drain toward the mine pits during mining and post-mining recovery. Back filling of mine pits with materials having neutralising capacity will provide adequate management of this risk.	Addressed in Chapter 10, Section 10.7.4.5 and Chapter 8 - Waste Rock and Rejects
		29	The proponent has presented an indicative management approach for disturbance of PASS/ASS within the disturbed area of the project site (SEIS, Section 5.10.4). No management plan or actions have been described for exposure of PASS/ASS elsewhere as may occur through groundwater drawdown. The proponent needs to provide measures to treat or prevent the exposure of ASS outside of the project disturbance area but within the zone of hydrogeological impact.	The analysis indicates the potential for ASS exposure in response to mine dewatering is low. The areas most at risk of exposure of ASS occurs within the ML where drawdowns of more than 10 m are predicted, and any development of acid drainage in this area will drain toward the mine pits during mining and post-mining recovery. Back filling of mine pits with materials having neutralising capacity will provide adequate management of this risk.	Addressed in Chapter 10, Section 10.7.4.5 and Chapter 8 - Waste Rock and Rejects
		30	According to the proponent, monitoring and management of the final landform are proposed to be undertaken in accordance with the Environmental Management System, which includes a number of intended management plans that will provide restoration goals (SEIS, Ch. 11, p. 11 54). These management plans should consider:		
		30a	monitoring for differential consolidation and settlement of backfilled material in the void. This process can affect the hydraulic properties of the backfill. As discussed in paragraph 4d above, realistic representation of the hydraulic properties of the backfill in the groundwater model is needed.	The hydraulic properties of backfilled materials will only have a local (pit-scale) effect on the groundwater system. Hydraulic conductivity of materials that remain in-situ (undisturbed) during mining will govern the rate of groundwater inflow, and he porosity of the backfilled materials will govern recovery timeframe. The final head of water (water table) in the pit will largely be governed by in-situ (undisturbed) materials. Model sensitivity to backfilled materials has been tested and the results suggest groundwater system	Addressed in Appendix A6, Section 3.7 and Chapter 10, Section 10.7.4.8

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
				response is relatively insensitive to higher K and S values.	
		30b	monitoring of the final landform using LIDAR or INSAR imagery. This would provide a way to determine elevation changes due to erosion and/or settlement, allowing identification of where repair work may be needed on the final landform.	Addressed.	Addressed in Chapter 11, Section 11.14
		30c	if there is sufficient water of a suitable quality available for irrigation of the initial groundcover and subsequent deep-rooted vegetation on the final landform. Given the local soils are prone to erosion and dispersion, a key requirement in developing the final landform is the rapid initial establishment of preferably locally endemic grass to prevent erosion due to rainfall impact and overland flow during the wet season.	The mine water balance confirms there will be adequate water to support he progressive rehabilitation program. The use of endemic species to the extent practicable is proposed.	Addressed in Chapter 9, Section 9.7.1 and Chapter 11, Section 11.11.5.
		30d	how to prevent ponding of water on saline sodic soil. High soil salinity, which occurs in some soils at the project site, can mask dispersive behaviour. If the salts are leached due to ponding of water, the soil will become more dispersive and tunnel erosion can be initiated (Dale et al. 2018).	Sodic and highly sodic materials have potential to cause slaking, are dispersive, and tend to be highly erodible. Mine waste (overburden and interburden) materials, particularly those placed ex-pit, will be appropriately shaped and monitored to create structurally and chemically suitable landforms (i.e. prevention of ponding of water on saline sodic soils) for successful rehabilitation.	Addressed in Chapter 11, Section 11.10.
		30e	whether any specific treatments of the topsoil applied to the final landform (e.g. lime, mulching) will be required to prevent erosion and allow rapid establishment of vegetation prior to the next wet season and to reduce weed invasion.	Erosion and sediment control is discussion in detail in Section 5.11. The strategies will form the basis of an Erosion and Sediment Control Plan that will be prepared by a CPESC. Where soils require additional treatment to enhance erosion and sediment control success this will be considered.	Addressed in Chapter 5, Section 5.11.

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		31	Areas where spatial coverage must be improved include: a. the addition of compliance monitoring and reference bores targeting the Basement aquifer; and, b. further reference bores located to the northwest (between RMB09 and RMB10) and to the east of the project (between RMB05 and RMB03) targeting all aquifers.	New monitoring bores have been installed across the study area, including bores installed in the Alluvium and Styx Coal Measures and two bores installed in weathered basement west of the ML. No "Basement" (i.e. Back Creek group) was encountered below the pit area during drilling, down to depths of -160mAHD (below the maximum depth of mining). Monitoring bores have been installed below the maximum depth of mining, which is considered sufficient (if no drawdown and water quality impacts are detected at these bores, we can assume no impacts would be seen in the Basement)	Addressed in Chapter 10, Figure 10-96
		32	The groundwater monitoring plan needs to explicitly consider monitoring for potential impacts from the final landform including: a. regular (preferably at least three-monthly) groundwater quality monitoring down hydraulic gradient of, and close to, the backfilled voids in all aquifers for identification of potential contaminant mobilisation. b. groundwater quality monitoring and monitoring for shallow groundwater discharge that may occur where the final landform and the original land surface contact to identify if leaching of contaminants from the ex-pit waste rock dumps is occurring. c. monitoring of the alluvial and Styx Coal Measure aquifers where discharge to Tooloombah and Deep Creek is likely to occur. This is needed to identify if hydraulic loading from the waste rock dumps is affecting surface water-groundwater connectivity.	New monitoring bores have been installed across the study area, including bores installed in the Alluvium and Styx Coal Measures and two bores installed in weathered basement west of the ML.	Addressed in Chapter 10, Section 10.8.5 and Figure 10-96

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		33	Monitoring for potential seawater intrusion is needed. The proponents groundwater modelling indicates that this is unlikely, however, given the low confidence in the current groundwater model this risk cannot be discounted. The monitoring program for seawater intrusion will need to consider the points discussed below.	-	-
		33a	The current location of the seawater-freshwater interface in different hydrolithologic units will need to be established.	A nested monitoring bore has been installed (WMP29A to WMP29E; screening all HSUs) near the Styx River at Ogmore. The presence of a seawater - freshwater interface is not indicated at this location, which is beyond the northerly extent of predicted drawdown influence.	Addressed in Chapter 10, Section 10.7.3.6 and Figure 10-96
		33b	Monitoring will need to include both electrical conductivity (EC) and hydraulic head in different aquifers to allow for density corrections to be made so that groundwater flow directions can be determined (Post et al. 2007). An appropriate approach may consist of a combination of nested bores to monitor hydraulic head and separate bores that are fully screened across their length to measure EC.	The proposed monitoring program includes monitoring of EC (as well as other water quality parameters) and hydraulic head across the study area. The nested sites (e.g. WMP29A to WMP29E) are included in the ongoing monitoring program.	Addressed in Chapter 10, Section 10.8.5
		33c	Bores must be sited to allow for early warning of seawater intrusion.	The nested monitoring bore site WMP29A to WMP29E are located to the north of Ogmore and the confluence of Tooloombah and Deep Creeks, well away from any identified GDE.	Addressed in Chapter 10, Figure 10-96
		33d	Monitoring details, thresholds and effective management responses should be defined in a TARP.	Addressed. The TARP approach is now outlined as part of the REMP.	Addressed in Chapter 10, Section 10.8.4

Question Number	Question	Comment Number	Comment	CDM Smith response	Relevant CDM Smith document reference
		34	The monitoring bores which are equipped with loggers to monitor groundwater levels daily (currently unclear as to which bores) should also be telemetered so that water levels can be regularly reviewed. This, plus the development and implementation of management triggers for both short-term and long-term groundwater drawdown, will improve the early-warning capabilities of the monitoring network and was noted in paragraphs 42e and 43 of IESC 2017. Daily site-specific rainfall data will also need to be collected to allow interpretation of changes in groundwater levels.	Automated pressure transducers will be installed at selected monitoring bores to provide daily observations that can be used to distinguish short-term changes. The download frequency of the transducer data loggers will be assessed as part of the REMP and telemetry will be considered. Climate data will be collected from an onsite weather station.	Addressed in Chapter 10, Section 10.8.5 and Chapter 23, Section 23.1.3.
		35	If the proposed project progresses, the compliance bores should be monitored more frequently than six-monthly during the first years of mining (i.e. monthly or quarterly depending on the amount of variability identified in the baseline dataset) as these data would be valuable for validation of the groundwater model and re-calibration if required.	Addressed.	Addressed in Chapter 10, Section 10.8.5