Table 1.1 Vulcan South Coal Mine PER Public Submission Response

Organisation	Submission	Response	Relevant Appendices
Barada Barna	Please accept our submission in support of the Vulcan South Coal Mine proposal (EPBC 2023/09708). It is important that this proposal is accepted. My comments and reasons for acceptance are listed below: 1. Social and Economic Impacts As the traditional owners and custodians of this land, the Barada Barna people have a deep-rooted connection to the country that spans from Lake Elphinstone, through Middlemount, Dysart, Moranbah, and the Peak Ranges. Our bond with this land is all-encompassing; it's not limited to any one area, but rather exists throughout the entire region. We actively collaborate with mining companies and various proponents operating on our country, ensuring that our needs are respected, and that we, as traditional custodians, are looked after. Vitrinite, in particular, stands out for its close-knit community spirit. This company has provided employment opportunities for our people, which makes a meaningful impact on our community. Whenever needed, I can reach out to people like Nick, and he responds immediately, demonstrating their commitment to open communication and collaboration. 2. Cultural Heritage As the project manager for cultural heritage, I work closely with all proponents to ensure that our cultural heritage is protected and respected. Access to our country is a key priority for me, especially when it comes to bringing our heritage workers and young people to culturally significant sites. With Vitrinite, this access is seamless, allowing us to maintain our connection to these important places without any complications. In our culture, different clans have both matriarchal and patriarchal structures. This is woman's country, and that is why a woman leads. The creeks, rivers, and mountains around us are all interconnected, just like our people. When I speak to my community, I remind them that these natural features are part of our tree of knowledge. Each branch and leaf carries our stories, and this connection binds us to the land in an unbreakable bond. Vitrinite understands the importance of this connection and the significance of our role as custodians. They value and respect the cultural heritage we are protecting, and for that, we are grateful. Please accept this submission in support of Vitrinite's proposal	Vitrinite respects and values its working relationship with the Barada Barna people and acknowledges the submission of support.	
Australian Coral Exports/Coral Life Marineland	Ms Jones, Thank you for the below email. I would like to take this opportunity to raise comment in relation to the following point you have raised. The continuation of harvest for export from the Queensland Coral Fishery, beyond 28 October 2024 is dependent on the Queensland Department of Agriculture and Fisheries (QDAF) finalising and submitting a new application for approval of the fishery as a WTO under the EPBC Act which must demonstrate that the fishery is operating in a sustainable manner. I have not seen the QLD governments application (for WTO) for the above fishery and do not pass comment as to whether it is properly made. I am however concerned of continuing applications (and subsequent approval) of coal mines, natural gas extraction and other emitters of greenhouse gases before the Commonwealth. The Vulcan South Coal Mine Project is a current example. From brief review, both the GUIDELINES FOR A DRAFT PUBLIC ENVIRONMENT REPORT/ENVIRONMENT IMPACT STATEMENT FOR Vulcan South Coal Mine and the subsequent Preliminary Environment Report give little consideration to the direct and indirect impacts of carbon emissions on the Great Barrier Reef. Cumulative impact assessment fairs no better. A prior Commonwealth Minister for the Environment raised concerns about the QLD coral fishery' sustainability. This appeared to be in direct relation to the Great Barrier Reef Marine Park and the impacts of global warming. This was cause for concern and necessitated particular actions – a number which had serious commercial impacts on the QLD Coral Fishery and its licence holders. I am one and was effectively required to offset the impacts of large carbon polluters. It is concerning to see one arm of the Commonwealth approve sources of pollution and not require the polluter to provide offsets. Yet another arm of the same Commonwealth Department requires the persons being impacted to provide offsets for the polluter. This is of major concern and is not fair and just. The suggestion again of the following action is also of concern, If WTR receive advice that the approval of the WTO may be delayed, WTR will again reach out to all current MCA holders and request stock-on-hand of corals harvested under the current WTO. MCA's will only be issued for the stock-on-hand quantities reported.	The matters raised by Australian Coral Exports/Coral Life Marineland are primarily associated with the decisions made by the Wildlife Trade Regulation (WTR) sector of the Department of Climate Change, Energy, the Environment and Water. Vitrinite Is not associated with this department or its decisions. Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (Appendix GG of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG Abatement Plan has been approved and its implementation is conditioned in the project's Environmental Authority issued by the State Government. Vitrinite will also adhere to internal and external energy and GHG emissions reporting requirements stipulated under the *National Greenhouse and Energy Reporting Act 2007* and the Safeguard Mechanism.	GHG Emissions Assessment **(Appendix GG)** GHG Abatement Plan (**Appendix HH)**

	The above action causes peaks in collection and resulting price drops. It is not a favourable outcome and de-values a state resource. This has implications for trade and incoming export dollars. The timely approval of the WTO would avoid this outcome. I have sent this email to Vitrinite to trigger a formal response (to the relevant provisions) pursuant to the EPBC Act 1999. Better outcomes for those effected by global emissions is required and should be within the ability of DEECCW to coordinate, particularly given the respective units are sister to each other. I have attempted to provide a properly made submission (comment) on the PER but little information was provided as to how this could be achieved. Thank you again for keeping me informed – the information provided is appreciated.		
Independent response 1	Thank you for the opportunity to comment on your draft Public Environment Report for the South Vulcan Mine. I wish to make some comments regarding the impacts on Koalas at the site, referring to the report of 21/08/2024 accessed via the link on the EPBC webpage. The surveys undertaken and reported on are only adequate to detect the presence of Koalas (and no greater claims are made - P46). There are Koalas all over the site (at P103 - Koalas were recorded 14 times within the survey area, involving at least 12 individuals) hence on the basis of your work and the information you cite there is insufficient information to conclude: "*Given the low fertility of local sandy soils, it is unlikely that most local E. crebra is utilised to a significant extent by Koalas*." This is not an appropriate conclusion to draw. The report defers to web pages for information on tree preferences of Koalas rather than examining local area reports and publications such as Melzer and co (Melzer et al., 2014). Hence table 5-7 - is not an accurate reflection of species use in the area –*E. populnea* is a key species as is coolabah and *orgadophylla* (see table 2 in Melzer et al). Where E. camaldulensis may not occur, relatively high density Koala populations occur reliant on *coolabah, melanophloia, orgadophylla, crebra, populnea and cambageana* (amongst others – Table 3 in Melzer et al). Hence very little, other than the occurrence of Koalas can be drawn from the work you have carried out and the further habitat assignments are not accurate reflections of the quality of habitat for Koalas. The habitat designations provided are unlikely to be accurate with respect to Koala habitat quality at the site. I note this flows to further EPBC documents, wherein some habitat is referred to as of "moderate quality" (Attachment 3 Att 3 Vulcan South_KoalaHabitat.pdf). This downplays the impact of proposed activities in areas that do not contain much *E. camaldulensis,* according to the method used. In central Queensland the open woodlands away from the watercourses seem to be every bit as vital to long term persistence as the vegetation associated with water courses. Population densities in both systems are variable, but it's clear that both are vital to population viability: low density woodland populations may persist through extreme drought periods, relying on species like *E. crebra* and providing opportunities for dispersal (see the work by Melzer and Lamb (Melzer, 1994; Melzer & Lamb, 1996)). Our studies have shown that gene flow in these systems is dependent on traveling males which are not restricted to the creek systems, so to refer to the habitat that sustains gene flow as less important to population viability than other areas is incorrect (Ellis et al., 2002). The use of the term "moderate quality" in this context is not likely to accurate. **References** Ellis, W., Hale, P., & Carrick, F. (2002). Breeding dynamics of Koalas in open woodlands. *Wildlife Research, 29*(1), 19-25. Melzer, A. (1994). *Aspects of the ecology of the Koala (Phascolarctos cinereus) in the semi-humid woodlands of Central Queensland.* [PhD, The University of Queensland]. Brisbane. Melzer, A., Cristescu, R., Ellis, W., FitzGibbon, S., & Manno, G. (2014). The habitat and diet of Koalas (*Phascolarctos cinereus*) in Queensland. *Australian Mammalogy, 36*(2), 189-199. https://doi.org/http://dx.doi.org/10.1071/AM13032 Melzer, A., & Lamb, D. (1996). Habitat utilisation by a central Queensland Koala colony. In G. Gordon (Ed.), *Koalas - Research for Management: Proceedings of the Brisbane Koala symposium, 22nd-23rd September 1990* (pp. 17-22). World Koala Research Incorporated.	It is accepted that there is no local data on food tree utilisation by Koalas on which to draw inferences about the relative importance of different local Eucalyptus species. Even the paper cited (Melzer et al. 2014) does not provide any data from the local area (the nearest study site is >70 km west). For this reason, all parts of the project area containing food trees are considered part of the "matter area" for Koalas. This means that all habitats classified as "low", "moderate" or "high" quality are considered habitat for the Koala, and impacts to all are proposed to be offset. The purpose of the crude habitat classifications was primarily to assist with the design of the project's footprint. If relative habitat quality was ignored in the impact assessments, almost the entire project area would be mapped as a homogenous block of Koala habitat. This provides no incentive to preserve, to the greatest extent practicable, habitats that are likely to be of highest importance to the species. A strong argument can be made that riparian vegetation units dominated by *E. camaldulensis* and/or *E. tereticornis* are likely to be of high importance to the Koala: • These are important food trees at almost every site studied. • They are by far the largest trees (and occur at highest density where they occur) in the local landscape, providing a dense food source. Large trees are also favoured as shelter during the day. • They occur along watercourses, where they have access to subterranean and stream water supplies. Being less reliant on recent rainfall to produce fresh growth, riparian and/or groundwater-dependent food trees provide important drought refuges. Avoiding these riparian habitats to the greatest extent practicable was an important part of the design stage of the project. This is not to suggest that removing "low" or "moderate" quality habitats is inconsequential to the Koala. However, due to the widespread nature of these habitats locally, avoiding impacts to them was not possible. We agree with the commenter that habitats mapped as "low" or "moderate" quality are still important to the Koala, both for maintaining connectedness between riparian areas, and for sustaining large, viable populations at the regional level. This is why the assessment of habitat fragmentation considered all habitat types. It is also why impacts to all habitat types are proposed to be offset, not only those classed as "high" quality.	Terrestrial Ecology Assessment (**Appendix M**)
Public Submission (Mareeba 4880)	Response to Public Environmental Report for Vulcan South Coal Mine Proposal - EPBC 2023/09708 Dear Sir/Madam, This proposal contains clearly unacceptable environmental impacts, with the clearing of almost one half thousand hectares of forests and woodlands including substantial areas of remnant forests and also threatened ecological communities including brigalow communities. Field surveys are already old and outdated having been conducted in 2018 to 2020.	With regard to "*Field surveys are already old and outdated having been conducted in 2018 to 2020*", it is true that this is when flora and fauna surveys were undertaken. However, habitat quality assessments were subsequently undertaken throughout the impact footprint in 2023 as part of the Environmental Offsets Strategy. These surveys ensured that all offsets calculations are based on measurements taken of the current condition of the site. These surveys also confirmed that there had been no significant changes to the environmental condition of the site since the flora and fauna surveys were completed. The site had not experienced any substantial disturbances such as clearing, cyclones, floods, drought or bushfire, and there is therefore little reason to expect that the findings of surveys completed in 2020 are not relevant in 2024.	Terrestrial Ecology Assessment (**Appendix M**) Offset Strategy (**Appendix Z**)

	However, even so they found the presence of 41 different species of mammal, 135 species of bird, 36 species of reptiles, and 14 species of frog and 429 species of vascular plant. This is obviously an area of considerable biodiversity. Four matters of national environmental significance were detected. These included brigalow forests of which at least 71 hectares will be cleared. Also, the Koala which is an endangered species, was found in this development area, and 1170 hectares of Koala habitat will be cleared. This is clearly outrageous and unacceptable. In addition, over 1200 hectares of Squatter Pigeon habitat will be cleared, and almost 1500 habitat for the Greater Glider will be destroyed. Other species which may occur on site such as the northern quoll and ornamental sake, will also be affected. The fact that they were not detected during limited surveys does not exclude their presence on this site. There are also impacts likely to the short beaked echidna, glossy black cockatoo and common death adder. The proponent euphemistically declares that their ecologically significant locations will be disturbed, when we all know that these will be destroyed plus there will be edge effects leading to denial of habitat in surrounding areas. Vulcan South is declared to be a small scale coal mine which will extract 13.5 million tonnes of coal, but will only last for seven years. This is a very high ecological price to pay for a coal mine which will last only seven years. This is quite frankly ridiculous. The PER contains no data as to the scope 1-2 and three emissions of this coal mine as well as the emissions that will occur as a result of the destruction of vegetation and loss of carbon uptake. All these climate effects should also cause this proposal to be rejected. The site contains well in excess of 4000 hectares of remnant vegetation. Quite frankly this is atrocious that this would even be considered as a coal mine site in 2024. The survey effort for endangered bird species was also abysmal. Only 20 minutes duration was allocated for 24 sites. Although it is claimed that survey guidelines have been met; they quite clearly have not been met for certain species which need to be targeted for intensive surveys such as the red goshawk. The survey effort for ghost bats was clearly inadequate. Again, targeted survey efforts need to be conducted for this species which included intensive spotlighting surveys not just forty person minutes duration, as well as harp traps for 8 trap nights for each of 100 hectares affected, essentially meaning there should have been at least 320 trap nights. This clearly was insufficient effort to detect this species on this location. 122 camera nights of camera trapping was also insufficient to properly exclude the presence of northern quolls. There is no information as to whether the camera traps were baited adequately, and the guidelines state that the baits should be replaced at least every two days. This is unlikely to have occurred given the time constraints that ecologists working on these sites are normally under. The topography that will be destroyed for this coal mine contains many special habitats, including water courses full of boulders, and small cliffs, which are habitat for many species which can occur nowhere else, and will never be able to occur again in any rehabilitated zones after the Coal mine has finished. The impacts of landscape destruction have not and cannot be offset. In addition, this site contains dam and wetlands areas which will also not be rehabilitated and will be most likely destroyed forever. There will be severe impacts on groundwater supplies and hydrology as well meaning that any wetlands will never occur again. This will also obviously have impact on many migratory species including waders such as latham's snipe, sharp tailed sandpiper, and curlew sandpiper. Field verified ecosystem mapping revealed a total of 145 hectares of endangered regional ecosystems within the survey area. These will all be destroyed or permanently degraded by the coal mining effort. Brigalow threatened ecological community which is endangered was found to occur in the area. This in itself should cause the Department of Environment to reject this project. Poplar box woodland on alluvium was also found to occur in the area however the proponents have managed to claim that this does not occur because the ground cover has become dominated by weeds rather than native grasses; essentially it is the same ecosystem though – if If not through weed invasion through no fault of the ecosystem this would be another threatened ecological community present on this site. Also, Semi Evergreen Vine Thicket does occur on this site which is another threatened ecological community. However the proponent claims that it does not occur on the grounds that it is occurring on a course- grained sedimentary rock. This is a minor technicality and it should be regarded to occur on this site regardless, as what is most important is the actual vegetation community. Of matters of environmental significance that were reviewed, it was declared that Latham's Snipe may occur, although this not was not seen on site. The very short survey periods plus limited search effort would obviously make it difficult for the ecologists to find this species. Had they been there for longer, and and more frequently it is much more likely that this space is would have been identified. Certainly suitable habitat for this species exists on this site, and ultimately that's all that matters. The same applies for the Australian Painted Snipe, as well as the curlew sandpiper, common Greenshank, Glossy Ibis, and Sharp-Tailed Sandpiper. Eucalyptus raveretiana was not found on the site according to the ecologists, however it is unlikely that they searched every hectare in enough detail to absolutely ascertain that. It should have been regarded as likely to be occurring on this site. Reptile species such as the Grey Snake, Ornamental Snake, Dunmall's Snake, Allan's Lesrista, and Yakka Skink should also be regarded as being potentially on the site despite the fact they were not identified by the ecologists. They can be exceedingly difficult to find and it is unlikely that the ecologist devoted enough search time an effort to find these species.	Regarding impacts to matters of state and national environmental significance, these have all been clearly identified in the PER. Impacts assessed includes the clearing of habitats, fragmentation, edge effects, weeds, pest animals, noise and vibration, lighting and road collisions. Regarding the criticism that Vulcan South "*will only last for seven years*", this relatively short timeframe offers scope to commence rehabilitating the site relatively early. Given the known ability for Koalas and Squatter Pigeons to utilise relatively young regrowth, the short lifespan of the project lessens the amount of time impacts will be experienced by these two species. This comment is primarily relevant to the Greater Glider, which as a hollow-dependent species, is less likely to utilise rehabilitated sites over available undisturbed sites. In response to the comment that "*the PER contains no data as to the scope 1-2 and three emissions",* this is provided in Section 7.6.1.2 of the PER and is discussed in detail within Appendix GG (GHG Emissions Assessment). Regarding the "*abysmal*" bird survey effort, the cited "*only 20 minutes duration was allocated for 24 sites"* is a misrepresentation of the total survey effort for birds. Bird surveys spanned two years and multiple seasons, and included the following: • At 34 trap sites, bird counts were undertaken on 10 occasions over four days per site (total of 136 person-hours of search effort). • Birds were surveyed at 28 active search sites for 40 person-minutes each (total of 18.7 person-hours of search effort). • Birds were surveyed at 24 bird count sites for 20 minutes each (total of 8 person-hours). • All birds heard and seen while undertaking all other survey types on site were recorded as incidental sightings. In total, 288 person-hours were spent searching for birds. Species accumulation curves fitted to the bird data indicated that very few bird species are likely to have been missed by the surveys (these curves predicted 100% detection). Regarding the survey effort for Ghost Bats, the current survey guidelines (*A Review of ghost bat ecology, threats and survey requirements*) recommend a focus on cave surveys to detect roost sites, rather than harp trapping in potential foraging areas (which yield low returns). The entire impact area and surrounding areas were searched thoroughly, and no caves were detected. It can therefore be concluded with confidence that no roost habitat for Ghost Bats will be impacted. The species has also never been recorded in this heavily surveyed region, so has a low risk of occurring on site. Regarding search effort for the Northern Quoll, a wide variety of bait types have successfully attracted Northern Quolls in previous studies, including canned dog food, peanut butter and oats, chicken necks, sardines and tuna. The Vulcan South study used peanut butter and oats as bait at all cameras deployed at all trap sites. At cameras deployed elsewhere (primarily targeting rocky habitats favoured by quolls), a mixture of peanut butter, oats and tinned tuna were used as bait. At trap sites, bait was replenished daily, while at remote camera sites, baits were not replenished for the duration of instalment (4-14 days). It is unclear which guidelines are being referenced by the comment, but the *Survey Guidelines for Australia's Threatened Mammals* make no recommendations about replacing baits at cameras. Fish baits left for up to 200 days have been successfully used in the past to survey Northern Quolls without replenishing (Moore 2021: PhD Thesis, Charles Sturt University). These produced >95% detection probabilities within 24 trap-nights. Using peanut butter and oats (not refreshed over 35 days) as bait produced detection probabilities of around 90% in 84 trap-nights (Heiniger *et al.* 2020: Austral Ecology 45, 759-772). Regarding topography to be destroyed, the boulder-filled watercourse and small cliffs referenced occur in and alongside the upper reaches of the creek located at -22.28917, 148.15643. These areas are close to the proposed highwall area but are outside the clearing footprint. These features will not be removed. Regarding the removal of wetlands, two farm dams will be removed. One of these (at -22.37758, 148.25896) is a small, steep-sided, heavily grazed stock watering point with no values to waterbirds. The other (at -22.38935, 148.26602) could potentially be used by waterbirds. None of the water bodies on site are groundwater-fed and changes to groundwater flow will not affect waterbird habitats. As outlined in the Surface Water Assessment, more than 30 new dams and sediment ponds will be constructed as part of mine infrastructure. As these will not have grazed margins, many are likely to provide suitable habitat for Latham's Snipe and Australian Painted-snipe. As specified in the Progressive Rehabilitation and Closure Plan, some of these will be retained in the final landscape, resulting in no net loss of surface water due to the project. Regarding the ecosystems on site, all have been defined according to Conservation Advices and other relevant documents. The Brigalow TEC does occur on site and will be removed as a result of the project. The impacts to this community are detailed within the PER. Regarding the Latham's Snipe and other waterbirds, if these were to occur on site they would experience impacts similar to the Australian Painted-snipe, which was assessed in detail within the PER. Regarding *Eucalyptus raveretiana,* this is a highly detectable species that is usually co-dominant where it occurs. It is therefore unlikely to be overlooked if present. There are no populations within 50 km of Vulcan South, and the project area is west of all known populations other than planted specimens. All natural populations are along watercourses that originate within ranges within 100 km of the coast, and no populations have ever been detected along watercourses that originate further west in the Harrow Range. The SPRAT profile states that it is unlikely that new stands of the species will be found, given the high	Offset area management Plan (**Appendix II**)

	There was suitable habitat for both the Koala and Greater Glider identified on the site, approximately 1500 hectares for each species. Given that both these species are now endangered this fact alone should cause this project to be rejected. Destruction of habitat is the key endangering threat to both these species, and this cannot be satisfactorily offset or negated. This coal mine will also destroy potential red goshawk habitat. This species is now endangered and destroying 1500 hectares of its potential habitat should also cause this project to be rejected. The ghost bat may certainly occur on this site. As mentioned above the survey effort was very likely inadequate to find this species and its presence cannot be realistically excluded. Whilst the Southern Snapping Turtle and Fitzroy River Turtle were not found on this site, it should have been regarded as being impacted because water sedimentation due to both agriculture and mining is a key threatening process for this species. Obviously this coal mine may contribute to poor water quality and sedimentation downstream which will cause reduced survival of any individuals of this species in downstream waterways. In terms of habitat for threatened and migratory species, there is abundant evidence for significant and potentially catastrophic impacts on these species due to destruction of habitat for this coal mine, especially for Koala, Greater Glider, southern Squatter Pigeon, and Offsets are clearly insufficient and just "securing" habitat does not negate the habitat destruction that is made necessary by this mine, despite government policy on offsets allowing this. Securing habitat elsewhere does not negate habitat destruction for this mine. **SUMMARY** The ecological and groundwater and climate impacts of this project are clearly unacceptable and this proposal should be immediately rejected without any further discussion between the DCCEEW and the proponent.	detectability of the species and the extensive previous surveys throughout its range. It is considered highly unlikely that the species occurs on site, even if "*every hectare in enough detail*" was searched. Search effort for the Grey Snake, Ornamental Snake, Dunmall's Snake, Allan's Lerista and Yakka Skink is detailed within the PER, including how this compared to recommended survey methods. Species accumulation curves fitted to the reptile data indicate that very few species were likely to be missed by the sampling undertaken. Impact assessments for these species considered nearby records and habitat features, alongside a failure to detect, when assessing likelihood of impacts. A candidate offset site for the Koala and Greater Glider has been located (See Appendix II). Regarding the Red Goshawk, this species is unlikely to be present on site for reasons detailed within the PER. This finding is supported by the analyses by MacColl *et al.* (2023: *Emu* 123, 93-104), which predicted that the species is likely extinct within the Brigalow Belt. Regarding the threatened turtles, the baseline state of all creeks on site is heavily sedimented, due to the history of grazing these watercourses and their banks. The management of sediment entering local waterways will likely improve as a result of a project as cattle will be removed from local watercourses and sediment controls will be implemented. Water quality objectives for water leaving the site include measures for suspended solids and turbidity, which are relevant to sedimentation risk of downstream waterways. If these objectives are met (a condition of the project), no impacts to turtles downstream are anticipated. Regarding the offsets for the affected matters, these are primarily achieved through projected gains in habitat quality, not just averted loss as suggested by "*just securing habitat*". How this is to be achieved is detailed in the Offset Area management Plan (**Appendix II**) and the Offset Strategy (**Appendix Z**).	
Do Gooder website submission 1 (182 copies of submission including duplicates from same sender)	Please accept my submission on the Vulcan South Coal Mine proposal (EPBC 2023/09708). This proposal must be rejected. The Public Environmental Report (PER) identifies significant impacts on Koalas, Greater Gliders and other threatened species and ecological communities. The PER does not provide an adequate assessment of impacts on water resources, including permanent, irreversible changes that may arise. The project will release 26 million tonnes of greenhouse gas emissions at a time when the world must rapidly reduce emissions by replacing fossil fuels with clean energy and technology. My detailed comments and reasons for rejection are that: 1. The scale of impacts on endangered species (Koalas and Greater Gliders) and threatened ecological communities is unacceptable - The Proposed Action asks for approval to clear 1167 ha of Koala habitat, 1058 ha of Greater Glider habitat and 71ha of brigalow threatened ecological community. - This will have significant and likely irreversible impacts on these matters - Biodiversity offsets are proposed by the proponent but there is no evidence that offsets compensate for biodiversity loss 2. Short and long term impacts on water quality have not been assessed and the project leaves a lasting scar in the Fitzroy basin. - The PER does not assess the impacts of alkalinity, toxic metals and other contaminants on surface waters or groundwater - The proponent is relying on being able to rehabilitate the site to avoid long term impacts on water quality from sediment and other contaminants. - However, rehabilitation success rates in Queensland are extremely low and it is likely that this mine will remain a polluting scar on the landscape in perpetuity. 3. Greenhouse gas emissions will undermine Federal and Queensland commitments to net zero - 26 million tonnes of greenhouse gas emissions from the Proposed Action will contribute to climate change that is already severely affecting our economy and the wellbeing of Australians. - The PER does not demonstrate that greenhouse gas emissions from the Project can be controlled and reduced in accordance with the requirements of the Safeguard Mechanism, causing Australia to miss its international commitments 4. Social and economic benefits are outweighed by impacts	**1. The scale of impacts on endangered species (Koalas and Greater Gliders) and threatened ecological communities is unacceptable** **a) The Proposed Action asks for approval to clear 1167 ha of Koala habitat, 1058 ha of Greater Glider habitat and 71ha of brigalow threatened ecological community.** **Greater Glider habitat areas** The Project will result in a loss of 1,056.8 of Greater Glider habitat (as defined by DCCEEW). Within this there are 750 ha of likely/current denning habitat, 234.6 ha of future denning habitat, 19.3 ha of foraging habitat and 52.9 ha of dispersal habitat. It should be noted that these assessments of habitat are conservative and, especially for the Greater Glider but also for the Koala, DCCEEW's definitions are different to the Queensland State Governments definitions of habitat. Presented with the same information, the Queensland Department of Environment, Science and Innovation (DESI) accepted that there were 39.4 ha of Greater Glider habitat (primarily associated with riparian areas which they are most often found in as these are where large trees, with hollows, are most abundant). This is supported by Greater Glider sightings within the broader survey area which found that 67 Gliders were identified in riparian areas (17 sites) and only 1 Greater Glider was found in non riparian areas (even though 42 sites were surveyed). The habitat area calculations within the PER and updated terrestrial ecology assessment (which was updated to align with DCCEEW's conservative definitions of habitat) are therefore very conservative. For example DCCEEW has disregarded the definitions of Greater Glider habitat defined in the Department of Environment and Science's "Guide to Greater Glider habitat in Queensland" which states that "The information collated indicates that on average, trees greater than 50 cm DBH (mean ± sd = 59.3 ± 19.9 cm) appear to be important for use by Greater Gliders as den trees". Instead, DCCEEW has required an overly conservative approach by requiring denning habitat to include trees above 30cm DBH. Therefore, areas that the research indicates are unlikely to ever be used by Greater Gliders as denning habitat are now defined as denning habitat. Further, habitat is now also classified as 'future denning habitat' which includes any tree that may at some point become denning habitat in the future. This clearly uses a high degree of interpolation and it is possible that many of these areas will never become denning habitat. **Koala habitat areas** Based on federal assessment methodology requirements, the Project will result in the loss of 1,166.9 ha of Koala habitat (938.6 for combined foraging/shelter/dispersal habitat, 45.5 ha for shelter/dispersal and 182.8 ha for dispersal only). When DESI was presented with the same information (terrestrial ecology assessment, field data etc) it accepted that there were only 770.4 ha of Koala habitat (of which only 3.9 ha is defined as 'high quality' habitat). For the Koala, DCCEEWs categorisation (shelter/foraging and dispersal) does not include any information regarding the quality of that Koala habitat. For example, poor quality non-remnant compared to high quality riparian vegetation cannot be differentiated within these definitions but will significantly affect how likely the habitats are to be utilised by the species. For this reason, a Koala habitat quality figure has been provided which shows the change in quality across the disturbance footprint and within a 2 km buffer around the disturbance footprint. This figure assists in showing where areas of the footprint have been removed to prevent the clearing of riparian or high-quality Koala habitat. Koala habitat by quality (habitat value) is	• Surface water Impact assessment (**Appendix I**) • Groundwater impact assessment (**Appendix P**) • Water Resources Cumulative Impact assessment (**Appendix T**) • Additional Surface Water information (**Appendix D**) • Response to the IESC (**Appendix C**).

	- Any short term economic and social benefits are undermined by short and long term adverse environmental, social and economic impacts, not least of which is the social cost of greenhouse emissions caused by the Proposed Action. - Both current and future generations of Australians will suffer because of this Proposed Action. 5. There is no need for a new metallurgical coal project - The International Energy Agency has advised that existing metallurgical coal mines have more than enough capacity to provide for steelmaking and other industries during the transition to net zero - The transition to net zero in steel and other emission intensive industries is already underway and Federal government data shows that metallurgical coal exports have been dropping - It is irresponsible to approve another new coal mine when it could easily become a stranded asset, leaving workers and local businesses high and dry 6. The Proponent has a poor environmental compliance record - On 22 March 2024, the proponent was issued with an Environmental Protection Order (EPO) under the Queensland Environment Protection Act 1994 (EP Act) in relation to permit EA0002912. - On 17th June 2024, the proponent was issued with a Direction Notice under the EP Act in relation to unauthorised clearing of vegetation and conduct of an environmentally relevant activity outside the approved area on EPC1233.	discussed in **Section 9.2.3** of the PER. DCCEEW does not acknowledge the breakdown of high, moderate or low quality habitat for the Koala. **b) "This will have significant and likely irreversible impacts"** **Magnitude of impact to Koala** As per Section 6.1.2 of the PER: 19 years of disturbance is anticipated in consideration of recolonisation of mature trees). Viable populations of Koalas are expected to be maintained in extensive neighbouring habitats (98.9% of the high-quality habitat within the survey area is being retained, and extensive tracts of moderate quality habitat occur throughout the adjacent Harrow Range) throughout this disturbance period, providing a source of recruitment to rehabilitated areas in the future. However, by definition, a large proportion of the rehabilitated disturbance footprint would become 'dispersal' Koala habitat within a few years following the completion of the action. Therefore, impacts to the Koala are not permanent or irreversible, and are further conservatively compensated for through the use of environmental offsets. **Magnitude of impact to Squatter Pigeon** The impacts of habitat clearance will persist at least for the short- to medium-term, until vegetation is re-established on mined land. Being a ground-dwelling bird, they are not dependent on old trees, and rehabilitated sites are expected to meet their requirements for a low, protective tree cover within 15 years post-rehabilitation (Ngugi and Neldner 2015). Although 25 years has been used as a conservative estimate given the lack of data on the dietary requirements of the species. Therefore, impacts to the Squatter Pigeon are not permanent or irreversible, and are further conservatively compensated for through the use of environmental offsets. **Magnitude of impact to Greater Glider** The project will adversely affect habitat critical to the survival of a species (i.e., by removing hollow trees). This impact will last until tree hollows have been replaced in rehabilitated areas post-mining. It is expected to take 120 years post-planting for trees to be large enough to form natural hollows. Therefore the impact of habitat clearing on the Greater Glider will consist of a near permanent loss (only of 'denning habitat') within the impact site However the offset area will seek to conserve and improve a significant area of relevant habitat. **c) "Biodiversity offsets are proposed by the proponent but there is no evidence that offsets compensate for biodiversity loss"** The Offsets Area Management Plan provides the specific details on the chosen offset site and its suitability as an offset for the impacts from the Project. As specified within the Offset Strategy (Section 7), the Offset has been selected in accordance with the EPBC Act Environmental Offsets Policy. Table 7-1 provides practical measures to achieve the net zero loss, such as: • by being a 100% direct offset, which provides a measurable conservation gain for the impacted protected matters; • By achieving a positive conservation outcome for the same protected matters as being impacted (i.e., the Brigalow ecological community, Koala, Greater Glider and Squatter Pigeon) and the same attributes (i.e., foraging, breeding and dispersal habitat for the Squatter Pigeon will be assessed separately); These are described further within the Offset area Management plan itself (Appendix II). **2. Short and long term impacts on water quality have not been assessed and the project leaves a lasting scar in the Fitzroy basin.** **a) The PER does not assess the impacts of alkalinity, toxic metals and other contaminants on surface waters or groundwater** The geochemistry assessment conducted by a third party AQP concluded that there was a negligible risk of acid mine drainage (See Section 4.8, Section 6.4.1.3 of the PER and Appendix R). Section 4.8 identifies the risk of AMD to surface and groundwater. As per section 4.8.1.6 of the PER, "The in-pit disposal of mixed coarse and fine reject materials within waste rock cells is also a low-risk strategy as the much larger volume of waste rock typically has very low sulphur content and excess acid-neutralising capacity. This mining waste management strategy is currently used at a number of coal mines in the Bowen Basin (Appendix R). Overall, surface runoff and seepage from the waste rock material is expected to be pH neutral to slightly alkaline and have a low level of salinity. Dissolved metal and metalloid concentrations in surface runoff and leachate from bulk mining waste materials are expected to be low and unlikely to pose a significant risk to the quality of surface and groundwater resources. "	

		Therefore, impacts from overland flow or groundwater seepage of PAF and other metals related to the storage of rejects and dry tailings from WRD's are expected to be minimal, considering the emplacement strategy, which will significantly reduce the likelihood of acid mine drainage (See Section 4.8.1.6 and Section 7.1.4.1) . The geochemistry assessment did identify the following parameters to be within the reject material (aluminium, arsenic, cadmium, copper, manganese, nickel and zinc – see **Appendix R**). Even though the risk of AMD is low, Vitrinite has committed to –a series of mitigation measures within Section **7.1.4.1** of the PER, refer below: "*Whilst the results of this assessment indicate that the occurrence of any PAF materials is unlikely, if any carbonaceous waste rock is identified as posing a potential risk (possibly PAF) through sampling and total sulfur analysis, this will be selectively handled and buried within NAF waste rock. Short term planning and truck management planning will be updated upon identification of any carbonaceous waste rock that is possibly PAF to ensure that this material is hauled directly to the correct emplacement areas used for storing coal rejects and without storage in temporary stockpiles.* *Any carbonaceous waste rock material identified as possibly PAF (and all coal reject materials) will be preferentially stored in the in-pit waste rock dumps when sufficient capacity is available and below predicted post-mining groundwater level, where practical, to reduce the potential oxidation of materials in the longer term post-closure.* *The extents of any PAF carbonaceous waste rock (and all coal reject materials) transferred to emplacement areas will be tracked with regular surveys. Spatial data files in an appropriate format will be created to record the extents/dimensions of the storage areas. All possibly PAF carbonaceous waste rock and all coal reject materials will be paddock dumped, traffic compacted and covered by NAF overburden to limit the infiltration of air and water into covered materials*." A figure of the PAF emplacement strategy is also provided (**Figure 7-1**) which presents how acid mine drainage will be minimised/prevented. Vitrinite has committed to testing for aluminium, arsenic, cadmium, copper, manganese, nickel and zinc (identified in the geochemistry assessment to potentially leach from WRDs) within their groundwater monitoring program. See **Table 7-3** – Groundwater Mitigation measures. Vitrinite has also included testing of these within the REMP (Appendix X). In summary, impacts to surface and groundwater quality from waste rock dumps are not anticipated as per the technical assessment completed (Appendix R), however, impacts will be continuously monitored for and management measures enacted should testing indicate there is a risk. Vitrinite will also complete a mineral waste management plan as per the final EA. See Section 7.6.1.3 of the PER, which states that a 'mineral water management plan' must be completed in accordance with the EA stipulations. Conditions within the EA for this plan include the below: 7**.6.1.3 Mineral Waste Management Plan (C11)** "The Mineral Waste Management Plan required by condition C11 must include at least: • a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; • a program of progressive sampling and characterisation to identify dispersive and nondispersive waste rock, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulphate, acid and alkali producing potential; • a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; • a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; • where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; • details regarding the management of seepage and leachates; and • monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover. • This plan will be reviewed an updated at regular intervals not exceeding two years." **b) The proponent is relying on being able to rehabilitate the site to avoid long term impacts on water quality from sediment and other contaminants.** The approved State PRCP incorporates a comprehensive water management strategy and plan. Long term management and control of water is part of the plan and is a conditioned part of rehabilitation success.	

		c) However, rehabilitation success rates in Queensland are extremely low and it is likely that this mine will remain a polluting scar on the landscape in perpetuity. The PRCP framework provides a legislated schedule of progressive rehabilitation that must be implemented. This provides stakeholders with some certainty on rehabilitation progression and the criteria upon which success will be based. **3. Greenhouse gas emissions will undermine Federal and Queensland commitments to net zero** **a) 26 million tonnes of greenhouse gas emissions from the Proposed Action will contribute to climate change that is already severely affecting our economy and the wellbeing of Australians.** The Project will produce 960,000 TCO_2e of scope 1 and 2 emissions (direct and indirect) over the course of the mine life. Scope 3 emissions (emissions related to upstream or downstream emissions caused/required by the activities but at sources controlled by other entities) makes up the rest of the emissions which total to 25,019000 TCO2e or 25,019 ktCO2e. That is, over 93% of the 25 MtCO2e are associated with the use of the high quality metallurgical coal as an essential element for the production of steel (Scope 3). Vitrinite has completed a Greenhouse Gas Emissions Report for the Project (**Appendix GG** of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in **Appendix HH** of the Final PER. The GHG Abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. **b) The PER does not demonstrate that greenhouse gas emissions from the Project can be controlled and reduced in accordance with the requirements of the Safeguard Mechanism, causing Australia to miss its international commitments** Vitrinite has prepared a Greenhouse Gas Abatement Plan which is now included within the PER as an appendix (**Appendix HH**). The GHG Abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. **4. Social and economic benefits are outweighed by impacts** **a) Any short term economic and social benefits are undermined by short and long term adverse environmental, social and economic impacts, not least of which is the social cost of greenhouse emissions caused by the Proposed Action.** Vitrinite has prepared a Greenhouse Gas Abatement Plan which is now included within the PER as an appendix (**Appendix HH**). The GHG Abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. The GHG assessment and abatement plan demonstrates that the Project does not prevent state and nation emissions reduction targets from being met. The project will make a significant contribution to the state through royalties and taxes which will contribute to social infrastructure across the state. Capital and operational expenditure will also make a significant contribution to local and regional economies. **b) Both current and future generations of Australians will suffer because of this Proposed Action.** It is not clear from the submission, what the cause of suffering is anticipated to be, but a significant amount of planning, assessment and management has occurred over recent years to ensure the impacts of the project are managed. It should be noted that the project has already been through a full state assessment and approval process and both it and the proposal closure plan (PRCP) are approved by the state government. This would not have occurred if the Project was likely to cause suffering for current and future generations. **5. There is no need for a new metallurgical coal project** **a) The International Energy Agency has advised that existing metallurgical coal mines have more than enough capacity to provide for steelmaking and other industries during the transition to net zero** **b) The transition to net zero in steel and other emission intensive industries is already underway and Federal government data shows that metallurgical coal exports have been dropping** **c) It is irresponsible to approve another new coal mine when it could easily become a stranded asset, leaving workers and local businesses high and dry**	

		The Vulcan South coal product is a Premium Low Volatile (PLV) Hard Coking Coal (HCC) for which there is high market demand. Wood Mackenzie (2024), in its reporting on Vitrinite coal products has provided the following commentary on demand for this product. The global seaborne metallurgical coal market is expected to increase gradually from 299 Mt in 2022 to 373 Mt by 2050, growing at a rate of 0.8% p.a. The global seaborne HCC market is expected to increase by 0.7% p.a. from 199 Mtpa in 2022 to 243 Mtpa by 2050. India and south-east Asia (notably Indonesia and Vietnam) are expected to support HCC imports over the forecast with ongoing build out of blast-furnace steel and coke making capacity and limited options for substitution. China remains an anchor to the market, with imports expected to remain firm owing to a requirement to continue imports of high-quality coking coal for blending as domestic high-quality reserves are anticipated to fall over time. In the longer term, growth in steelmaking capacity and output, largely in India and south-east Asia, as well as the need for new projects, is expected to place increase pressure on supply through to at least 2050. Substitutions to traditional steel making processes are expected to increase over the coming decades however are not anticipated to have a significant impact on demand for HCC through to 2050. Vitrinite has supreme confidence in the demand for the Vulcan South product, particularly over the shorter life of the project (less than a decade). **6. The Proponent has a poor environmental compliance record** **a) On 22 March 2024, the proponent was issued with an Environmental Protection Order (EPO) under the Queensland Environment Protection Act 1994 (EP Act) in relation to permit EA0002912.** **b) On 17th June 2024, the proponent was issued with a Direction Notice under the EP Act in relation to unauthorised clearing of vegetation and conduct of an environmentally relevant activity outside the approved area on EPC1233.** Vitrinite acknowledges these compliance matters. Whist they are relatively minor in nature, Vitrinite takes them seriously. Vitrinite has continued to work with the relevant department to resolve the matters and to put measures in place to mitigate the risk of reoccurrence. Vitrinite remains in compliance with the conditions of those compliance notices.	
Do Gooder website submission 2	Please accept my submission on the Vulcan South Coal Mine proposal (EPBC 2023/09708). This proposal must be rejected. I must say that I just can't believe it. How could you even consider this? I know you were jaclknifed into this portfolio by an unforgiving and lacklustre prime minister but even a modicum of common sense would seem to dictate that you just MUST reject this project. I am just as disappointed in Chris Bowen with whom I'm sure you have consulted. Besides threatened species, water resources are going to be a huge issue in the future. Trees attract rainfall with aerosols and roots retain it locally in groundwater. They are super efficient water recyclers. They are are the main oxygen providers for the O2 in the atmosphere. The trashing of the ecosystems around us is beyond belief stupidity and ignorance by the human species at a time when all species are faced with dealing with rising temperatures and disappearing ecosystems due to our past wrecking ball destruction. I have deleted the stock answer, just in the vain hope someone might actually read this. I strongly urge you to consult with one or more of the immensely respected senior ecologists around for a crash course in ecology as it is obvious you and Chis Bowen are oblivious to the real consequences of these decisions you are making. I know you both have the smarts to understand. It is desperately urgent that you make the time to listen and learn. And stand up to the climate and ecosystem wreckers! For the survival of us all. We will all suffer for this decision otherwise. I have had 40 years of trying to fight ecosystem destruction and feel a complete failure. We can all do so much better! We have to.	**"Besides threatened species, water resources are going to be a huge issue in the future. Trees attract rainfall with aerosols and roots retain it locally in groundwater. They are super efficient water recyclers. They are are the main oxygen providers for the O2 in the atmosphere."** The loss of habitat to threatened fauna and the loss of trees will be offset through the management of an offset area (please see the OAMP as **Appendix II** of the PER). Also note that the loss of trees is temporary with large areas of woodland required to be established in accordance with the approved PRCP. All impacts to water resources will be managed as per the onsite water management system, through ongoing surface water and groundwater monitoring as per the REMP, Water Management Plan and groundwater management plan. These conditions are stipulated within the approved final EA (approved by DESI).	Offset area Management Plan (Appendix II)

Do Gooder website submission 3	[All the points made in the 'Do Gooder website submission 1' were replicated here with the following additional point:] The IPCC has stated we can no longer approve fossil fuel projects if we are to achieve anything like Net Zero in time.	Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (**Appendix GG** of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG Abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. Vitrinite will also adhere to internal and external energy and GHG emissions reporting requirements stipulated under the National Greenhouse and Energy Reporting Act 2007 and the Safeguard Mechanism.	• Greenhouse Gas Emissions Assessment (**Appendix GG**) • Greenhouse Gas Abatement plan (**Appendix HH**)
Do Gooder submission incomplete (5 copies of incomplete submission received)	Please accept my submission on the Vulcan South Coal Mine proposal (EPBC 2023/09708). This proposal must be rejected. The Public Environmental Report (PER) identifies significant impacts on Koalas, Greater Gliders and other threatened species and ecological communities. The PER does not provide an adequate assessment of impacts on water resources, including permanent, irreversible changes that may arise. The project will release 26 million tonnes of greenhouse gas emissions at a time when the world must rapidly reduce emissions by replacing fossil fuels with clean energy and technology. My detailed comments and reasons for rejection are that: 1. The scale of impacts on endangered species (Koalas and Greater Gliders) and threatened ecological communities is unacceptable - The Proposed Action asks for approval to clear 1167 ha of Koala habitat, 1058 ha of Greater Glider habitat and 71ha of brigalow threatened ecological community. - This will have significant and likely irreversible impacts on t	See response to 'Do Gooder submission 1'.	
Environmental Advocacy in Central Queensland	Thank you for the opportunity to make this submission in response to the Public Environment Report (PER) for the proposed Vulcan South Coal Mine (the Project) by Vitrinite Pty Ltd (the Proponent) under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act). **Environmental Advocacy in Central Queensland** Environmental Advocacy in Central Queensland (EnvA) is a Central Queensland association concerned about the risks associated with coal mining, coal seam gas and climate change. EnvA believes that opening new and expanding coal and gas projects: • is contrary to meeting Australia's emission targets and Queensland's emission targets, • is likely to result in irreparable damage to our local landscape and result in stranded assets, • will put our local community at further risk of extreme weather such as increasing the intensity and frequency of storms, floods, droughts and bushfires, • will damage our significant coastal resources including our beaches and the Great Barrier Reef through storm surge and increased coral bleaching events, and • will further degrade wildlife habitats of state and national significance through both habitat loss and climate change. **The proposed action**	**Significant impact on threatened species and communities** Vitrinite submitted the EA Application and EPBC referral using DESI's definitions of habitat for the Greater Glider and Koala. DESI then reviewed this information and agreed with the total habitat areas for the species which they published in the final Vulcan South EA (and which was included within the EPBC referral). Since then, DCCEEW disagreed with DESI's definitions of habitat and posed their own definitions which required the amendment of the terrestrial ecology assessment and therefore, the PER represents the updated DCCEEW definitions of habitat. The total disturbance footprint remains unchanged. Only the definitions of what constitutes habitat and the breakdown of types of habitat has changed. The clearing footprint is the same. See discussion below. **Greater Glider habitat areas** The Project will result in a loss of 1,056.8 of Greater Glider habitat (as defined by DCCEEW). Within this there is 750 ha of likely/current denning habitat, 234.6 ha of future denning habitat, 19.3 ha of foraging habitat and 52.9 ha of dispersal habitat. It should be noted that these assessments of habitat are conservative and, especially for the Greater Glider but also for the Koala, DCCEEW's definitions are different to the Queensland State Governments definitions of habitat. Presented with the same information, DESI accepted that there were 39.4 ha of Greater Glider habitat (primarily associated with riparian areas which they are most often found in as these are where large trees, with hollows, are most abundant). This is supported by Greater Glider sightings within the broader survey area which found that 67 Gliders were identified in riparian areas (17 sites) and only 1 Greater Glider was found in non-riparian areas (even though 42 sites were surveyed). The habitat area calculations within the PER and updated terrestrial ecology assessment (which was updated to align with DCCEEW's conservative definitions of habitat) are therefore very conservative. For example, DCCEEW has disregarded the definitions of Greater Glider habitat defined in the Department of Environment and Science "Guide to Greater Glider habitat in Queensland" which states that "The information collated indicates that on average,	• Surface water Impact Assessment (**Appendix I**) • Groundwater Impact assessment (**Appendix P**) • Water Resources Cumulative Impact assessment (**Appendix T**) • Additional Surface Water information (**Appendix D**)

	The Proponent is seeking to develop an open cut coal mining development and a smaller highwall mining trial area to further its metallurgical coal mining interest at the Vulcan Coal Complex. The project would be located approximately 35 km south-east of Moranbah, within the Isaac Regional Council in Central Queensland. The recently approved Project Mining Lease Area (ML 700073) covers an area of approximately 3800 ha and is situated over multiple underlying prerequisite tenures (EPC 1732, 1233 and 1234). The project disturbance footprint is stated to be approximately 1476.4 ha. The proposed Project will operate for approximately nine years, including primary rehabilitation works, following a two-year construction period. Approximately 13.5 Mt of ROM coal will be extracted consisting predominately of hard coking coal (with an incidental thermal secondary product) at a rate of up to 1.95 million tonnes per annum (Mtpa). The project includes: • three separate open cut mines identified as Vulcan North, Vulcan Main and Vulcan South, • a highwall mining trial involving the establishment of four highwall mining benches across a number of hillsides, • a mine infrastructure area, • a modular coal handling and preparation plant, • a rail loop and train load-out facility, • out-of-pit waste rock dumps, • ancillary infrastructure including offices, roads and surface water management infrastructure, and • the realignment of the existing Saraji Road and services infrastructure. **ENVA'S SUBMISSION** **Summary of concerns and recommendations** EnvA considers that the Project must be rejected as it would result in: • significant impacts on threatened species and communities • impacts on local water quality and volumes within the largest catchment flowing to the Great Barrier Reef, • increased greenhouse gas emissions fuelling more frequent and extreme weather events and the consequent impacts on Australia's natural environment and the people that live here. We also have concerns that the Proponent is still claiming that the Project is not part of a staged development, and hence has avoided the scrutiny of an environmental assessment of the entire Vulcan Complex coal mine. It is clear the three 'distinct' projects that have been referred for EPBC assessment are a staged development and recommend that the Vulcan Complex, Matilda Pit and infrastructure, and Vulcan South must be considered as one large project when assessing the impacts on Matters of National Environmental Significance (MNES). EnvA's further evidence in relation to this being a staged development is the proposed export of coal product (detailed in section 2.2.5 of the PER) through the Matilda Pit and Infrastructure project which is located within the initial Vulcan Complex Project. The claim that they are separate distinct projects is highly misleading and inaccurate. We also note that the PER has been updated since the referral for assessment under the EPBC Act (section 1.1 of the PER) and the granting of an Environmental Authority (P-EA-100265081), and is now seeking approval to clear greater areas of threatened species habitat than previously identified for the Project footprint. Despite EnvA's view that this Project must be rejected as it will clearly have significant and unacceptable impacts on the MNES, we strongly recommend that if there is any consideration of providing an approval, the footprint area must be reduced to the maximum extent outlined in the Queensland Government's Environmental Authority. EnvA has had the opportunity to communicate directly with the Proponent since the approval of the Environmental Authority for the Project, but we recommend that the Proponent's past approvals and compliance history is taken into account in considering whether they can be relied on to appropriately operate a Project that will significantly impact on the environment.	trees greater than 50 cm DBH (mean ± sd = 59.3 ± 19.9 cm) appear to be important for use by Greater Gliders as den trees". Instead, DCCEEW has required an overly conservative approach by requiring denning habitat to include trees above 30cm DBH. Therefore, areas that the research indicates are unlikely to ever be used by Greater Gliders as denning habitat are now defined as denning habitat. Further, habitat is now also classified as 'future denning habitat' which includes any tree that may at some point become denning habitat in the future. This clearly uses a high degree of interpolation, and it is possible that many of these areas will never become denning habitat. The assessment of impacts is therefore very conservative. **Koala habitat areas** Based on federal assessment methodology requirements, the Project will result in the loss of 1,166.9 ha of Koala habitat (938.6 for combined foraging/shelter/dispersal habitat, 45.5 ha for shelter/dispersal and 182.8 ha for dispersal only). When DESI was presented with the same information (terrestrial ecology assessment, field data etc) it accepted that there were only 770.4 ha of Koala habitat (of which only 3.9 ha is defined as 'high quality' habitat). For the Koala, DCCEEWs categorisation (shelter/foraging and dispersal) does not include any information regarding the quality of that Koala habitat. For example, poor quality non-remnant compared to high quality riparian vegetation cannot be differentiated within these definitions but will significantly affect how likely the habitats are to be utilised by the species. For this reason, a Koala habitat quality figure has been provided which shows the change in quality across the disturbance footprint and within a 2 km buffer around the disturbance footprint. This figure assists in showing where areas of the footprint have been removed to prevent the clearing of riparian or high-quality Koala habitat. Koala habitat by quality (habitat value) is discussed in **Section 9.2.3** of the PER. DCCEEW does not acknowledge the breakdown of high, moderate or low quality habitat for the Koala. **Significant impact on water resources** The PER provides a thorough assessment of impacts to water resources within Section 6.4 as derived from the Surface water Impact Assessment (**Appendix I**), the Groundwater Impact assessment (**Appendix P**), Water Resources Cumulative Impact assessment (**Appendix T)**, Additional Surface Water information (**Appendix D**) and Response to the IESC (**Appendix C**). The Surface Water Impact Assessment and Groundwater Impact Assessment were prepared by qualified water and hydrogeological specialists, respectively, in accordance with the latest guidelines. Monitoring, mitigation and management measures are provided in the PER, within sections 7.1.2 (Erosion and Sedimentation), 7.1.3 (Groundwater Drawdown and Contamination), and 7.1.4 (Surface Water mitigation measures). Further information has also been made available in Appendix D (Additional surface water information), which serves to provide supporting information concerning the IESC's advice. In terms of adaptive management, the recommendations contained within the surface water and groundwater reports are third party assessments conducted by an appropriately qualified party, however it will be Vitrinite's responsibility to implement mitigation measures as appropriate to conditions on site. Monitoring will be conducted in accordance with the project's Environmental Authority, as regulated through the Queensland Government's Department of Environment, Science, and Innovation. Overall, the water resources in the project area, both surface and groundwater systems, are highly modified by agricultural and surrounding mining activities. The water resources in this location are not of exceptional value and the impacts on them are of limited significance. **GHG Emissions** The Project will produce 960,000 TCO_2e of scope 1 and 2 emissions (direct and indirect) over the course of the mine life. Scope 3 emissions (emissions related to upstream or downstream emissions caused/required by the activities but at sources controlled by other entities) makes up the rest of the emissions which total to 25,019000 TCO2e or 25,019 ktCO2e. That is, over 93% of the 25 MtCO2e are associated with the use of the high quality metallurgical coal as an essential element for the production of steel (Scope 3). Vitrinite has completed a Greenhouse Gas Emissions Report for the Project (**Appendix GG** of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. As part of business improvement, Vitrinite will continue to identify energy consumption reduction and GHG emissions abatement options to be considered in the design phase of the Project. Vitrinite will also adhere to internal and external energy and GHG emissions reporting requirements stipulated under the *National Greenhouse and Energy Reporting Act 2007* and the Safeguard Mechanism. A GHG Abatement Plan (**Appendix HH**) has been added to the PER. This report includes Vitrinite's emissions reduction and abatement commitments. **The Proponent's previous environmental breaches** Vitrinite acknowledges these compliance matters. Whist they are relatively minor in nature, Vitrinite takes them seriously. Vitrinite has continued to work with the relevant department to resolve the matters and to put measures in place to mitigate the risk of reoccurrence. Vitrinite remains in compliance with the conditions of those compliance notices.	• Response to the IESC (**Appendix C**). • GHG Abatement Plan (**Appendix HH)**

Further background information and comments are contained in our previous submissions related to the Vulcan Coal Complex. Our further concerns and recommendations are outlined below.

GROUNDS FOR SUBMISSION

Significant impact on threatened species and communities

As noted by the Proponent in the PER, this Project will have significant residual impacts on threatened species and communities including direct impacts on:

- 71.2ha of brigalow,
- 1219ha of Squatter Pigeon habitat,
- 1167ha of Koala habitat (noting that the Queensland Government's EA approval allows for only 770ha of Koala to be cleared),
- 1056 ha of Greater Glider habitat, and potentially
- Over 1000ha of potential ornamental snake habitat.

These areas of residual impacts are significantly different to the previous reports provided in the Proponent's EA application and the referral for EPBC assessment. A summary of the discrepancies is provided in Table 1.

Table 1. Examples of the areas of MNES previously determined by the Proponent

MNES	PER (ha)	EPBC referral (ha)	EA application (ha)	EA approval (ha)
Brigalow	71.2	71.2	124	67
Squatter Pigeon	1219	543	1400	1023.5
Koala	1167	883	1023	770.4
Greater Glider	1056	50.7	71.1	39.4
Ornamental snake	>1000	100.5	107.5	-

EnvA considers that these are significant discrepancies and hence it is not clear of the 'real' impact on MNES from the Proponent's studies and documentation. We also consider that if the EA and referral documents were incorrect (and the PER is correct), this Project must be refused and the Proponent's intent to progress through the approval process using misleading information is investigated.

We further recommend that the Proponent is required to resubmit an application for an approval that includes all components of the Vulcan Coal Complex to accurately reflect the impacts that this mine will have on the environment. The cumulative impact of the three separate sub-projects of this coal mine complex is significant and deserves the highest level of scrutiny.

The combined projects would result in the clearing of more than 1400 ha of Koala habitat as well as significant areas of habitat for threatened species including Greater Glider, glossy black-cockatoo, Squatter Pigeon and ornamental snake. They would also remove up to 71 ha of the endangered

Brigalow threatened ecological community. The Bowen Basin is a highly cleared and fragmented environment.

The pre-clearing cover for the Isaac-Comet Downs subregion is estimated at approximately 2,693,397 ha compared to 570,968 ha that remains (Accad et al. 2023). Therefore, 78.8% of vegetation cover has already been cleared in this Brigalow Belt subregion which means that any further habitat clearing or disturbance is highly likely to result in significant impact on threatened species and ecosystems.

EnvA recommends that the project does not proceed as it will have a clearly unacceptable impacts on threatened species and communities.

Significant Impact on Water Resources

Vitrinite had previously determined that the Project and its associated effects on water resources are of a limited scale and duration. The Independent Expert Scientific Committee (IESC) advised that the Proponent's assessment was insufficient to determine the impacts on water resources and provided recommendations.

The bulk sampling was authorised pursuant to special conditions attached to EPC 1233. The approval process for State government authorisation of those activities, under the EP Act, included a significant residual impact assessment that determined a significant residual impact would not occur. This assessment was accepted by the State government.

The sampling area and associated infrastructure layout was planned specifically to avoid areas of high value.

The EPBC Act referral as published for the Vulcan South project confirms:

Small scale resource definition and sampling activities will continue within the project area while the Vulcan South Mine assessment and approval process proceeds. These activities will continue in accordance with associated State government approvals. These activities are not part of the action and are not of a scale that require separate referral.

	Despite the IESC advice, the Proponent still has not provided adequate monitoring, mitigation and management measures in either the groundwater or surface water reports. 'Adaptive management' is used as a cover where the appropriate management measures have not been considered upfront but can be added during mine operation, if and when issues arise. It is not the intent of adaptive management to devise mitigation measures on an as needed basis; rather it is a means of modifying existing mitigation measures to adapt to changing conditions. We also note that the Proponent does not good have a good record in protecting and managing water resources as is detailed below. **Greenhouse Gas (GHG) emissions** The GHG emissions from the Project are estimated to be 25,019ktCO2-e over the life of the mine, with 96% of this total being Scope 3 emissions. While these emissions levels maybe relatively small when compared to other nearby coal mines, it is very clear that any additional CO2 will contribute further to increased global temperatures and the associated extreme weather events being experienced across Australia. The Project will emit GHG emissions which will cumulatively increase global temperature and result in adverse impacts to MNES. EnvA considers that the splitting of the larger Vulcan Complex project into three projects may be taking an advantage of the current Safeguard Mechanism reporting requirements. It appears from the many applications and approvals that all three projects (if approved) will overlap in coal mining operations and should be assessed for the purposes of the Safeguard Mechanism as combined greenhouse gas emissions. We also consider that the there are no decarbonisation measures proposed and no details on how this project can align with the legislated emission reduction targets. **The Proponent's previous environmental breaches** <u>Water management</u> The Queensland Government issued an Environmental Protection Order (EPO) to the Proponent on 22 March 2024 in relation to repeated release of contaminated water from the Vulcan Complex mine and inappropriate water monitoring and drainage infrastructure. The EPO clearly identifies that there were numerous contaminated water releases from the Vulcan Complex mine between November 2022 and March 2023, with the company blaming heavy rainfall and staffing challenges. The EPO also shows that in October 2023, nearly a year following the first reported contamination event, Vitrinite was yet to construct all the infrastructure required as part of its Environmental Authority conditions. <u>Clearing of threatened species habitat</u> The Queensland Department of Environment and Science (DESI) issued a Directions Notice to the Proponent on 17 June 2024 in relation to unauthorised clearing outside of the approved area for the Proponent's bulk sampling project (EPPR03277115). The bulk sampling project is located within the proposed Vulcan South coal mine footprint which does not appear to have been referred for EPBC assessment and hence has no federal approval despite the clearing of 67ha of habitat for threatened species and communities. Vitrinite's compliance history does not provide EnvA any confidence that our environment (and climate) will be appropriately protected and managed. EnvA strongly believes that this Project must be refused based on the information provided in our previous submissions on this broader coal mine complex and the comments raised above in relation to the current Project. We believe that our submissions demonstrate that this project will have significant adverse impacts to MNES and compromise Queensland and Australia's emission reduction targets. Thank you again for the opportunity to make comment on this proposed Project.		

Queensland Conservation Council	Queensland Conservation Council welcomes the opportunity to comment on the Public Environmental Report (PER) for the Vulcan South Coal Mine (EPBC 2023/09708). Queensland Conservation Council is the peak body for environment groups around the state representing 61 groups and more than 20,000 members, who are seeing firsthand the impacts of climate change and the pressures of development imperil Queensland's threatened species, unique environments and communities. We are working towards achieving a safe climate future by limiting warming to 1.5 degrees, by transitioning Queensland to renewable energy by 2030. A 1.5 degree aligned future is imperative for Queensland's human rights. The Queensland Land Court in the 2022 Youth Verdict vs Waratah decision recognised the impact that fossil fuel developments have on the human rights of Indigenous people, and children. Globally, a 1.5 degree aligned future means no new fossil fuel projects can, or need to be approved, according to the International Energy Agency Internationally, this is already recognised and countries around the globe are reducing coal demand. Global demand for thermal coal has likely already peaked. Demand for metallurgical coal will also likely reduce in the near term, with the Institute for Energy Economics and Financial Analysis and the International Energy Agency identifying rapid advances in steel production methods that don't rely on coal. In June 2024, the Australian Government's Resources and Energy Quarterly Bulletin showed demand for metallurgical coal contracting. A new coal mine at Vulcan South risks draining public funding into a stranded asset. This is not adequately addressed in the social impact or economic assessment of this project. The economic cost of climate change is also not addressed. The 25 million tonnes of carbon dioxide equivalent (CO2e) released by burning coal from this mine would expose Australians and people across the planet to the devastating effects of climate change. A realistic social cost of carbon is around $US185/tonne, so that the Vulcan South Coal Mine would add a burden of about $US4.6 billion to the global population ($AU6.9 billion). The Vulcan South Coal Mine would also add around 106 ktonnes CO2e annually to Queensland's emissions. This is equivalent to the current carbon footprint of more than 3,000 Queenslanders, at a time when we are trying to reach a 75% emissions reduction target by 2035. Most of these emissions would be in the form of the super pollutant methane as fugitive emissions leaking from the coal seam. Methane is an extremely potent short term greenhouse gas so that the impacts of these emissions in the next 20 years would be almost three times higher than reported on a 100 year time frame. There is no place for projects like the Vulcan South Coal Mine in a safe climate future. The Vulcan South Coal Mine is further damaging to the local environment, removing threatened remnant brigalow and more than 1000 hectares of habitat for threatened species Greater Glider, Koala and Squatter Pigeon, as well as threatening water supply and rivers. We are deeply concerned that Vitrinite is already clearing Koala habitat for a test coal mining pit, ahead of this EPBC assessment. We believe this shows Vitrinite is not a fit entity to operate in Queensland due to this disregard of our environmental laws. Vitrinite are proposing a permanent modification to the landscape. The PER purports that post mining impacts will be negligible, despite the fact that no coal mines in Queensland have ever been rehabilitated properly in Queensland. The Queensland Mine Rehabilitation Commissioner identifies that less than 6,000 hectares of coal mine affected land is certified to be rehabilitated, of nearly 87,000 hectares claimed by mining companies, less than 2 percent of all land disturbed by mining in Queensland. This, itself, is less than one quarter of all land impacted by coal mines in Queensland. QCC recommends that this coal mine be refused. Further detail of our concerns around Matters of National Environmental Significance, water, and the company's record are detailed below. **Matters of National Environmental Significance** The Vulcan South Coal Mine is proposed in the Brigalow Belt bioregion which has the second lowest remnant extent of any bioregion in Queensland. The Brigalow Belt continues to have the highest rates of tree clearing in the state with 173,294 hectares bulldozed in the latest reporting period. This includes 28,887 hectares of regulated forest and woodland, with the majority being remnant forest with areas of high biodiversity value. This highlights the importance of protecting the remaining vegetation in the Brigalow Belt. However, the PER acknowledges significant impacts on: ● Brigalow Threatened Ecological Community (71.2 ha) ● Squatter Pigeon (1219 ha) ● Koala (1166.0 ha) ● Greater Glider (1056.84 ha) There will also be indirect and incidental impacts as mentioned in Appendix E, including habitat fragmentation and dust and noise pollution of twice as much Koala and Greater Glider habitat. The offsets and mitigation measures proposed are not adequate, as detailed below.	**Introduction text** **A new coal mine at Vulcan South risks draining public funding into a stranded asset.** The Vulcan South coal product is a Premium Low Volatile (PLV) Hard Coking Coal (HCC) for which there is high market demand. Wood Mackenzie (2024), in its reporting on Vitrinite coal products has provided the following commentary on demand for this product. The global seaborne metallurgical coal market is expected to increase gradually from 299 Mt in 2022 to 373 Mt by 2050, growing at a rate of 0.8% p.a. The global seaborne HCC market is expected to increase by 0.7% p.a. from 199 Mtpa in 2022 to 243 Mtpa by 2050. India and south-east Asia (notably Indonesia and Vietnam) are expected to support HCC imports over the forecast with ongoing build out of blast-furnace steel and coke making capacity and limited options for substitution. China remains an anchor to the market, with imports expected to remain firm owing to a requirement to continue imports of high-quality coking coal for blending as domestic high-quality reserves are anticipated to fall over time. In the longer term, growth in steelmaking capacity and output, largely in India and south-east Asia, as well as the need for new projects, is expected to place increase pressure on supply through to at least 2050. Substitutions to traditional steel making processes are expected to increase over the coming decades however are not anticipated to have a significant impact on demand for HCC through to 2050. Vitrinite has supreme confidence in the demand for the Vulcan South product, particularly over the shorter life of the project (less than a decade). **The economic cost of climate change is not addressed.** The Project will produce 960,000 TCO_2e of scope 1 and 2 emissions (direct and indirect) over the course of the mine life. Scope 3 emissions (emissions related to upstream or downstream emissions caused/required by the activities but at sources controlled by other entities) makes up the rest of the emissions which total to 25,019000 TCO2e or 25,019 ktCO2e. That is, over 93% of the 25 MtCO2e are associated with the use of the high-quality metallurgical coal as an essential element for the production of steel (Scope 3). Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (Appendix GG of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. A significant amount of planning, assessment and management has occurred over recent years to ensure the impacts of the project are managed. It should be noted that the project has already been through a full state assessment and approval process and both it and the proposal's closure plan (PRCP) are approved by the state government. Vitrinite will also adhere to internal and external energy and GHG emissions reporting requirements stipulated under the National Greenhouse and Energy Reporting Act 2007 and the Safeguard Mechanism. **We are deeply concerned that Vitrinite is already clearing Koala habitat for a test coal mining pit, ahead of this EPBC assessment. We believe this shows Vitrinite is not a fit entity to operate in Queensland due to this disregard of our environmental laws.** Vitrinite acknowledges these compliance matters. Whist they are relatively minor in nature, Vitrinite takes them seriously. Vitrinite has continued to work with the relevant department to resolve the matters and to put measures in place to mitigate the risk of reoccurrence. Vitrinite remains in compliance with the conditions of those compliance notices. **Matters of National Environmental Significance** **Greater Glider habitat areas** The Project will result in a loss of 1,056.8 of Greater Glider habitat (as defined by DCCEEW). Within this there is 750 ha of likely/current denning habitat, 234.6 ha of future denning habitat, 19.3 ha of foraging habitat and 52.9 ha of dispersal habitat. It should be noted that these assessments of habitat are conservative and, especially for the Greater Glider but also for the Koala, DCCEEW's definitions are different to the Queensland State Governments definitions of habitat. Presented with the same information, DESI accepted that there were 39.4 ha of Greater Glider habitat (primarily associated with riparian areas	• Surface water Impact Assessment (**Appendix I**) • Groundwater Impact assessment (**Appendix P**) • Water Resources Cumulative Impact assessment (**Appendix T**) • Additional Surface Water information (**Appendix D**) • Response to the IESC (**Appendix C**). • GHG Abatement Plan (**Appendix HH)** • GHG Emissions Assessment (**Appendix GG**) • PRCP (**Appendix J**) • PRCP Schedule (**Appendix K**) • OAMP (**Appendix II**) • Terrestrial Ecology Cumulative Impact Assessment (**Appendix S**) • REMP (**Appendix X**) • LEM (**Appendix AA**)

	Offset strategy risks permanent habitat loss The proposed offsets strategy, as outlined in Appendix Z, relies on declaring regrowth vegetation on leasehold cattle properties as 'Category A' under the Queensland Vegetation Management Act 1999. We are concerned that this does not provide permanent protection, as the areas could be reclassified as vegetation regrows, and Category A land can be reclassified and cleared through the provision of an 'exchange area'. The offsets are only proposed to last for 20 years, by which time the Vulcan South Coal Mine is assumed to have been rehabilitated. However, full rehabilitation of coal mines in Queensland is dismally low, and there is no contingency plan to ensure that habitat is protected if it is not able to be restored. This does not meet the requirements of the EPBC offsets policy that legal protection is "permanent (lasting forever) and [] secure". **Habitat fragmentation is likely** The mitigation measures proposed to reduce habitat fragmentation, such as sequential development of the mine pits, as mentioned in Appendix M, rely on effective rehabilitation of mine pits within the lifetime of the project. This is infeasible, even if full rehabilitation could be achieved, which is unlikely as discussed above. The life of the project is less than ten years and it will take more time than this to restore habitat for Koalas and Greater Gliders. The PER commits to minimise fragmentation 'where possible' through selection of infrastructure locations. This is not sufficiently detailed for a PER, which is supposed to be the basis of the final approval decision. **Cumulative impacts are not properly assessed** A cumulative impact assessment (CIA) on threatened species and ecosystems is spoken of in Section 6.2.8 and Appendix S but arrives at no conclusions, and considers impacts additive, rather than cumulative, so cannot really be considered a CIA. For the threatened species of Koala, Greater Glider and Squatter Pigeon, the CIA focuses on the impact of other proposed coal mines, instead of a focus on remaining habitat. A CIA should attempt to determine the threshold for species persistence and consider all pressures on habitat, including climate change, which is one of the most significant threatening processes for all aspects of Australia's biodiversity. **Water** The PER has not done sufficient long term water impact modelling, and does not take responsibility for the impacts of the Vulcan South coal mine on water. **Water Pollution** We are concerned that the PER does not adequately address the impacts of the Vulcan South Mine on surface water because: • it does not adequately address all contaminants, focusing only on salinity, despite acknowledging that there may be other contaminants of concern (page 333). • electrical conductivity in discharges is not compared to Water Quality Objectives\ • residual impacts post closure are not assessed despite the Landform Modelling Report (Appendix AA) identifying that erosion risk is at best moderate, and at less than 50% grass cover would be high, leading to loss of topsoil, exposure of sodic sub soils and waste rock, acknowledged to be alkaline and in some cases with relevant aluminium and copper levels (Appendix R). The Receiving Environment Monitoring Programme (REMP) (Appendix X), does not include testing for copper, alkalinity, major anions and cations, and does not include a commitment to long term monitoring after mine closure. There is no discussion in the REMP or PER as to what corrective actions will be applied in the event that the 'criteria' are exceeded. Unless the proponent is willing to undertake a thorough assessment of the potential for contamination of surface water and groundwater over the long term, i.e. post closure, and propose effective monitoring and mitigation measures, this Proposed Action must be refused on the basis of the potential for permanent, long term impacts on water resources. **Groundwater Impacts** The proponent has not undertaken a full assessment of groundwater conditions. On page 72 of the Groundwater Impact Assessment (GIA) (Appendix P) it is acknowledged that there is not yet enough data to set water quality objectives for groundwater monitoring. This is not sufficient to approve the project. Vitrinite acknowledges that they have yet to create a full groundwater model, as requested by the Independent Expert Scientific Committee (IESC). The PER also does not provide a plan to replace monitoring bores that will be destroyed by the mine.	which they are most often found in as these are where large trees, with hollows, are most abundant). This is supported by Greater Glider sightings within the broader survey area which found that 67 Gliders were identified in riparian areas (17 sites) and only 1 Greater Glider was found in non riparian areas (even though 42 sites were surveyed). The habitat area calculations within the PER and updated terrestrial ecology assessment (which was updated to align with DCCEEW's conservative definitions of habitat) are therefore very conservative. For example DCCEEW has disregarded the definitions of Greater Glider habitat defined in the Department of Environment and Science "Guide to Greater Glider habitat in Queensland" which states that "The information collated indicates that on average, trees greater than 50 cm DBH (mean ± sd = 59.3 ± 19.9 cm) appear to be important for use by Greater Gliders as den trees". Instead, DCCEEW has required an overly conservative approach by requiring denning habitat to include trees above 30cm DBH. Therefore, areas that the research indicates are unlikely to ever be used by Greater Gliders as denning habitat are now defined as denning habitat. Further, habitat is now also classified as 'future denning habitat' which includes any tree that may at some point become denning habitat in the future. This clearly uses a high degree of interpolation and it is possible that many of these areas will never become denning habitat. **Koala habitat areas** Based on federal assessment methodology requirements, the Project will result in the loss of 1,166.9 ha of Koala habitat (938.6 for combined foraging/shelter/dispersal habitat, 45.5 ha for shelter/dispersal and 182.8 ha for dispersal only). When DESI was presented with the same information (terrestrial ecology assessment, field data etc) it accepted that there were only 770.4 ha of Koala habitat (of which only 3.9 ha is defined as 'high quality' habitat). For the Koala, DCCEEWs categorisation (shelter/foraging and dispersal) does not include any information regarding the quality of that Koala habitat. For example, poor quality non-remnant compared to high quality riparian vegetation cannot be differentiated within these definitions but will significantly affect how likely the habitats are to be utilised by the species. For this reason, a Koala habitat quality figure has been provided which shows the change in quality across the disturbance footprint and within a 2 km buffer around the disturbance footprint. This figure assists in showing where areas of the footprint have been removed to prevent the clearing of riparian or high-quality Koala habitat. Koala habitat by quality (habitat value) is discussed in **Section 9.2.3** of the PER. DCCEEW does not acknowledge the breakdown of high, moderate or low quality habitat for the Koala. **<u>Offset strategy risks permanent habitat loss</u>** An OAMP has now been prepared and is provided as Appendix II of the PER. It details the various management measures proposed to enhance the subject area for the benefit of the species and communities it seeks to protect. The area subject to the OAMP will be legally secured to the satisfaction of the department. The 20-year timeframe applies if the necessary gains are achieved. If they are not, the offset area will be managed until they are. Progressive mine rehabilitation is now subject to the approved and legislated PRCP schedule which imposes statutory obligations on the proponent. Vulcan South's rehabilitation Schedule (**Appendix K**), as outlined within the Progressive Rehabilitation and Closure Plan (**Appendix J**), has been submitted to and approved by the Queensland Government. The Schedule is a legislated document to which Vitrinite is required to adhere. **<u>Habitat fragmentation is likely</u>** The wording has been updated in Table 7-1 to clarify that that infrastructure areas have already been selected to minimise fragmentation. The EA denotes the final approved Project layout which provides certainty to the final positioning of infrastructure. The PRCP framework provides a legislated schedule of progressive rehabilitation that must be implemented. This provides stakeholders with some certainty on rehabilitation progression and the criteria upon which success will be based. Fragmentation (aside from that discussed below) is unlikely due to the requirements of the PRCP schedule. The primary areas of fragmentation already identified are associated with 4 areas which were previously included in the disturbance footprint however were removed for the sole purpose of retaining high value riparian habitat for the Greater Glider and Koala. Therefore, any negative effects of introduced habitat fragmentation should be considered to be outweighed by the fact that these areas with large numbers of hollows have been retained and not cleared.	

	Further, the groundwater model is not currently adequate to conduct post closure groundwater simulations (IESC Item 7c, 8) or a full uncertainty analysis in accordance with IESC guidelines (IESC Item 7d). The GIA does not specific impact triggers or corrective action for management of groundwater drawdown and quality monitoring. As mentioned above, rehabilitation of mines is dismally low, and so the potential for groundwater to leak into backfilled pits post closure needs to be fully explored, to understand the potential impacts of waste and coal reject materials coming into contact with the groundwater through leaching. There needs to be a cumulative impact assessment, considering impacts on groundwater of other mines. Cumulative impact assessment requires establishment of thresholds beyond which the combined effects of impacts from multiple sources cannot extend. No attempt has been made to determine such thresholds. The IESC requested field validation of Groundwater Dependent Ecosystems (GDE), including the potential presence of terrestrial and subsurface GDEs. This validation is not reported on in the PER. **Water supply** An external water requirement of up to 1520 ML/year is identified in Section 6.4.1.9. The PER states that the proponent will source water from 'neighbouring operations', however much more information is needed on where this water will come from, how it might impact other users, including food production. The quality of the water also needs to be specified, particularly in relation to salinity. Overall, the assessment provided in the PER and appendices does not adequately demonstrate that there will not be a reduction in the current or future utility of water resources as described in the Significant Impact Guidelines - Coal seam gas and large coal mining developments—impacts on water resources. Both environmental and public utility uses may be affected, particularly post closure, given the low likelihood of rehabilitation success. **Vitrinite's record** We are deeply concerned that Vitrinite has already cleared at least 49.5 ha of the Koala habitat on the site for a bulk sample pit, apparently without EPBC approval. Vitrinite has already been issued with a Direction Notice on 17 June 2024 by the Queensland Department of Environment, Science and Innovation, as this exceeds the amount of habitat clearing authorised under its Environmental Authority (EA EPPR03277115). This shows a disregard for our environmental laws by both not waiting for Federal approval, and clearing more than was approved by the State. This is not the first time Vitrinite have operated outside the EPBC approval. Their EPBC compliance report from 2023 records several instances of non-compliance with permit conditions of EPBC approval 2020/8676, including clearing land outside the authorised area and failure to report potential breaches. The track record of Vulcan coal mine project water pollution is also deeply problematic. Mine affected water has been released from the mine, prompting the Queensland Government to issue an Environmental Protection Order (EPO) in March 2024, under the Queensland Environment Protection Act 1994 (EP Act). The EPO alleges a failure "to meet your general environmental duty as you have failed to take all reasonable action to prevent or minimise potential environmental harm associated with the activities at Vulcan Coal Mine" through: ● Failure to install and operate adequate measures to monitor and manage releases to water ● Failure to install and operate erosion and sediment control measures as required in its erosion and sediment control plan ● No provision for effective management of actual and potential environmental impacts in its water management plan. These failures casts serious doubt on whether Vitrinite will actually limit clearing to the amount of habitat listed in the PER, or be able to manage water pollution. **Climate Impacts** The greenhouse gas assessment of the project estimates that the Vulcan South Coal Mine would contribute 960,000 tonnes CO2e to Queensland's emissions, primarily through Scope 1 emissions. Based on similar nearby mines, we assume that 60% of the Scope 1 emissions are fugitive methane emissions. The short term impact of these will be much greater than described on a 100 year basis. If a 20 year warming potential of methane is used, the scope 1 emissions over the lifetime of the project would be around 2500 ktonnes CO2e. There is no attempt to quantify potential mitigation actions shown in Table 4 of Appendix GG.	**<u>Cumulative impacts are not properly assessed</u>** The remaining habitat in the landscape and its viability to contain displaced populations was assessed within the Terrestrial Ecology Assessment – specifically the Greater Glider, Koala and Squatter Pigeon. This is considered a cumulative impact assessment and is also contained within Section 9.1.3 of the PER for the Koala, 9.1.2 for the Squatter Pigeon, 9.1.4 for the Greater Glider. This information was taken from the terrestrial ecology assessment (Section 5.3.3 – Appendix M). See below wording taken from the PER: **Koala** The impact of clearing will last until mature food trees have re-established in rehabilitated areas post-mining. Re-colonisation of rehabilitated sites after six years has been observed in wetter climates in south-east Queensland (Cristescu, et al., 2013), but a more conservative estimate of 15 years is adopted here due to the drier climate and slower growth rates expected. As the final blocks of disturbed land can only commence rehabilitation at the cessation of mining activities (nine years after the commencement of the project), the duration of disturbance is estimated to be 24 years. Viable populations of Koalas are expected to be maintained in extensive neighbouring habitats (95.1% of the high-quality habitat within the survey area is being retained, and extensive tracts of moderate-quality habitat occur throughout the adjacent Harrow Range) throughout this disturbance period, providing a source of recruitment to rehabilitated areas in the future. Average Koala densities in the Brigalow Belt are thought to be 0.005 Koalas/ha (Threatened Species Scientific Committee, 2012). Given that the Cherwell-Harrow Range spans over 170,000 ha, the remaining Koala population is expected to exceed 850 individuals. **Greater Glider:** Viable populations of Greater Gliders are expected to be maintained in extensive neighbouring habitats (91.7 % of Greater Glider habitat is retained in the broader landscape) throughout the disturbance period, providing a source of recruitment to rehabilitated areas in the future. No data on population density is available for Greater Gliders within the Brigalow Belt, but the related Greater Glider occurs at average densities of 0.6 to 4 individuals per hectare (Henry, 1984; Kehl & Borsboom, 1984; Nelson, et al., 2018) while the Northern Greater Glider occurs at a density of 3.3 to 3.8 individuals per hectare at the single site (Taravale) in which they have been studied (Comport, et al., 1996). With a conservative assumption that densities within the survey area are on the lower end of published data (i.e., 0.6 per hectare), the 561.8 ha of habitat that will remain uncleared within the survey area supports at least 337 individuals. Furthermore, this population is likely to be connected to others throughout the Harrow Range to the west. **Squatter Pigeon** An additional 170 ha of breeding habitat was or is approved to be removed for the neighbouring Vulcan Coal Mine. Assuming habitat from the Vulcan Coal Mine is not rehabilitated prior to the commencement of Vulcan South, breeding habitat for 102 pairs will be retained in the local landscape throughout the project (assuming each pair occupies 8 ha and 50% of available territories are occupied). The estimated size of this retained local population is highly conservative, as it does not include contiguous habitat west and south of the survey area. It is more likely that habitat for several hundred pairs will be retained in the local region, supporting a viable population that will serve as a source of recruitment for rehabilitated land post-mining. The specific analysis and contents of **Appendix S** was at the special request of DCCEEW. **<u>Water</u>** The PER provides a thorough assessment of impacts to water resources within **Section 6.4** (spanning almost 100 pages) as derived from the Surface water Impact Assessment (**Appendix I)**, the Groundwater Impact assessment (**Appendix P**), Water Resources Cumulative Impact assessment (**Appendix T**), Additional Surface Water information (**Appendix D**) and Response to the IESC (**Appendix C**). The Surface Water Impact Assessment and Groundwater Impact Assessment were prepared by qualified water and hydrogeological specialists, respectively, in accordance with the latest guidelines. Monitoring, mitigation and management measures are provided in the PER, within sections 7.1.2 (Erosion and Sedimentation), 7.1.3 (Groundwater Drawdown and Contamination), and 7.1.4 (Surface Water mitigation measures). Further information has also been made available in Appendix D (Additional surface water information), which serves to provide supporting information concerning the IESC's advice. Overall, the water resources in the project area, both surface and groundwater systems, are highly modified by agricultural and surrounding mining activities. The water resources in this location are not of exceptional value and the impacts on them are of limited significance. ***<u>Water Pollution</u>*** **Surface water – contamination, EC, residual impacts post closure, inadequate REMP, no corrective actions** Vitrinite has committed to testing for aluminium, arsenic, cadmium, copper, manganese, nickel and zinc (identified in the geochemistry assessment to potentially leach from WRDs) within their groundwater monitoring program. See **Table 7-3** – Groundwater Mitigation measures. As requested by the IESC Vitrinite has included the additional Copper and DOC into their surface water quality testing regime within the REMP (**Appendix X**). This is in addition to the monitoring of 'standard' water quality parameters including, but not limited to pH, EC, major anions (sulfate, chloride and alkalinity), major cations (sodium,	

	The proposed emissions would be around 0.063 tonnes CO2e/tonne ROM coal. This is more than 10 times the international best practice guidelines under the Safeguard Mechanism. This shows that there is huge potential for Vitrinite to act on reducing their emissions, that they have not taken. **Summary** In summary, QCC considers that every aspect of the Proposed Action undermines the principles of ecologically sustainable development (ESD) enshrined in the EPBC Act (Section 3A). In particular: 1. Any short term economic and social benefits are undermined by short and long term adverse environmental, social and economic impacts. 2. Intergenerational equity is not provided for as future generations will be less able to enjoy a healthy, diverse and productive environment due to both the loss of biodiversity and water resources, and the accretion of GHGs in the atmosphere. 3. Loss of biodiversity must be considered permanent due to the low likelihood of success of proposed biodiversity offsets and site rehabilitation. 4. The Proposed Action will permanently alter the landform, hydrological and hydrogeological characteristics of the site and it is unlikely that the site can be adequately rehabilitated. QCC calls on Minister Plibersek to secure the future of Australian biodiversity and the wellbeing of Australians by refusing this Proposed Action.	calcium, magnesium and potassium), TDS and a broad suite of soluble metals/metalloids to detect runoff from spoil piles. See Surface water Impact Assessment (Section 9.7). This will be included in the Water Management Plan. The duration and extent of impacts to surface water are discussed within **Section 6.4.1.14** which concludes that the duration of surface water impacts will occur until drainage diversions are remediated and drainage lines reinstated to the natural topography, backfilling of the pit and removing all other water management infrastructure post closure. It is expected all water management infrastructure that requires removal or remediation at the Project, will be completed by 2034. Overall, the impact of the Project on the hydraulic characteristics of Boomerang Creek, Hughes Creek and their tributaries do not affect the existing conditions significantly. It is expected that the channel and floodplain will undergo little, if any, adjustment to the hydraulic conditions upstream or downstream of the Project as a result of the Project. The Environmental Authority and Progressive Rehabilitation and Closure Plan Schedule (statutory documents) require that there are non permanent impacts to surface water through the trigger level prescriptions, surface water monitoring locations and monitoring frequency, corrective actions, specifications on when, how and by what criteria drainage lines are to be rehabilitated and the conditions these rehabilitation areas must meet etc. It should be noted that the baseline monitoring indicates that the surrounding environment is of poor quality. The Project is located within the Bowen Basin region which has be subject to mining activities for over 100 years and the Project area is located adjacent to BMA peak Downs mine. Therefore the 'receiving environment' of the Project is actually the Peak Downs Mine's mine water catchment. The short duration of the Project, the requirement to comply with a Water management Plan, REMP for ongoing monitoring and corrective actions associated if trigger limits are exceeded, in addition to the requirement to comply with the approved PRCP schedule and PRCP which stipulate specific conditions for rehabilitation of drainage corridors, mean that any long term measurable impact on the 'receiving environment' is very unlikely. This has been modelled in depth within the surface water impact assessment. Estimates on salinity within the project area have been provided within Section 6.4.1.12 of the PER. See Table 6-25 with the annual salt balance. Note that the salt balance is reported in annual tonnes of total dissolved solids (TDS) based on an EC to TDS conversion factor of 0.7. EC is a parameter within the EA surface water quality testing suite (see Table 7-9 of the PER or **Appendix E** – the Environmental Authority providing Surface water Quality Objectives as per the approved Final Vulcan South EA). Please also see Section 7.6.1.3 of the PER, which states that a 'mineral water management plan' must be completed in accordance with the EA stipulations. Conditions within the EA for this plan include the below: 7**.6.1.3 Mineral Waste Management Plan (C11)** "The Mineral Waste Management Plan required by condition C11 must include at least: • a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; • a program of progressive sampling and characterisation to identify dispersive and nondispersive waste rock, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulphate, acid and alkali producing potential; • a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; • a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; • where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; • details regarding the management of seepage and leachates; and • monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover. • This plan will be reviewed an updated at regular intervals not exceeding two years." **Erosion risk post closure** The 70% grass cover design chosen for the PRCP is the highest achievable and practical cover design for the Project. It is also the cover design with the lowest possible erosion risk determined by the Landform Evolution Modelling (**Appendix AA**). 100% grass cover is rarely achievable for a rehabilitated site nor is it appropriate as a grass cover of 100% prevents the growth of overstorey and understorey required for the achievement of habitat for Greater Gliders and Koalas. These species need tree cover which one cannot achieve if the landform contains 100% Grass. A percentage cover of 50% protects slopes from erosion (Loch 2000; Waters 2004; Carroll et al. 2010). Cover >70%is required to achieve background rates of erosion on slopes steeper	

		than 10% (AARC 2022). Excessive groundcover inhibits the recruitment of trees and shrubs, and a maximum value of 96% cover was observed within reference sites in stable, unmined vegetation communities (as per the Terrestrial ecology assessment). This cover design was chosen based on trials undertake at the Adjacent Saraji Mine. Trials undertaken at the adjacent Saraji Mine compared vegetation establishment on waste rock (spoil) that received 0 cm, 10 cm or 30 cm of topsoil prior to planting (Kopittke et al. 2004). Grass established at higher densities in the topsoil treatments than on the spoil; however, even on spoil, grass achieved 70% cover. Native trees and shrubs actually established better without topsoil, due to reduced competition with grass, but natural thinning over the first ten years resulted in a final stem density that was equivalent to the topsoil treatments. The spoil at Saraji is more saline (Kopittke et al. 2004) than that at Vulcan South, suggesting that local waste rock is unlikely to pose a barrier to root growth for local vegetation. Based on these trials, the cover proposed at the Project is expected to be ideal for establishing a productive pasture with a moderate density of native woody vegetation. Erosion will be monitored every two years as well as throughout multiple stages of the rehabilitation milestone criteria monitoring process. See Section 7.1.2 of the PER which outlines erosion mitigation measures, see section 8.3.1.3 which outlines erosion monitoring in accordance with PRCP criteria, also see Appendix W ESCP (erosion and sediment control plan) and the PRCP Schedule which provides when erosion monitoring must be completed by, at which rehabilitation area and to what criteria (**Appendix K**). **Post closure monitoring and corrective actions** The surface water assessment specifically addresses long term impacts as impacts during post closure. See Section 8 – Flood modelling and Impact assessment and within this Section 8.5.2 – changes to post closure conditions model changes, Section 8.8 – Post closure conditions potential flood impacts, Section 9.5.2 post closure surface water monitoring. Post closure groundwater and surface water monitoring is committed to within the PRCP Schedule and PRCP (**Appendix K** and **J**, respectively). Corrective actions that will be undertaken in the event that surface water or groundwater trigger levels are exceeded during operations or post closure is provided within section. ***Groundwater Impacts*** **The proponent has not undertaken a full assessment of groundwater conditions. On page 72 of the Groundwater Impact Assessment (GIA) (Appendix P) it is acknowledged that there is not yet enough data to set water quality objectives for groundwater monitoring. This is not sufficient to approve the project.** Since submission of the Groundwater Impact Assessment (2022), monitoring of groundwater levels and quality has continued to further establish a baseline dataset to confirm the understanding of pre-project groundwater conditions. A data sharing agreement is currently being negotiated between Vitrinite and BHP and this will provide additional groundwater data and confirmation of mining activities (historic, current and future approved) for future model updates. Until the data agreement is finalised, conditions of this agreement are still unknown, and so is the availability of data under this agreement. The data sharing agreement is currently being established between Vitrinite and BHP; this information is located within Appendix C of the PER. **Vitrinite acknowledges that they have yet to create a full groundwater model, as requested by the Independent Expert Scientific Committee (IESC).** The groundwater model has been designed, developed and constructed with reference to the Australian Groundwater Modelling Guidelines and is considered fit for purpose for the assessment of the project and cumulative impacts. Uncertainty analysis was completed in accordance with the guidelines at the time of development. The numerical model and groundwater impact assessment was reviewed by a third party to assess it as fit for purpose during the recent 2024 update of the GIA and verification of the groundwater model. The groundwater model for the project will be reviewed and potentially updated within 12 months of approval. The model is to be updated to incorporate available BHP data and the updated dataset from the project groundwater monitoring network. The modelling is to include operational predictions, post-mining predictions and uncertainty analysis. As specified with the Groundwater Impact assessment, Section 6.2.5: Post-closure modelling was not carried out as part of the model predictions. The rationale for not completing post-closure modelling is provided below: • Following cessation of Project mining, the Project open pits will be backfilled with overburden emplacement.	

		• The backfilling of the Project open pits will cease any evaporative groundwater losses resulting from the project and the local groundwater levels will likely recover to pre-mine conditions. • The BHP Saraji Mine and Peak Downs Mine will include the presence of final pit voids as part of their approved final landform. • The number of, location of, and depth of the BHP final pit voids are currently unknown. There is currently no information in the public domain and a data sharing agreement between Vitrinite and BHP is currently not in place to obtain this information. These BHP mines are extensive and have approval to continue well into the future. • It is likely that pit lakes will form in these BHP final pit voids, however this concept needs to be confirmed with BHP and the elevations of any final void pit lakes is unknown. • The BHP final pit voids will result in evaporative sinks into perpetuity, thus resulting in regional drawdown effects that extend to the west and to the east. • The post closure drawdown effects of the BHP final pit voids are highly likely to extend into the project area and influence local groundwater conditions. • The duration and timing of the Project is insignificant when compared to the historic and approved mining associated with the BHP Saraji Mine and Peak Downs Mine. The magnitude and extent of mining at BHP is significant and the groundwater conditions within the Project area (and in proximity) will be significantly influenced by the presence of large evaporative sinks in the post mining landscape. • Regional groundwater flow is from west to east and any potential leachate that may be introduced via the Project • open pits will be captured in the evaporative sinks of the BHP final voids. The post-closure scenario is heavily dependent upon the closure conditions and approved final landforms at Saraji Mine and Peak Downs Mine . There is currently no information in the public domain and a data sharing agreement between Vitrinite and BHP is currently not in place to obtain this information. It is not reasonable to expect that numerical modelling is carried out when there is such uncertainty in the post-closure mining environment. **The PER also does not provide a plan to replace monitoring bores that will be destroyed by the mine.** Additional monitoring bores have been installed for the project (April 2024) to supplement the groundwater monitoring network and confirm the current conceptual understanding. The newly proposed monitoring bores and network are outlined in Section 7.2.2 of the PER. **Further, the groundwater model is not currently adequate to conduct post closure groundwater simulations (IESC Item 7c, 8) or a full uncertainty analysis in accordance with IESC guidelines (IESC Item 7d).** See response above. Additional information was also provided following the IESC review which is provided as **Appendix D** to the PER. **The GIA does not specific impact triggers or corrective action for management of groundwater drawdown and quality monitoring.** Impacts to groundwater level and quality are assessed to be limited. Nonetheless, the approved Vulcan South Environmental Authority (PER **Appendix E**) incorporates conditions, monitoring requirements and triggers for both impacts to groundwater quality and standing water level. In accordance with these conditions, should and impact be detected by the required groundwater monitoring and management program, a process of investigation, reporting and where required, corrective action will be implemented. **There needs to be a cumulative impact assessment, considering impacts on groundwater of other mines. Cumulative impact assessment requires establishment of thresholds beyond which the combined effects of impacts from multiple sources cannot extend. No attempt has been made to determine such thresholds.** The model developed to inform the groundwater impact assessment incorporates the cumulative effect of surrounding mining operations in its inherent conceptualisation, calibration and representation of baseline conditions. The fact is that there is limited groundwater within the project area and the geology supports low hydraulic conductivity. Therefore, the effects of the project are extremely localised and cumulatively, have little effect on the broader groundwater regime. **As mentioned above, rehabilitation of mines is dismally low, and so the potential for groundwater to leak into backfilled pits post closure needs to be fully explored, to understand the potential impacts of waste and coal reject materials coming into contact with the groundwater through leaching.**	

		The Project geochemical assessment (PER **Appendix R**) assesses the risks associated with groundwater and waste interactions. In a closure context, this discussion is further developed in the approved Project PRCP (PER **Appendix K**). The groundwater assessment further explores groundwater recovery following cessation of operations. Specific closure criteria relating to the maintenance of groundwater quality are incorporated into the PRCP schedule, which is a statutory document that is required to be adhered to. Furthermore, the PRCP schedule specifies the Projects progressive rehabilitation requirements and demands rapid and progressive rehabilitation as areas become available. **The IESC requested field validation of Groundwater Dependent Ecosystems (GDE), including the potential presence of terrestrial and subsurface GDEs. This validation is not reported on in the PER.** It is widely recognised in literature which tree species have a propensity to utilise groundwater and to what extent (defined as "terrestrial GDEs"). This is described in detail within Section 5.10.4.1 of the PER, Table 5-20 specifically. Terrestrial flora field validation surveys were completed for these species as discussed within Section 4.7.2. Mapping of terrestrial GDEs also considered the depth-to-groundwater data, national GDE mapping and water quality data. ***Water supply*** Good quality raw water supply has been secured through the Bingegang pipeline. Opportunities to reuse water from adjacent mines is being explored and would be assessed for suitability prior to use. The adjacent land uses are primarily mining and cattle from surrounding beef production operations will be excluded from operational areas. There is no cropping land in the vicinity. Estimates on salinity within the project area have been provided within Section 6.4.1.12 of the PER. See **Table 6-25** with the annual salt balance. Note that the salt balance is reported in annual tonnes of total dissolved solids (TDS) based on an EC to TDS conversion factor of 0.7. EC is a parameter within the EA surface water quality testing suite (see **Table 7-9** of the PER or Appendix E – the Environmental Authority providing Surface water Quality Objectives as per the approved Final Vulcan South EA). The project's impact on water resources has been assessed as relatively minor especially when surrounding, larger projects are considered (see Section 6.4.6 of the PER). Given these minimal impacts, and the legislated schedule of rehabilitation to which the Proponent is required to adhere (Appendix J, Progressive Rehabilitation and Closure Plan), current and future water utility is unlikely to be significantly affected. As described in the PER (Section 6.4.1.8), it is also noted that there are five active water access licences/licence to take water from waterways that drain through the Project area (Harrow Creek, East Creek, Boomerang Creek, and Hughes Creek). The surface water modelling indicates the Project will have insignificant impacts on surface flows and water quality to the receiving environment following implementation of mitigation measures. Therefore, the impacts on third party users is expected to be negligible. Mitigation measures will be implemented if third party users emerge. **Vitrinite's record** Vitrinite acknowledges these compliance matters. Whist they are relatively minor in nature, Vitrinite takes them seriously. Vitrinite has continued to work with the relevant department to resolve the matters and to put measures in place to mitigate the risk of reoccurrence. Vitrinite remains in compliance with the conditions of those compliance notices. The bulk sampling was authorised pursuant to special conditions attached to EPC 1233. The approval process for State government authorisation of those activities, under the EP Act, included a significant residual impact assessment that determined a significant residual impact would not occur. This assessment was accepted by the State government. The sampling area and associated infrastructure layout was planned specifically to avoid areas of high value. The EPBC Act referral as published for the Vulcan South project confirms: Small scale resource definition and sampling activities will continue within the project area while the Vulcan South Mine assessment and approval process proceeds. These activities will continue in accordance with associated State government approvals. These activities are not part of the action and are not of a scale that require separate referral. **Climate impacts** The Project will produce 960,000 TCO_2e of scope 1 and 2 emissions (direct and indirect) over the course of the mine life. Scope 3 emissions (emissions related to upstream or downstream emissions caused/required by the activities but at sources controlled by other entities) makes up the rest of the emissions which total to 25,019000 TCO2e or 25,019 ktCO2e. That is, over 93% of the 25 MtCO2e are associated with the use of the high-quality metallurgical coal as an essential element for the production of steel (Scope 3).	

		Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (**Appendix GG** of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. It is not clear from the submission, what the cause of suffering is anticipated to be, but a significant amount of planning, assessment and management has occurred over recent years to ensure the impacts of the project are managed. It should be noted that the project has already been through a full state assessment and approval process and both it and the proposal closure plan (PRCP) are approved by the state government. This would not have occurred if the Project was likely to cause suffering for current and future generations. Vitrinite will also adhere to internal and external energy and GHG emissions reporting requirements stipulated under the National Greenhouse and Energy Reporting Act 2007 and the Safeguard Mechanism.	
Mackay Conservation Group	Thank you for the opportunity to make this submission. I am authorised by Mackay Conservation Group Inc. (MCG) to make this submission on behalf of the group. MCG is the lead community-based environmental organisation in the Mackay-Isaac-Whitsunday Region. MCG has been actively involved in on-ground environmental work and advocacy for environmental protection in the region since 1984. We provide support to community members who are affected by actions that cause environmental harm. We also conduct environmental education activities and support a number of other groups working in the field of environmental protection and monitoring in the region. We are particularly concerned about the risks associated with coal mining, coal seam gas and climate change. MCG is concerned that The Public Environmental Report (PER) identifies significant impacts on Koalas, Greater Gliders and other threatened species and ecological communities. The PER does not provide an adequate assessment of impacts on water resources, including permanent, irreversible changes that may arise. The project will release 26 million tonnes of greenhouse gas emissions at a time when the world must rapidly reduce emissions by replacing fossil fuels with clean energy and technology. As such, we believe that this project should not go ahead. Please find our detailed comments and reasons outlined below. **The Project:** The Proposed Action consists of an open cut mine and a highwall trial, targeting metallurgical and thermal coal, at a production rate of about 1.95 million tonnes per annum, with a total extraction amount of about 13.5 million tonnes (run of mine) over about nine years. A total of about 26 million tonnes of carbon dioxide equivalent (CO_2e) will be added to the concentration of greenhouse gases (GHG) in the atmosphere. The total footprint of the Proposed Action is 1,476.4, over two thirds of which is habitat for native animals, including listed endangered species. **Significant impacts on threatened species and ecological communities:** MCG believes that the scale of impacts on endangered species (Koalas and Greater Gliders) and threatened ecological communities is unacceptable. The Proposed Action asks for approval to clear 1167 ha of endangered Koala habitat, 1058 ha of endangered Greater Glider habitat, 1219 ha of vulnerable Squatter Pigeon habitat and 71ha of brigalow threatened ecological community which is endangered. As well as these direct impacts, indirect and incidental impacts are also mentioned in the PER and Appendix E, including: • Loss of access to water at dam sites for Squatter Pigeons • Indirect impacts of dust, light, noise and activity in general on 2,111 ha of Koala habitat, and 2210 ha of Greater Glider habitat • Habitat fragmentation • Mortality during vegetation clearing and from vehicle strikes. While mitigation measures are listed in the PER, their effectiveness is unclear and questionable. We disagree with the proponent's claim that these measures will significantly reduce impacts on threatened species and ecological communities. Some examples of this are: • It is unlikely that Squatter Pigeons will utilise mine dams and sediment dams within the disturbed area, and indeed, given the vulnerability of Squatter Pigeons to vehicle strikes, this could be detrimental. • Measures to minimise the risk of inadvertent clearing outside approved areas, while considered good practice, do not actually reduce the significance of the impact of planned habitat loss. Further, if clearing	**Significant impacts on threatened species and ecological communities:** **MCG believes that the scale of impacts on endangered species (Koalas and Greater Gliders) and threatened ecological communities is unacceptable. The Proposed Action asks for approval to clear 1167 ha of endangered Koala habitat, 1058 ha of endangered Greater Glider habitat, 1219 ha of vulnerable Squatter Pigeon habitat and 71ha of brigalow threatened ecological community which is endangered.** **Greater Glider habitat areas** The Project will result in a loss of 1,056.8 of Greater Glider habitat (as defined by DCCEEW). Within this there is 750 ha of likely/current denning habitat, 234.6 ha of future denning habitat, 19.3 ha of foraging habitat and 52.9 ha of dispersal habitat. It should be noted that these assessments of habitat are conservative and, especially for the Greater Glider but also for the Koala, DCCEEW's definitions are different to the Queensland State Governments definitions of habitat. Presented with the same information, DESI accepted that there were 39.4 ha of Greater Glider habitat (primarily associated with riparian areas which they are most often found in as these are where large trees, with hollows, are most abundant). This is supported by Greater Glider sightings within the broader survey area which found that 67 Gliders were identified in riparian areas (17 sites) and only 1 Greater Glider was found in non riparian areas (even though 42 sites were surveyed). The habitat area calculations within the PER and updated terrestrial ecology assessment (which was updated to align with DCCEEW's conservative definitions of habitat) are therefore very conservative. For example, DCCEEW has disregarded the definitions of Greater Glider habitat defined in the Department of Environment and Science "Guide to Greater Glider habitat in Queensland" which states that "The information collated indicates that on average, trees greater than 50 cm DBH (mean ± sd = 59.3 ± 19.9 cm) appear to be important for use by Greater Gliders as den trees". Instead, DCCEEW has required an overly conservative approach by requiring denning habitat to include trees above 30cm DBH. Therefore, areas that the research indicates are unlikely to ever be used by Greater Gliders as denning habitat are now defined as denning habitat. Further, habitat is now also classified as 'future denning habitat' which includes any tree that may at some point become denning habitat in the future. This clearly uses a high degree of interpolation and it is possible that many of these areas will never become denning habitat. **Koala habitat areas** Based on federal assessment methodology requirements, the Project will result in the loss of 1,166.9 ha of Koala habitat (938.6 for combined foraging/shelter/dispersal habitat, 45.5 ha for shelter/dispersal and 182.8 ha for dispersal only). When DESI was presented with the same information (terrestrial ecology assessment, field data etc) it accepted that there were only 770.4 ha of Koala habitat (of which only 3.9 ha is defined as 'high quality' habitat). For the Koala, DCCEEWs categorisation (shelter/foraging and dispersal) does not include any information regarding the quality of that Koala habitat. For example, poor quality non-remnant compared to high quality riparian vegetation cannot be differentiated within these definitions but will significantly affect how likely the habitats are to be utilised by the species. For this reason, a Koala habitat quality figure has been provided which shows the change in quality across the disturbance footprint and within a 2 km buffer around the disturbance footprint. This figure assists in showing where areas of the footprint have been removed to prevent the clearing of riparian or high-quality Koala habitat. Koala habitat by quality (habitat value) is discussed in **Section 9.2.3** of the PER. DCCEEW does not acknowledge the breakdown of high, moderate or low quality habitat for the Koala. **As well as these direct impacts, indirect and incidental impacts are also mentioned in the PER and Appendix E, including:** • **Loss of access to water at dam sites for Squatter Pigeons**	• Surface water Impact Assessment (**Appendix I**) • Groundwater Impact assessment (**Appendix P**) • Water Resources Cumulative Impact assessment (**Appendix T**) • Additional Surface Water information (**Appendix D**) • Response to the IESC (**Appendix C**). • GHG Abatement Plan (**Appendix HH)** • GHG Emissions Assessment (**Appendix GG**) • PRCP (**Appendix J**) • PRCP Schedule (**Appendix K**) • OAMP (**Appendix II**) • Terrestrial Ecology

	outside approved areas occurs, offsetting this loss at some point in the future is not an effective mitigation measure. **Offsets:** Offsets are proposed to mitigate the impacts. While an Offset Area Management Plan has not been provided, a broad overview is outlined in Appendix Z, from which it appears that the offsets largely revolve around protecting regrowth vegetation on leasehold cattle grazing properties. We are concerned that this will not provide permanent protection as there exists a risk that land reclassification and mechanisms for clearing Category A land through 'exchange areas' create a risk of offset areas being endlessly moved without achieving meaningful results. The lack of permanent legal protection fails to meet EPBC policy requirements, which call for lasting and secure protection. The proponent plans to manage these sites for only 20 years, hoping for successful rehabilitation of the Vulcan South coal mine, but offers no contingency if mine rehabilitation fails. This raises concerns that habitat lost to mining won't be restored, resulting in a net loss of biodiversity. Despite the possibility of permanent protections, concerns about biodiversity offsets persist. Since the Commonwealth Environmental Offsets Policy was introduced in 2012, biodiversity has declined across all indicators. Minister Plibersek acknowledged on July 4, 2024, that the current offset system is "broken and making nature worse." Even if such protections can be provided, there are serious concerns about the effectiveness of biodiversity offsets. The Commonwealth Environmental Offsets Policy was introduced in 2012. In the intervening 12 years, biodiversity has continued to decline across all indicators including extent and condition of vegetation, number of listed threatened species and number of listed threatened ecological communities. Issues with offsets range from lack of permanent legal protection, threat of bushfire and other climate-induced natural disasters, and limited evidence that biodiversity increases in offset areas, or that offset areas are recolonised by the target species. On this basis, MCG believes that the Proposed Action will lead to significant impacts on Koala, Greater Glider, Squatter Pigeon and brigalow threatened ecological community, and that these impacts are unacceptable. **Cumulative Impacts:** A cumulative impact assessment (CIA) on threatened species and ecosystems is presented in Section 6.2.8 and Appendix S, but no conclusions are made regarding the acceptability of these impacts. For brigalow threatened ecological communities, an attempt is made to consider loss in the context of the extent of the available remnant vegetation that makes up the threatened ecological community and information on overall clearing rates in the brigalow belt bioregion is also presented. Neither of these pieces of information constitute a CIA. For Koalas, Greater Gliders, and Squatter Pigeons, the CIA compares clearing for the Proposed Action with other coal mines, but this doesn't address cumulative impacts. It should assess overall habitat loss trends, thresholds for species viability, and consider climate change effects such as droughts, heatwaves, bushfires and severe and frequent storms. The CIA incorrectly claims that impacts are additive, overlooking that additive effects are part of cumulative impacts. Given ongoing biodiversity decline, any further impact is significant. Without proper justification, as in this case, the proposal should be refused. Significant impacts on Koalas, Greater Gliders, Squatter Pigeons, and Brigalow are predicted, with no effective mitigation measures provided. **Impacts on water resources:** The Proposed Action has the potential to cause short, medium, and long-term (permanent) impacts on water resources, but the PER provides a minimal assessment. Short- and medium-term issues are downplayed due to the damage from other mines, and long-term impacts are ignored based on the flawed assumption that rehabilitation will restore the site to pre-development conditions. Water quality issues are largely ignored, focusing only on salinity. The PER suggests updating assessments if new contaminants are detected, but this would be too late to prevent damage. Sediment dam releases to East and Hughes Creeks are addressed, but sediment levels and whether electrical conductivity levels meet Water Quality Objectives are unclear. Erosion risk post-closure is dismissed despite modelling showing high erosion risks over time. Contour banks are suggested as a solution, but no assessment is provided on maintaining them if rehabilitation fails.	**Section 9.1.2** of the PER discusses how additional water sources will more than make up for the loss of previous sources: "The removal of these water sources has the potential to reduce the local extent of breeding habitat beyond the boundaries of the disturbance footprint, as breeding habitat is defined by distance to water. However, the addition of new water sources (sediment dams, mine water dams, etc) have the potential to offset some or all of these impacts. In order to assess the net effect of water source removal and addition, Squatter Pigeon breeding habitat was recalculated for the survey area outside the disturbance footprint, based on planned water infrastructure. This analysis revealed that the installation of new water sources will more than make up for the removal of former water sources, and the net gain of breeding habitat outside the clearing footprint will be 85.6 ha (i.e., 85.6 ha of foraging habitat is within 1 km of the new water sources, making this appropriate for breeding)." • **Indirect impacts of dust, light, noise and activity in general on 2,111 ha of Koala habitat, and 2210 ha of Greater Glider habitat** See discussion on Koala and Greater Glider habitat definitions above. • **Habitat fragmentation** **Koala** As discussed within **Section 6.1.2**: Given Koalas can disperse between forested areas, fragmentation for the purposes of dispersal will be minimal and is only anticipated during construction and operation where areas are inaccessible for a maximum of 9 years. **Greater Glider** **Section 6.2.3** of the PER discusses the effect of habitat fragmentation. As the project is adjacent to existing disturbance, the extent of habitat fragmentation resulting from Vulcan South is limited. There are 4 areas along the disturbance footprint which are considered as partial barriers. It should be noted, that these 4 areas were previously included in the disturbance footprint however were removed for the sole purpose of retaining high value riparian habitat for the Greater Glider and Koala. Therefore, any negative effects of introduced habitat fragmentation should be considered to be outweighed by the fact that these areas with large numbers of hollows have been retained and not cleared. Nevertheless, Greater Gliders are known to disperse through regrowth vegetation (Eyre, et al., 2022), and isolated habitat patches will regain connectivity to neighbouring habitat within 15 years of closure. In total, these habitat patches will remain partially isolated for approximately 25 years. **Squatter Pigeon** As stated within Section 6.1.4: Each of the mine pits is to be developed sequentially, so that Vulcan North pit will be rehabilitated prior to Vulcan South pit being developed. This will maintain dispersal corridors for east-west movement through the Project area throughout the duration of operations. Therefore, habitat fragmentation is expected to be minimal. Within the assessment, all potential impacts were addressed and discussed and then a determination was made as to whether these impacts required mitigation or management measures. Habitat fragmentation was not considered to have more than a low impact. • **Mortality during vegetation clearing and from vehicle strikes.** These impacts were addressed and mitigation measures are provided in detail within Section 7.1.1 of the PER. **While mitigation measures are listed in the PER, their effectiveness is unclear and questionable.** **We disagree with the proponent's claim that these measures will significantly reduce impacts on threatened species and ecological communities. Some examples of this are:** • **It is unlikely that Squatter Pigeons will utilise mine dams and sediment dams within the disturbed area, and indeed, given the vulnerability of Squatter Pigeons to vehicle strikes, this could be detrimental.** Mine water dams and sediment dams will be rehabilitated after operations cease and those that are retained (after they have been de-contaminated and rehabilitated) will act as additional water sources to Squatter Pigeons following the ceasing of operations. It is possible that Squatter Pigeons will utilise sediment dams as water sources during operations considering they are often found in highly disturbed areas, even in close proximity to active mining areas.	Cumulative Impact Assessment (**Appendix S**) • REMP (**Appendix X**)

	Geochemical issues, such as alkalinity and the potential for metal contamination from waste rock, are overlooked. The PER inconsistently downplays the risk of acid mine drainage, despite findings in the Geochemistry Assessment showing low but present risks. The monitoring program lacks adequate testing for copper, alkalinity, major ions, and post-closure monitoring. Simply setting impact criteria won't prevent damage, and no corrective actions are outlined if criteria are exceeded. There is also insufficient groundwater data, and no timeframe is given for collecting this information before mining starts. We believe that without thorough long-term water contamination assessments and effective monitoring and mitigation measures, the Proposed Action must be refused due to its potential for permanent impacts on water resources. **Rehabilitation:** The proposed action will permanently alter landforms, including floodplains and drainage lines, with flawed assumptions that post-closure impacts will be negligible due to effective rehabilitation. However, no evidence or trials are provided to support this. Further, the proponent seems to be only committing to managing biodiversity offsets for 20 years, on the basis that rehabilitation can be completed in this time frame. We believe that rehabilitation prospects are poor. In Queensland, mine rehabilitation success rates are extremely low. In its most recent annual report, the Queensland Mine Rehabilitation Commissioner identifies that, of the 86,867 hectares of total rehabilitation claimed by mining companies, (historical to the end of CY2023), only 5,822 hectares (seven percent) is actually certified. Certified rehabilitated land represents less than 2 percent of all land disturbed by mining in Queensland, while uncertified rehabilitation accounts for less than one quarter of the total disturbance. The Progressive Rehabilitation and Closure Plan also fails to address key concerns raised in the Geochemical Assessment, including the dispersive nature of waste rock and ongoing risks to water quality, biodiversity, and land productivity. It is that there will be ongoing impacts from the Proposed Action on water quality, biodiversity and land productivity once mining is complete. The permanent legacy of the site will include sediment laden runoff, potentially also containing high alkalinity levels and various metals, unstable slopes, dust generation and ongoing loss of agricultural productivity and native habitat. None of these impacts have been addressed in the PER. The permanent nature of these impacts is such that the Proposed Action must be refused. **Climate Impacts:** The greenhouse gas assessment of the project estimates that the Vulcan South Coal Mine would contribute 960,000 tonnes CO2e to Queensland's emissions, primarily through Scope 1 emissions. Based on similar nearby mines, we assume that 60% of the Scope 1 emissions are fugitive methane emissions. The short term impact of these will be much greater than described on a 100 year basis. If a 20 year warming potential of methane is used, the scope 1 emissions over the lifetime of the project would be around 2500 ktonnes CO2e. There is no attempt to quantify potential mitigation actions shown in Table 4 of Appendix GG. The proposed emissions would be around 0.063 tonnes CO2e/tonne ROM coal. This is more than 10 times the international best practice guidelines under the Safeguard Mechanism. This shows that there is huge potential for Vitrinite to act on reducing their emissions, that they have not taken. **Social and Economic Impacts:** The Proponent falls short in adequately addressing the possible social impacts and lacks evidence that the Project's negative social effects have been avoided or reduced. This inadequacy arises from the Proponents' failure to consider the social costs of exacerbating climate change and its failure to offer strategies to mitigate the Project's climate-related impacts. This Project will contribute emissions leading to accelerated global climate change. Extreme weather effects are already affecting Central Queensland in the form of increased temperatures, and more extreme and severe heat waves, bushfires and damaging storms. These climate related impacts risk the health of all people in our region, especially outdoor workers and those who have underlying health issues. All additional emissions from new and	• **Measures to minimise the risk of inadvertent clearing outside approved areas, while considered good practice, do not actually reduce the significance of the impact of planned habitat loss. Further, if clearing outside approved areas occurs, offsetting this loss at some point in the future is not an effective mitigation measure.** As stated within Table 7-1, if clearing occurs outside the disturbance footprint, an investigation will be undertaken and the disturbed area will be rehabilitated. Further corrective actions will be developed to improve existing processes, such as reviewing communication protocols prior to shifts. Therefore, the cleared area will be rehabilitated in addition to the requirement for an offset. **Offsets are proposed to mitigate the impacts. While an Offset Area Management Plan has not been provided, a broad overview is outlined in Appendix Z, from which it appears that the offsets largely revolve around protecting regrowth vegetation on leasehold cattle grazing properties. We are concerned that this will not provide permanent protection as there exists a risk that land reclassification and mechanisms for clearing Category A land through 'exchange areas' create a risk of offset areas being endlessly moved without achieving meaningful results. The lack of permanent legal protection fails to meet EPBC policy requirements, which call for lasting and secure protection.** An OAMP has now been prepared and is provided as **Appendix II** of the PER. It details the various management measures proposed to enhance the subject area for the benefit of the species and communities it seeks to protect. The area subject to the OAMP will be legally secured to the satisfaction of the department. **The proponent plans to manage these sites for only 20 years, hoping for successful rehabilitation of the Vulcan South coal mine, but offers no contingency if mine rehabilitation fails. This raises concerns that habitat lost to mining won't be restored, resulting in a net loss of biodiversity.** The 20-year timeframe applies if the necessary gains are achieved. If they are not, the offset area will be managed until they are. Progressive mine rehabilitation is now subject to the approved and legislated PRCP schedule which imposes statutory obligations on the proponent. **Despite the possibility of permanent protections, concerns about biodiversity offsets persist. Since the Commonwealth Environmental Offsets Policy was introduced in 2012, biodiversity has declined across all indicators. Minister Plibersek acknowledged on July 4, 2024, that the current offset system is "broken and making nature worse." Even if such protections can be provided, there are serious concerns about the effectiveness of biodiversity offsets. The Commonwealth Environmental Offsets Policy was introduced in 2012. In the intervening 12 years, biodiversity has continued to decline across all indicators including extent and condition of vegetation, number of listed threatened species and number of listed threatened ecological communities.** **Issues with offsets range from lack of permanent legal protection, threat of bushfire and other climate-induced natural disasters, and limited evidence that biodiversity increases in offset areas, or that offset areas are recolonised by the target species.** **On this basis, MCG believes that the Proposed Action will lead to significant impacts on Koala, Greater Glider, Squatter Pigeon and brigalow threatened ecological community, and that these impacts are unacceptable.** As per the Offset Strategy (**Appendix Z**), a signed agreement with the landholder is required before the commencement of the action (see Table 9-1 of the Offsets Strategy) and the land must be legally secured within 12 months from the commencement of the action. Offset areas are chosen based on their capacity to improve over time, their likelihood of being colonised by the species of interest and many other variables which will be discussed within detail within the OAMP. The risk of bushfires will be managed over the duration of the offset area management period (see Table 9-8 of the PER, which describes management measures for offsetting the Brigalow TEC). Fire management strategy will be included for all species (see **Section 9.2.5.1** for the Koala, **9.2.5.2** for the Squatter Pigeon, and 9.2.5.3 for the Greater Glider which all have individual fire management strategies depending on the individual species requirements). Further information into the suitability of the offset area can be found within the Offset Area Management Plan (**Appendix II**). **<u>Cumulative Impacts:</u>** The remaining habitat in the landscape and its viability was assessed in its ability to contain displaced populations within the terrestrial ecology assessment – specifically the Greater Glider, Koala and Squatter Pigeon. This is considered a cumulative impact assessment and is also contained within Section 9.1.3 of the PER for the Koala, 9.1.2 for the Squatter Pigeon, 9.1.4 for the Greater Glider. This information was taken from the terrestrial ecology assessment (Section 5.3.3 – **Appendix M**). See below wording taken from the PER:	

	expanding fossil fuel developments will impact on the health of Queenslanders, regardless of where the coal is burned. Given the International Energy Agency's position that we cannot afford to approve any new coal resources if we want to have any chance of staying under 1.5°C global temperature increase, any economic argument is no longer a sound justification. The financial, legal, and fiscal risks and costs of climate change are well understood. Further emissions of GHGs into the atmosphere will cause financial, legal, and fiscal risks and costs, which must be set off against any economic benefits of any development that will further contribute to the accretion of greenhouse gases into the atmosphere. **The proponent's poor environmental record:** We are deeply concerned that Vitrinite has already cleared at least 49.5 ha of the Koala habitat on the site for a bulk sample pit, apparently without EPBC approval. Vitrinite has already been issued with a Direction Notice on 17 June 2024 by the Queensland Department of Environment, Science and Innovation, as this exceeds the amount of habitat clearing authorised under its Environmental Authority (EA EPPR03277115). This shows a disregard for our environmental laws by both not waiting for Federal approval, and clearing more than was approved by the State. This is not the first time Vitrinite has operated outside the EPBC approval. Their EPBC compliance report from 2023 records several instances of non-compliance with permit conditions of EPBC approval 2020/8676, including clearing land outside the authorised area and failure to report potential breaches. The track record of Vulcan coal mine project water pollution is also deeply problematic. Mine affected water has been released from the mine, prompting the Queensland Government to issue an Environmental Protection Order (EPO) in March 2024, under the Queensland Environment Protection Act 1994 (EP Act). The EPO alleges a failure "to meet your general environmental duty as you have failed to take all reasonable action to prevent or minimise potential environmental harm associated with the activities at Vulcan Coal Mine" through: • Failure to install and operate adequate measures to monitor and manage releases to water • Failure to install and operate erosion and sediment control measures as required in its erosion and sediment control plan • No provision for effective management of actual and potential environmental impacts in its water management plan. These failures cast serious doubt on whether Vitrinite will actually limit clearing to the amount of habitat listed in the PER, or be able to manage water pollution. **In conclusion:** In conclusion, MCG considers that every aspect of the Proposed Action undermines the principles of ecologically sustainable development (ESD) enshrined in the EPBC Act (Section 3A). In particular: 1. Any short term economic and social benefits are undermined by short and long term adverse environmental, social and economic impacts. 2. Intergenerational equity is not provided for as future generations will be less able to enjoy a healthy, diverse and productive environment due to both the loss of biodiversity and water resources, and the accretion of GHGs in the atmosphere. 3. Loss of biodiversity must be considered permanent due to the low likelihood of success of proposed biodiversity offsets and site rehabilitation. 4. The Proposed Action will permanently alter the landform, hydrological and hydrogeological characteristics of the site and it is unlikely that the site can be adequately rehabilitated. MCG calls on Minister Plibersek to secure the future of Australian biodiversity and the wellbeing of Australians by refusing this Proposed Action.	**Koala** The impact of clearing will last until mature food trees have re-established in rehabilitated areas post-mining. Re-colonisation of rehabilitated sites after six years has been observed in wetter climates in south-east Queensland (Cristescu, et al., 2013), but a more conservative estimate of 15 years is adopted here due to the drier climate and slower growth rates expected. As the final blocks of disturbed land can only commence rehabilitation at the cessation of mining activities (nine years after the commencement of the project), the duration of disturbance is estimated to be 24 years. Viable populations of Koalas are expected to be maintained in extensive neighbouring habitats (95.1% of the high-quality habitat within the survey area is being retained, and extensive tracts of moderate-quality habitat occur throughout the adjacent Harrow Range) throughout this disturbance period, providing a source of recruitment to rehabilitated areas in the future. Average Koala densities in the Brigalow Belt are thought to be 0.005 Koalas/ha (Threatened Species Scientific Committee, 2012). Given that the Cherwell-Harrow Range spans over 170,000 ha, the remaining Koala population is expected to exceed 850 individuals. **Greater Glider:** Viable populations of Greater Gliders are expected to be maintained in extensive neighbouring habitats (91.7 % of Greater Glider habitat is retained in the broader landscape) throughout the disturbance period, providing a source of recruitment to rehabilitated areas in the future. No data on population density is available for Greater Gliders within the Brigalow Belt, but the related Greater Glider occurs at average densities of 0.6 to 4 individuals per hectare (Henry, 1984; Kehl & Borsboom, 1984; Nelson, et al., 2018) while the Northern Greater Glider occurs at a density of 3.3 to 3.8 individuals per hectare at the single site (Taravale) in which they have been studied (Comport, et al., 1996). With a conservative assumption that densities within the survey area are on the lower end of published data (i.e., 0.6 per hectare), the 561.8 ha of habitat that will remain uncleared within the survey area supports at least 337 individuals. Furthermore, this population is likely to be connected to others throughout the Harrow Range to the west. **Squatter Pigeon** An additional 170 ha of breeding habitat was or is approved to be removed for the neighbouring Vulcan Coal Mine. Assuming habitat from the Vulcan Coal Mine is not rehabilitated prior to the commencement of Vulcan South, breeding habitat for 102 pairs will be retained in the local landscape throughout the project (assuming each pair occupies 8 ha and 50% of available territories are occupied). The estimated size of this retained local population is highly conservative, as it does not include contiguous habitat west and south of the survey area. It is more likely that habitat for several hundred pairs will be retained in the local region, supporting a viable population that will serve as a source of recruitment for rehabilitated land post-mining. The specific analysis of that particular **Appendix S** and its contents was at the special request of DCCEEW. **<u>Impacts on water resources:</u>** **The Proposed Action has the potential to cause short, medium, and long-term (permanent) impacts on water resources, but the PER provides a minimal assessment. Short- and medium-term issues are downplayed due to the damage from other mines, and long-term impacts are ignored based on the flawed assumption that rehabilitation will restore the site to pre-development conditions.** The PER provides a thorough assessment of impacts to water resources within **Section 6.4** (spanning almost 100 pages) as derived from the Surface water Impact Assessment (**Appendix I)**, the Groundwater Impact assessment (**Appendix P**), Water Resources Cumulative Impact assessment (**Appendix T**), Additional Surface Water information (**Appendix D**) and Response to the IESC (**Appendix C**). The Surface Water Impact Assessment and Groundwater Impact Assessment were prepared by qualified water and hydrogeological specialists, respectively, in accordance with the latest guidelines. Monitoring, mitigation and management measures are provided in the PER, within sections 7.1.2 (Erosion and Sedimentation), 7.1.3 (Groundwater Drawdown and Contamination), and 7.1.4 (Surface Water mitigation measures). Further information has also been made available in Appendix D (Additional surface water information), which serves to provide supporting information concerning the IESC's advice. Overall, the water resources in the project area, both surface and groundwater systems, are highly modified by agricultural and surrounding mining activities. The water resources in this location are not of exceptional value and the impacts on them are of limited significance. **Water quality issues are largely ignored, focusing only on salinity. The PER suggests updating assessments if new contaminants are detected, but this would be too late to prevent damage. Sediment dam releases to East and Hughes Creeks are addressed, but sediment levels and whether electrical conductivity levels meet Water Quality Objectives are unclear. Erosion risk post-closure is dismissed despite modelling showing high erosion risks over time. Contour banks are suggested as a solution, but no assessment is provided on maintaining them if rehabilitation fails.** Additional wording has been added to Section 6.4.1.3 in accordance with the below discussion.	

		The three potential sources of receiving waters contamination from the water management system are releases from the sediment dams, releases from the mine affected dams and pumped releases from DD2. The mine affected dams are not predicted to spill under any of the modelled climate sequences. Releases from DD2 are expected to be of a water quality that is similar to the receiving waters as it primarily collects water from an undisturbed rural catchment. Any potential discharges from sediment dams will be in accordance with Schedule F and Condition F4 of the Vulcan South EA. Sediment dam trigger values will be monitored against the 'Surface water quality objectives' outlined in Table F3 of the EA (see Table 5 18) and mine water dams will be managed and operated with a maximum 'operating volume' which defines the maximum volume the dams can operate up to before pumped inflows cease. The operating volumes of each dam are below their respective full storage volumes to maintain storage capacity below the spillway level of the dams which will reduce the risk of overflows to the receiving environment. If mine water dams are at their operating volumes, mine water can be pumped back to the pits in emergency. Any potential releases from erosion and sediment control structures will be in accordance with Schedule F and Condition F4 of the Vulcan South EA. Sediment dam trigger values will be monitored against the 'Surface water quality objectives' outlined in Table F3 of the EA and Table 5 18. There are mitigation measures in place within Section 7.1.2 specifying the monitoring and mitigation of impacts from sediment dams (such as de-silting the sediment dams) and corrective actions should there be an exceedance of WQO's. Sediment dam monitoring locations are specified within Table 7-8. With regard to updating assessments if new contaminants are detected. This provides a contingency measure should testing indicate unforeseen parameters of relevance. As described above, the surface water impact assessment thoroughly addresses impacts to surface water resources. Additional information was provided following the IESC review which is provided as Appendix D to the PER. As specified within Section 6.4.1.3 "Modelling (Appendix I) predicts that the EC for spills from the sediment dams will be below the water quality objective (720 µS/cm) for baseflows of the Project area." Further information can be found within Section 7.3.10 of the surface water impact assessment. The surface water impact assessment determined that "There will be some areas that will require erosion control measures such as where existing natural drainage paths enter constructed drains and at the upstream and downstream ends of constructed drains. Hence, the proposed surface water drainage infrastructure for the Project will result in a very low risk of changes to the existing erosion and sedimentation process in the receiving waters." Regardless, an Erosion and Sediment Control plan has been prepared to minimise and manage the risk of erosion. Further, the PER provides detailed erosion and sedimentation mitigation measures within Table 7-2. Corrective actions are included here, such as erosion monitoring to be undertaken every two years including during rehabilitation. **Geochemical issues, such as alkalinity and the potential for metal contamination from waste rock, are overlooked. The PER inconsistently downplays the risk of acid mine drainage, despite findings in the Geochemistry Assessment showing low but present risks.** The geochemistry assessment conducted by a third party AQP concluded that there was a negligible risk of acid mine drainage (See Section 4.8, Section 6.4.1.3 of the PER and Appendix R). Section 4.8 identifies the risk of AMD to surface and groundwater. As per section 4.8.1.6 of the PER, "The in-pit disposal of mixed coarse and fine reject materials within waste rock cells is also a low-risk strategy as the much larger volume of waste rock typically has very low sulphur content and excess acid-neutralising capacity. This mining waste management strategy is currently used at a number of coal mines in the Bowen Basin' (Appendix R). Overall, surface runoff and seepage from the waste rock material is expected to be pH neutral to slightly alkaline and have a low level of salinity. Dissolved metal and metalloid concentrations in surface runoff and leachate from bulk mining waste materials are expected to be low and unlikely to pose a significant risk to the quality of surface and groundwater resources. " Therefore, impacts from overland flow or groundwater seepage of PAF and other metals related to the storage of rejects and dry tailings from WRD's are expected to be minimal, considering the emplacement strategy, which will significantly reduce the likelihood of acid mine drainage (See Section 4.8.1.6 and Section 7.1.4.1) . The geochemistry assessment did identify the following parameters to be within the reject material (aluminium, arsenic, cadmium, copper, manganese, nickel and zinc – see **Appendix R**). Even though the risk of AMD is low, Vitrinite has committed to –a series of mitigation measures within Section **7.1.4.1** of the PER, refer below: "*Whilst the results of this assessment indicate that the occurrence of any PAF materials is unlikely, if any carbonaceous waste rock is identified as posing a potential risk (possibly PAF) through sampling and total sulfur analysis, this will be selectively handled and buried within NAF waste rock. Short term planning and truck management planning will be updated upon*	

		identification of any carbonaceous waste rock that is possibly PAF to ensure that this material is hauled directly to the correct emplacement areas used for storing coal rejects and without storage in temporary stockpiles. *Any carbonaceous waste rock material identified as possibly PAF (and all coal reject materials) will be preferentially stored in the in-pit waste rock dumps when sufficient capacity is available and below predicted post-mining groundwater level, where practical, to reduce the potential oxidation of materials in the longer term post-closure.* *The extents of any PAF carbonaceous waste rock (and all coal reject materials) transferred to emplacement areas will be tracked with regular surveys. Spatial data files in an appropriate format will be created to record the extents/dimensions of the storage areas. All possibly PAF carbonaceous waste rock and all coal reject materials will be paddock dumped, traffic compacted and covered by NAF overburden to limit the infiltration of air and water into covered materials*." A figure of the PAF emplacement strategy is also provided (**Figure 7-1**) which presents how acid mine drainage will be minimised/prevented. Vitrinite has committed to testing for aluminium, arsenic, cadmium, copper, manganese, nickel and zinc (identified in the geochemistry assessment to potentially leach from WRDs) within their groundwater monitoring program. See **Table 7-3** – Groundwater Mitigation measures. Vitrinite has also included testing of these within the REMP (Appendix X). In summary, impacts to surface and groundwater quality from waste rock dumps are not anticipated as per the technical assessment completed (Appendix R), however, impacts will be continuously monitored for and management measures enacted should testing indicate there is a risk. Please also see Section 7.6.1.3 of the PER, which states that a 'mineral water management plan' must be completed in accordance with the EA stipulations. Conditions within the EA for this plan include the below: 7**.6.1.3 Mineral Waste Management Plan (C11)** "The Mineral Waste Management Plan required by condition C11 must include at least: • a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; • a program of progressive sampling and characterisation to identify dispersive and nondispersive waste rock, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulphate, acid and alkali producing potential; • a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; • a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; • where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; • details regarding the management of seepage and leachates; and • monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover. • This plan will be reviewed an updated at regular intervals not exceeding two years." **The monitoring program lacks adequate testing for copper, alkalinity, major ions, and post-closure monitoring. Simply setting impact criteria won't prevent damage, and no corrective actions are outlined if criteria are exceeded. There is also insufficient groundwater data, and no timeframe is given for collecting this information before mining starts.** Surface runoff and seepage from WRD piles, including any rehabilitated areas, will monitored for 'standard' water quality parameters including, but not limited to pH, EC, major anions (sulfate, chloride and alkalinity), major cations (sodium, calcium, magnesium and potassium), TDS and a broad suite of soluble metals/metalloids. See Surface water Impact Assessment (Section 9.7). This will be included in the Water Management Plan. Copper and DOC will also be tested in the REMP at the request of the IESC (see **Appendix X**). Post closure groundwater and surface water monitoring is committed to within the PRCP Schedule and PRCP (Appendix K and J, respectively). The water management plan will contain further details on post-closure monitoring. Corrective actions for the potential exceedance of WQO's are outlined in Table 7-4 of the PER and within Section 7.7.1 (surface water corrective actions). This specifies that after three consecutive exceedances of WQOs, an investigation into the cause and potential for environmental harm will be carried out by an AQP. Following this a written report will be provided to DESI. This is in accordance with condition F13 of the EA (Appendix E) as per below:	

		Unless otherwise advised by the administering authority, if a water quality characteristic measured at a downstream site specified in Table F2 – Surface waters monitoring locations exceeds any water quality objective specified in Table F3 – Surface water quality objectives the holder of this environmental authority must compare this result to the applicable upstream site and: *a) If the quality measured at a downstream site is equal to or less than the quality measured at the applicable upstream site, no further action is required; or* *b) If the quality measured at a downstream site is greater than the quality measured at the applicable upstream site, complete an investigation into the cause of the deterioration in water quality and the potential for environmental harm and submit a written report to the administering authority within twenty (20) business days outlining:* *i. details of the investigation carried out including any assumptions and limitations of the investigation; and* *ii. findings of the investigation including an explanation of the cause identified; and* *iii. recommendations of the investigation; and* *iv. actions taken to comply with the conditions of the environmental authority and to prevent environmental harm.* Please also see Section 7.6.1.3 of the PER, which states that a 'mineral water management plan' must be completed in accordance with the EA stipulations. Conditions within the EA for this plan include the below: 7**.6.1.3 Mineral Waste Management Plan (C11)** "The Mineral Waste Management Plan required by condition C11 must include at least: • a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; • a program of progressive sampling and characterisation to identify dispersive and nondispersive waste rock, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulphate, acid and alkali producing potential; • a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; • a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; • where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; • details regarding the management of seepage and leachates; and • monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover. • This plan will be reviewed an updated at regular intervals not exceeding two years." **We believe that without thorough long-term water contamination assessments and effective monitoring and mitigation measures, the Proposed Action must be refused due to its potential for permanent impacts on water resources.** **The PER provides a thorough assessment of impacts to water resources within Section 6.4 (spanning almost 100 pages) as derived from the Surface water Impact Assessment (Appendix I), the Groundwater Impact assessment (Appendix P), Water Resources Cumulative Impact assessment (Appendix T), Additional Surface Water information (Appendix D) and Response to the IESC (Appendix C). The Surface Water Impact Assessment and Groundwater Impact Assessment were prepared by qualified water and hydrogeological specialists, respectively, in accordance with the latest guidelines. Monitoring, mitigation and management measures are provided in the PER, within sections 7.1.2 (Erosion and Sedimentation), 7.1.3 (Groundwater Drawdown and Contamination), and 7.1.4 (Surface Water mitigation measures). Further information has also been made available in Appendix D (Additional surface water information), which serves to provide supporting information concerning the IESC's advice.** **Overall the water resources in the project area, both surface and groundwater systems, are highly modified by agricultural and surrounding mining activities. The water resources in this location are not of exceptional value and the impacts on them are of limited significance.** The surface water assessment specifically addresses long term impacts as impacts during post closure. See Section 8 – Flood modelling and Impact assessment and within this Section 8.5.2 – changes to post closure conditions model changes, Section 8.8 – Post closure conditions potential flood impacts, Section 9.5.2 post closure surface water monitoring. Post closure groundwater and surface water monitoring is committed to within the PRCP Schedule and PRCP (Appendix K and J, respectively).	

		<u>Rehabilitation:</u> **The proposed action will permanently alter landforms, including floodplains and drainage lines, with flawed assumptions that post-closure impacts will be negligible due to effective rehabilitation. However, no evidence or trials are provided to support this. Further, the proponent seems to be only committing to managing biodiversity offsets for 20 years, on the basis that rehabilitation can be completed in this time frame. We believe that rehabilitation prospects are poor.** The proposed final landform cover design is informed through successful trials at adjacent mines and is associated with the lowest modelled erosion risk as per the Landform Evolution Modelling (Appendix AA). This cover design was chosen based on trials undertake at the Adjacent Saraji Mine. Trials undertaken at the adjacent Saraji Mine compared vegetation establishment on waste rock (spoil) that received 0 cm, 10 cm or 30 cm of topsoil prior to planting (Kopittke et al. 2004). Grass established at higher densities in the topsoil treatments than on the spoil; however, even on spoil, grass achieved 70% cover. Native trees and shrubs actually established better without topsoil, due to reduced competition with grass, but natural thinning over the first ten years resulted in a final stem density that was equivalent to the topsoil treatments. The spoil at Saraji is more saline (Kopittke et al. 2004) than that at Vulcan South, suggesting that local waste rock is unlikely to pose a barrier to root growth for local vegetation. Based on these trials, the cover proposed at the Project is expected to be ideal for establishing a productive pasture with a moderate density of native woody vegetation. The surface water assessment concluded that the proposed Surface water management system, the provision of flood levees and through the proposed mitigation measures, risks to the surface water environment will be low. Overall, the water resources in the project area, both surface and groundwater systems, are highly modified by agricultural and surrounding mining activities. The water resources in this location are not of exceptional value and the impacts on them are of limited significance. The 20-year timeframe applies if the necessary gains are achieved. If they are not, the offset area will be managed until they are. Progressive mine rehabilitation is now subject to the approved and legislated PRCP schedule which imposes statutory obligations on the proponent. **In Queensland, mine rehabilitation success rates are extremely low. In its most recent annual report, the Queensland Mine Rehabilitation Commissioner identifies that, of the 86,867 hectares of total rehabilitation claimed by mining companies, (historical to the end of CY2023), only 5,822 hectares (seven percent) is actually certified. Certified rehabilitated land represents less than 2 percent of all land disturbed by mining in Queensland, while uncertified rehabilitation accounts for less than one quarter of the total disturbance.** **The Progressive Rehabilitation and Closure Plan also fails to address key concerns raised in the Geochemical Assessment, including the dispersive nature of waste rock and ongoing risks to water quality, biodiversity, and land productivity.** The Queensland State Progressive Rehabilitation and Closure Plan assessment process only came about in 2019. This was put forward by the Queensland Government to improve mining rehabilitation outcomes within the region by ensuring mining companies commit to progressive rehabilitation prior to the commencement of the activity. The PRCP Schedule is a statutory document with requirements on when rehabilitation is achieved for each rehabilitation area, with DESI undertaking frequent audits to ensure this is complete. For this reason the statistics on rehabilitation outcomes in Queensland are largely reflective of the outdated rehabilitation methodologies from historical mines and reflective of former government guidelines and policies in place. There is no data on the new PRCP process and its outcomes given it is new. Improved rehabilitation performance is anticipated. The subsoil will be mixed with waste rock as proposed within the cover design. Commitments are made to apply gypsum to the subsoil/waste rock layer to reduce dispersion. This is described within section 6.3.5 of the PRCP: 'Where dispersive subsoil material is to be utilised in rehabilitation works, it will tested, and if required, treated with gypsum (calcium sulphate) prior to sowing/planting. Further details on specific rehabilitation methodology and conditions can be found in either the PRCP (**Appendix J**) or PRCP Schedule (**Appendix K**). Please also see Section 7.6.1.3 of the PER, which states that a 'mineral water management plan' must be completed in accordance with the EA stipulations. Conditions within the EA for this plan include the below: 7**.6.1.3 Mineral Waste Management Plan (C11)** "The Mineral Waste Management Plan required by condition C11 must include at least: • a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; • a program of progressive sampling and characterisation to identify dispersive and nondispersive waste rock, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulphate, acid and alkali producing potential; • a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage;	

		• a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; • where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; • details regarding the management of seepage and leachates; and • monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover. • This plan will be reviewed an updated at regular intervals not exceeding two years." **It is that there will be ongoing impacts from the Proposed Action on water quality, biodiversity and land productivity once mining is complete. The permanent legacy of the site will include sediment laden runoff, potentially also containing high alkalinity levels and various metals, unstable slopes, dust generation and ongoing loss of agricultural productivity and native habitat. None of these impacts have been addressed in the PER. The permanent nature of these impacts is such that the Proposed Action must be refused.** This is addressed within the PRCP and requirements for timeframes to meet criteria are specified within the PRCP schedule (Appendix J and Appendix K, respectively). **<u>Climate Impacts</u>** Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (Appendix GG of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. Vitrinite will also adhere to internal and external energy and GHG emissions reporting requirements stipulated under the NGER Act and the Safeguard Mechanism. **<u>Social and Economic Impacts:</u>** **The Proponent falls short in adequately addressing the possible social impacts and lacks evidence that the Project's negative social effects have been avoided or reduced. This inadequacy arises from the Proponents' failure to consider the social costs of exacerbating climate change and its failure to offer strategies to mitigate the Project's climate-related impacts.** The Social Impact Assessment (SIA) was submitted and accepted by the State Government as part of the Queensland State Environmental Authority approvals process for Vulcan South. The PER guideline for Vulcan South specified that economic and social matters were to be analysed as part of the PER process, and this SIA was included as part of that requirement. No further information was requested by DCCEEW concerning the SIA. It provides an appropriate overview of the likely social and economic impacts of the project and their likely reach. It should be noted that the project is a small-scale, short-term mining operation to be implemented in a very well-established mining community. Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (Appendix GG of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG Abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. **This Project will contribute emissions leading to accelerated global climate change. Extreme weather effects are already affecting Central Queensland in the form of increased temperatures, and more extreme and severe heat waves, bushfires and damaging storms. These climate related impacts risk the health of all people in our region, especially outdoor workers and those who have underlying health issues. All additional emissions from new and expanding fossil fuel developments will impact on the health of Queenslanders, regardless of where the coal is burned.**	

		Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (Appendix GG of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG Abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. **Given the International Energy Agency's position that we cannot afford to approve any new coal resources if we want to have any chance of staying under 1.5°C global temperature increase, any economic argument is no longer a sound justification.** The transition to large scale renewable energy production will be incredibly expensive, providing good economic justification for considered resource stewardship and generation of royalties to fund government initiatives in this space. Development of natural resources is particularly important to the Queensland economy. **The financial, legal, and fiscal risks and costs of climate change are well understood. Further emissions of GHGs into the atmosphere will cause financial, legal, and fiscal risks and costs, which must be set off against any economic benefits of any development that will further contribute to the accretion of greenhouse gases into the atmosphere.** The relative contribution of this small-scale metallurgical coal project is discussed in Greenhouse Gas Emissions Assessment Report for the Project (**Appendix GG** of the PER) **<u>Proponents poor environmental record</u>** Vitrinite acknowledges these compliance matters. Whist they are relatively minor in nature, Vitrinite takes them seriously. Vitrinite has continued to work with the relevant department to resolve the matters and to put measures in place to mitigate the risk of reoccurrence. Vitrinite remains in compliance with the conditions of those compliance notices. The bulk sampling was authorised pursuant to special conditions attached to EPC 1233. The approval process for State government authorisation of those activities, under the EP Act, included a significant residual impact assessment that determined a significant residual impact would not occur. This assessment was accepted by the State government. The sampling area and associated infrastructure layout was planned specifically to avoid areas of high value. The EPBC Act referral as published for the Vulcan South project confirms: Small scale resource definition and sampling activities will continue within the project area while the Vulcan South Mine assessment and approval process proceeds. These activities will continue in accordance with associated State government approvals. These activities are not part of the action and are not of a scale that require separate referral.	
Lock the Gate Alliance	Lock the Gate Alliance (LTG) welcomes the opportunity to make this submission on the Public Environmental Report (PER) about the impacts of Vulcan South Coal Mine (the Proposed Action) by Queensland Coking Coal, a subsidiary of Vitrinite (the Proponent) under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act). LTG is a network of over 120,000 farmers, Traditional Owners, conservationists, and community members from across Australia, affected by and concerned about the impacts of coal and unconventional gas mining. We live and work in the communities affected by these industries and undertake research, advocacy and support to protect the environment, cultural heritage and society from damage. Many of our members are regionally-based, and are also experiencing first-hand the consequences of the global warming that has already occurred. The Proposed Action consists of an open cut mine and a highwall trial, targeting metallurgical and thermal coal, at a production rate of about 1.95 million tonnes per annum, with a total extraction amount of about 13.5 million tonnes (run of mine) over about nine years. A total of about 26 million tonnes of carbon dioxide equivalent (CO_2e) will be added to the concentration of greenhouse gases (GHG) in the atmosphere. The total footprint of the Proposed Action is 1,476.4 hectares, over two thirds of which is habitat for native animals, including listed endangered species (Koala and Greater Glider). The Proposed Action will require external water supply of 1,260ML/year in 50%ile years and 1,520 ML/year in 1%ile years from an unspecified source. The proposed action will require diversion of two drainage lines, one of length 1.4km, and the other of length 298 m and this, and	**Significant impacts on threatened species and ecological communities** **Direct impacts through habitat loss** The following is of note, specifically with regard to Greater Glider and Koala habitat areas: **Greater Glider habitat areas** The Project will result in a loss of 1,056.8 of Greater Glider habitat (as defined by DCCEEW). Within this there is 750 ha of likely/current denning habitat, 234.6 ha of future denning habitat, 19.3 ha of foraging habitat and 52.9 ha of dispersal habitat. It should be noted that these assessments of habitat are conservative and, especially for the Greater Glider but also for the Koala, DCCEEW's definitions are different to the Queensland State Governments definitions of habitat. Presented with the same information, DESI accepted that there were 39.4 ha of Greater Glider habitat (primarily associated with riparian areas which they are most often found in as these are where large trees, with hollows, are most abundant). This is supported by Greater Glider sightings within the broader survey area which found that 67 Gliders were identified in riparian areas (17 sites) and only 1 Greater Glider was found in non riparian areas (even though 42 sites were surveyed). The habitat area calculations within the PER and updated terrestrial ecology assessment (which was updated to align with DCCEEW's conservative definitions of habitat) are therefore very conservative. For example, DCCEEW has disregarded the definitions of Greater Glider habitat defined in the Department of Environment and Science "Guide to Greater Glider habitat in Queensland" which states that "The information collated indicates that on average, trees greater than 50 cm DBH (mean ± sd = 59.3 ± 19.9 cm) appear to be important for use by Greater Gliders as den trees". Instead, DCCEEW has required an overly conservative approach by requiring denning habitat to include trees above 30cm DBH. Therefore, areas that the research indicates are unlikely to ever be used by Greater Gliders as denning habitat are now defined	• **Surface water Impact Assessment** (Appendix I) • **Groundwater Impact assessment** (Appendix P) • **Water Resources Cumulative Impact assessment** (Appendix T) • **Additional Surface Water information** (Appendix D)

the open cut mining method, will result in permanent changes to the hydrological and hydrogeological characteristics of the site.

The Proposed Action will employ about 190 full time workers (including offsite haulage), of whom 30 will be permanent and 160 employed by contractors. The PER indicates that these workers are expected to live in Moranbah and Dysart when working but does not provide any details of how negative social impacts will be managed and mitigated.

LTG's overall view is that the Proposed Action must be refused because of its significant adverse impacts on matters of national environmental significance (MNES), most importantly, the endangered species Koala and Greater Glider and brigalow threatened ecological community. Further, the proponent's assessment of impacts on water resources is inadequate to demonstrate that there will not be significant short, medium and long term impacts on water resources. The Proposed Action adds to serious pressures on habitat and water resources from existing and proposed mining activity in the Bowen Basin, which will be exacerbated by climate change, to which this project will contribute. No competent attempt has been made to examine the cumulative impacts of the Proposed Action in this context but LTG notes a recent study by an alliance of environmental groups that identifies 26 proposed coal mines and extensions in Queensland and New South Wales that will affect a combined area of over 11,000 hectares of Koala habitat, and contribute a further 8.2 billion tonnes of CO_2e, which will continue to undermine efforts to recover the species.

Mitigation measures proposed by the proponent, including offsets and rehabilitation, are unlikely to be effective, leaving a significant residual impact that is unacceptable given (a) the ongoing decline of biodiversity in Australia and (b) current and future (climate change related) pressures on biodiversity and water resources.

LTG considers that the social and economic benefits of the project do not outweigh the negative social, economic and environmental impacts and there is no justification for deciding to approve this Proposed Action as global coal demand must drop rapidly in line with international agreements on decarbonisation. LTG notes that the proponent has a poor compliance record.

LTG's particular concerns are set out below.

Significant impacts on threatened species and ecological communities

<u>Direct impacts through habitat loss</u>

The PER acknowledges that the Proposed Action will have significant direct impacts on Brigalow threatened ecological community, the endangered Koala and Greater Glider and the vulnerable Squatter Pigeon due to habitat loss, as summarised in Table 1. In particular the Proposed Action affects habitat that is critical to the survival of the endangered Koala and Greater Glider and the vulnerable Squatter Pigeon.

LTG is also concerned that the proponent has already cleared at least 49.5 ha of the Koala habitat on EPC1233 for a bulk sample pit. The proponent holds Queensland Environmental Authority (EA) EPPR03277115 authorising clearance of 47.5 ha, but does not, as far as LTG is aware, hold an EPBC Act approval for this clearing. The proponent also cleared a further 2ha of Koala habitat outside the area authorised under EPPR03277115, and was issued with a Direction Notice by the Queensland Department of Environment, Science and Innovation on 17th June 2024.

Table 1 – Significant Direct Impacts on MNES

Matter	Status	Impact amount (ha)	Significant impact?
Brigalow ecological community	Endangered	71.2 ha cleared	Yes
Squatter Pigeon	Vulnerable	Total direct impacts: 1,219 ha, including: • Breeding and Foraging habitat: 372.5ha • Foraging habitat: 78.9 ha	Yes

as denning habitat. Further, habitat is now also classified as 'future denning habitat' which includes any tree that may at some point become denning habitat in the future. This clearly uses a high degree of interpolation and it is possible that many of these areas will never become denning habitat.

Koala habitat areas

Based on federal assessment methodology requirements, the Project will result in the loss of 1,166.9 ha of Koala habitat (938.6 for combined foraging/shelter/dispersal habitat, 45.5 ha for shelter/dispersal and 182.8 ha for dispersal only).

When DESI was presented with the same information (terrestrial ecology assessment, field data etc) it accepted that there were only 770.4 ha of Koala habitat (of which only 3.9 ha is defined as 'high quality' habitat).

For the Koala, DCCEEWs categorisation (shelter/foraging and dispersal) does not include any information regarding the quality of that Koala habitat. For example, poor quality non-remnant compared to high quality riparian vegetation cannot be differentiated within these definitions but will significantly affect how likely the habitats are to be utilised by the species. For this reason, a Koala habitat quality figure has been provided which shows the change in quality across the disturbance footprint and within a 2 km buffer around the disturbance footprint. This figure assists in showing where areas of the footprint have been removed to prevent the clearing of riparian or high-quality Koala habitat. Koala habitat by quality (habitat value) is discussed in Section 9.2.3 of the PER. DCCEEW does not acknowledge the breakdown of high, moderate or low-quality habitat for the Koala.

Vitrinite acknowledges these compliance matters. Whist they are relatively minor in nature, Vitrinite takes them seriously. Vitrinite has continued to work with the relevant department to resolve the matters and to put measures in place to mitigate the risk of reoccurrence. Vitrinite remains in compliance with the conditions of those compliance notices.

The bulk sampling was authorised pursuant to special conditions attached to EPC 1233. The approval process for State government authorisation of those activities, under the EP Act, included a significant residual impact assessment that determined a significant residual impact would not occur. This assessment was accepted by the State government.

The sampling area and associated infrastructure layout was planned specifically to avoid areas of high value.

The EPBC Act referral as published for the Vulcan South project confirms:

Small scale resource definition and sampling activities will continue within the project area while the Vulcan South Mine assessment and approval process proceeds. These activities will continue in accordance with associated State government approvals. These activities are not part of the action and are not of a scale that require separate referral.

No credible avoidance measures are contemplated to prevent the loss of Greater Glider and Koala habitat. Instead, offsets are proposed to mitigate these direct impacts. While an Offset Area Management Plan has not been provided, a broad overview is outlined in Appendix Z, from which it appears that the offsets largely revolve around protecting regrowth vegetation on leasehold cattle grazing properties. These areas will apparently be declared 'Category A' under the Queensland *Vegetation Management Act 1999*.

Besides the reduction of the disturbance footprint (see comment below) and preventing unintentional clearing, the primary mitigation for clearing is through offsets.

The impact of clearing viable, good condition habitat that is currently providing breeding and foraging habitat for threatened species with future regeneration of native vegetation cannot be offset with the establishment of new vegetation that will take decades to reach maturity. The species at risk from this project are experiencing its impact now. Moreover, "Category A" declaration does not provide permanent protection as there remains a mechanism for clearing Category A land through provision of an "exchange area," which means it does not achieve the security required for biodiversity offsets under the EPBC Act. It does not appear that additional legal mechanisms will be in place to meet the requirements of the EPBC policy of legal protection that is "permanent (lasting forever) and … secure (that is, they are difficult to change or alter)".

An OAMP has now been prepared and is provided as Appendix II of the PER. It details the various management measures proposed to enhance the subject area for the benefit of the species and communities it seeks to protect. The area subject to the OAMP will be legally secured to the satisfaction of the department.

It also seems that the proponent is only planning to manage these sites for 20 years, by which time it hopes that the Vulcan South coal mine has been successfully rehabilitated. Again, this proposal is not compliant with EPBC offsets policy. There is no discussion of the implications of low success rates of mine rehabilitation and no contingency is provided in the (likely)

- **Response to the IESC (**Appendix C**).**
- **GHG Abatement Plan (**Appendix HH)
- **GHG Emissions Assessment (**Appendix GG**)**
- **PRCP (**Appendix J**)**
- **PRCP Schedule (**Appendix K**)**
- **OAMP (**Appendix II**)**
- **Terrestrial Ecology Cumulative Impact Assessment (**Appendix S**)**

REMP (Appendix X**)**

		• Dispersal habitat: 767.6 ha	
Koala	Endangered	Total direct impacts: 1,166.9 ha, including • Foraging/shelter/dispersal 938.6 ha • Shelter/dispersal 45.5 ha • Dispersal 182.2 ha.	Yes
Greater Glider	Endangered	Total direct impacts: 1,056.84 ha including: • 750.0 ha of likely/current denning habitat • 234.6 ha of future denning habitat • 19.3 ha of foraging habitat • 52.9 ha of dispersal habitat.	Yes

No credible avoidance measures are contemplated to prevent the loss of Greater Glider and Koala habitat. Instead, offsets are proposed to mitigate these direct impacts. While an Offset Area Management Plan has not been provided, a broad overview is outlined in Appendix Z, from which it appears that the offsets largely revolve around protecting regrowth vegetation on leasehold cattle grazing properties. These areas will apparently be declared 'Category A' under the Queensland *Vegetation Management Act 1999*.

The impact of clearing viable, good condition habitat that is currently providing breeding and foraging habitat for threatened species with future regeneration of native vegetation cannot be offset with the establishment of new vegetation that will take decades to reach maturity. The species at risk from this project are experiencing its impact now. Moreover, "Category A" declaration does not provide permanent protection as there remains a mechanism for clearing Category A land through provision of an "exchange area," which means it does not achieve the security required for biodiversity offsets under the EPBC Act. It does not appear that additional legal mechanisms will be in place to meet the requirements of the EPBC policy of legal protection that is "permanent (lasting forever) and … secure (that is, they are difficult to change or alter)".

It also seems that the proponent is only planning to manage these sites for 20 years, by which time it hopes that the Vulcan South coal mine has been successfully rehabilitated. Again, this proposal is not compliant with EPBC offsets policy. There is no discussion of the implications of low success rates of mine rehabilitation and no contingency is provided in the (likely) event that habitat lost to mining is not able to be restored at the mine site (see further comments below regarding low likelihood of rehabilitation success).

Without permanent protection of the offset sites, and in the high likelihood that rehabilitation of the mine disturbance area is not effective, there will be a net loss of biodiversity due to the Proposed Action. In any case, the PER does not engage with the impact of the clearing on the species affected by it in the period prior to offset vegetation being established.

Even if such protections can be provided, there are serious concerns about the effectiveness of biodiversity offsets. The Commonwealth Environmental Offsets Policy was introduced in 2012. In the intervening 12 years, biodiversity has continued to decline across all indicators including extent and condition of vegetation, number of listed threatened species and number of listed threatened ecological communities. Minister Plibersek was quoted on 4th July 2024 as saying "we know the current offset arrangements are broken and making nature worse".

Lock the Gate has not been able to identify any studies that demonstrate the effectiveness of offsets in maintaining and protecting biodiversity. Recently published studies in Australia and overseas, all highlight significant failings in offsetting. Issues range from lack of permanent legal protection, threat of bushfire and other climate-induced natural disasters, and limited evidence that biodiversity increases in offset areas, or that offset areas are recolonised by the target species.

event that habitat lost to mining is not able to be restored at the mine site (see further comments below regarding low likelihood of rehabilitation success).

The 20-year timeframe applies if the necessary gains are achieved. If they are not, the offset area will be managed until they are. Progressive mine rehabilitation is now subject to the approved and legislated PRCP schedule which imposes statutory obligations on the proponent.

Without permanent protection of the offset sites, and in the high likelihood that rehabilitation of the mine disturbance area is not effective, there will be a net loss of biodiversity due to the Proposed Action. In any case, the PER does not engage with the impact of the clearing on the species affected by it in the period prior to offset vegetation being established.

The effect on displaced individuals and the available habitat in neighbouring areas is discussed within the significant impact assessment section of the PER (section 6.2 of the PER).

Even if such protections can be provided, there are serious concerns about the effectiveness of biodiversity offsets. The Commonwealth Environmental Offsets Policy was introduced in 2012. In the intervening 12 years, biodiversity has continued to decline across all indicators including extent and condition of vegetation, number of listed threatened species and number of listed threatened ecological communities. Minister Plibersek was quoted on 4th July 2024 as saying "we know the current offset arrangements are broken and making nature worse".

The management of the offset area to ensure the achievement of its success is described within the OAMP.

Lock the Gate has not been able to identify any studies that demonstrate the effectiveness of offsets in maintaining and protecting biodiversity. Recently published studies in Australia and overseas, all highlight significant failings in offsetting. Issues range from lack of permanent legal protection, threat of bushfire and other climate-induced natural disasters, and limited evidence that biodiversity increases in offset areas, or that offset areas are recolonised by the target species.

The consultants use the work by Cristescu et al. (2013) to support their contention that fauna habitat can be recreated, but in fact, the paper emphasises that simply producing the appropriate habitat will not guarantee that animals like Koala will move back in, particularly given the time lag between loss of habitat and any possible restoration in the offset areas.

On this basis, LTG submits that the Proposed Action will lead to significant impacts on Koala, Greater Glider, Squatter Pigeon, and brigalow TEC, and that these impacts are unacceptable. LTG does not consider that habitat that is critical to the survival of endangered Koala and Greater Glider and vulnerable Squatter Pigeon can be replaced by offsets, not least because of the significant time lag between loss of the critical habitat and any replacement habitat that may become available at offset sites.

See discussion of habitat definitions above.

The disturbance footprint will be defined under DCCEEW's guidelines as 'dispersal habitat' a few years after rehabilitation has commenced. It should be noted that re-colonisation of the Koala in rehabilitated sites after six years has been observed in wetter climates in south-east Queensland (Cristescu et al. 2013), but a more conservative estimate of 15 years is adopted here due to the drier climate and slower growth rates expected. However, it is likely that recolonisation will occur faster than this.

As discussed within **Section 6.2** of the PER:

Viable populations of Koalas are expected to be maintained in extensive neighbouring habitats (95.1% of the shelter/foraging/dispersal habitat within the survey area is being retained with low likelihood of indirect impacts, and extensive tracts of habitat occur throughout the adjacent Harrow Range) throughout this disturbance period, providing a source of recruitment to rehabilitated areas in the future.

Re-colonisation of rehabilitated sites after six years has been observed in wetter climates in south-east Queensland (Cristescu et al. 2013), but a more conservative estimate of 15 years is adopted here due to the drier climate and slower growth rates expected. As the final blocks of disturbed land can only commence rehabilitation at the cessation of mining activities (nine years after commencement).

The management of the offset area to ensure the achievement of its success is described within the OAMP.

<u>Indirect and incidental impacts</u>

Indirect and incidental impacts are also mentioned in the PER and Appendix E, including:

- **Loss of access to water at dam sites for Squatter Pigeons**

	The consultants use the work by Cristescu et al. (2013) to support their contention that fauna habitat can be recreated, but in fact, the paper emphasises that simply producing the appropriate habitat will not guarantee that animals like Koala will move back in, particularly given the time lag between loss of habitat and any possible restoration in the offset areas. On this basis, LTG submits that the Proposed Action will lead to significant impacts on Koala, Greater Glider, Squatter Pigeon, and brigalow TEC, and that these impacts are unacceptable. LTG does not consider that habitat that is critical to the survival of endangered Koala and Greater Glider and vulnerable Squatter Pigeon can be replaced by offsets, not least because of the significant time lag between loss of the critical habitat and any replacement habitat that may become available at offset sites. <u>Indirect and incidental impacts</u> Indirect and incidental impacts are also mentioned in the PER and Appendix E, including: • Loss of access to water at dam sites for Squatter Pigeons • Indirect impacts of dust, light, noise and activity in general on 2,111 ha of Koala habitat, and 2210 ha of Greater Glider habitat • Habitat fragmentation • Mortality during vegetation clearing and from vehicle strikes. Table 7-1 of the PER and Table 5-3 of Appendix M both list a range of mitigation measures for these impacts. While some attempt has been made to explore the effectiveness of these mitigation measures, the method used is not clear, and appears illogical. It is not clear how many of these mitigation measures will work in practice and LTG disputes the implication by the proponent that these measures may reduce the significance of indirect and incidental impacts on threatened ecological communities and species. For example: • Sequential development of the mine pits to maintain east-west dispersal corridors (which is mentioned in Appendix M but not in the PER) will only be effective if the earlier disturbed areas are fully rehabilitated before starting on the next put. Given (a) that the life of the project is less than ten years, (b) that it is likely to take at least 15-20 years to re-establish habitat for species such as Koala and Greater Glider, and (c) the actual low likelihood of ever being able to restore habitat at the site, it seems that sequential development of the pits is unlikely to mitigate fragmentation impacts. • It is unlikely that Squatter Pigeon will utilise mine dams and sediment dams within the disturbed area, and indeed, given the vulnerability of Squatter Pigeon to vehicle strikes, this could be detrimental. • Measures to minimise the risk of inadvertent clearing outside approved areas, while considered good practice, do not actually reduce the significance of the impact of planned habitat loss. Further, if clearing outside approved areas occurs, offsetting this loss at some point in the future is not an effective mitigation measure. • Commitments such as 'where possible, infrastructure locations will be selected to minimise fragmentation' cannot be claimed as impact mitigation. The proponent should already be in a position to nominate infrastructure locations so that the public can be fully aware of the specific clearing envelopes. • It is not clear how destruction of breeding places can be avoided given the whole-scale destruction of habitat that occurs for coal mines. If there are specific areas that can feasibly be avoided, these should be identified and specified in the PER so that prohibitions on clearing in these areas can be included in conditions and environmental management plans. • For direct mortality (clearing, traffic related), it is acknowledged by the proponent that mitigation measures such as clearing in stages and taking injured animals to a wild carer or vet are not effective, but "this is expected to be negligibly effective but contributes to a cumulative positive effect." It is not at all clear what a 'cumulative positive effect' actually is, and this mitigation measure cannot be claimed as a means to reduce the significance of the impacts of vegetation clearing. • For mortality during clearing, a spotter catcher is stated to be highly effective, however no data is offered to support this claim. For example, on other sites, how many animals are 'saved' by spotter-catchers compared to those that are killed or euthanised due to injury? This mitigation measure cannot be claimed to be effective in	• **Indirect impacts of dust, light, noise and activity in general on 2,111 ha of Koala habitat, and 2210 ha of Greater Glider habitat** • **Habitat fragmentation** • **Mortality during vegetation clearing and from vehicle strikes.** **Table 7-1 of the PER and Table 5-3 of Appendix M both list a range of mitigation measures for these impacts. While some attempt has been made to explore the effectiveness of these mitigation measures, the method used is not clear, and appears illogical.** **It is not clear how many of these mitigation measures will work in practice and LTG disputes the implication by the proponent that these measures may reduce the significance of indirect and incidental impacts on threatened ecological communities and species. For example:** • **Sequential development of the mine pits to maintain east-west dispersal corridors (which is mentioned in Appendix M but not in the PER) will only be effective if the earlier disturbed areas are fully rehabilitated before starting on the next put. Given (a) that the life of the project is less than ten years, (b) that it is likely to take at least 15-20 years to re-establish habitat for species such as Koala and Greater Glider, and (c) the actual low likelihood of ever being able to restore habitat at the site, it seems that sequential development of the pits is unlikely to mitigate fragmentation impacts.** The disturbance footprint will be defined under DCCEEW's guidelines as 'dispersal habitat' a few years after rehabilitation has commenced. It should be noted that re-colonisation of the Koala in rehabilitated sites after six years has been observed in wetter climates in south-east Queensland (Cristescu et al. 2013), but a more conservative estimate of 15 years is adopted here due to the drier climate and slower growth rates expected. However, it is likely that recolonisation will occur faster than this. As discussed within **Section 6.2** of the PER: Viable populations of Koalas are expected to be maintained in extensive neighbouring habitats (95.1% of the shelter/foraging/dispersal habitat within the survey area is being retained with low likelihood of indirect impacts, and extensive tracts of habitat occur throughout the adjacent Harrow Range) throughout this disturbance period, providing a source of recruitment to rehabilitated areas in the future. • **It is unlikely that Squatter Pigeon will utilise mine dams and sediment dams within the disturbed area, and indeed, given the vulnerability of Squatter Pigeon to vehicle strikes, this could be detrimental.** This appears to have been misinterpreted. Mine water dams and sediment dams will be rehabilitated after operations cease and those that are retained (after they have been de-contaminated and rehabilitated) will act as additional water sources to Squatter Pigeons following the ceasing of operations. Squatter Pigeons are unlikely to utilise mine water dams during operations. • **Measures to minimise the risk of inadvertent clearing outside approved areas, while considered good practice, do not actually reduce the significance of the impact of planned habitat loss. Further, if clearing outside approved areas occurs, offsetting this loss at some point in the future is not an effective mitigation measure.** As stated within Table 7-1, if clearing occurs outside the disturbance footprint, an investigation will be undertaken and the disturbed area will be rehabilitated. Further corrective actions will be developed to improve existing processes, such as reviewing communication protocols prior to shifts. Therefore**,** the cleared area will be rehabilitated in addition to the requirement for an offset. • **Commitments such as 'where possible, infrastructure locations will be selected to minimise fragmentation' cannot be claimed as impact mitigation. The proponent should already be in a position to nominate infrastructure locations so that the public can be fully aware of the specific clearing envelopes.** The wording has been updated in **Table 7-1** to clarify that that infrastructure areas have already been selected to minimise fragmentation. See response below on this accord. The EA denotes the final approved Project layout which provides certainty to the final positioning of infrastructure. • **It is not clear how destruction of breeding places can be avoided given the whole-scale destruction of habitat that occurs for coal mines. If there are specific areas that can feasibly be avoided, these should be identified and specified in the PER so that prohibitions on clearing in these areas can be included in conditions and environmental management plans.**	

	reducing the significance of the impacts without data demonstrating actual mortality versus saved rates for Koala, Greater Glider and Squatter Pigeon. • While it is encouraging to see the concept of continuous improvement reflected in the PER, it is not acceptable to simply nominate that for example 'where necessary, further corrective actions will be developed to improve existing processes'. In order to give any confidence that mitigation of impacts will be taken seriously, specific corrective actions to address possible scenarios where mitigation measures are ineffective should be nominated. • In relation to noise impacts during blasting, it is not clear how adhering to noise levels in the Environmental Authority, which are based on human exposure, will be effective in mitigating noise impacts on threatened species. Further, once the noise impact has occurred, it is not clear how the immediate implementation of "Noise abatement measures" will correct any issues. • During rehabilitation, it is not clear how 'standard mine fire safety and smoking protocols' will stop fires starting in the rehabilitated areas. These measures will also not address the fact that fires, once started, are becoming more intense due to climate change. <u>Cumulative Impact Assessment is deeply flawed</u> A cumulative impact assessment (CIA) on threatened species and ecosystems is offered in Section 6.2.8 and Appendix S. No actual conclusions as to the acceptability of cumulative impacts are provided; and indeed given the flawed approach, it would be impossible to do so. For brigalow TEC, an attempt is made to consider loss of the TEC in the context of the extent of the available remnant vegetation that makes up the TEC and some very confusing information on overall clearing rates in the brigalow belt bioregion is also presented. Neither of these pieces of information constitute a CIA. For Koala, Greater Glider and Squatter Pigeon, the CIA compares the clearing for the Proposed Action with the scale of clearing for other coal mines undertaken or proposed within the period 2013-2033. While this may provide some context as to the scale of impact of the Proposed Action and the devastating impacts of coal mines on native fauna to date, it is not a valid means of determining cumulative impacts. Firstly, the clearing area needs to be compared to the overall available remaining habitat and trends in available habitat over the past decade or so. An attempt must be made to determine the threshold below which each species becomes unviable due to ongoing habitat loss. Consideration must be given to the extent to which all types of clearing including for coal mining, infrastructure and urban development projects as well as clearing and degradation of habitat by agricultural activities might take the extent of remaining habitat towards that threshold. No attempt is made to address the current and future impacts of climate change on listed species and ecological communities, in spite of climate change being listed as one of the most significant threatening processes for all aspects of Australia's biodiversity. Pressures on each species from climate change (with and without the contribution to climate change made by the Proposed Action) must also be factored in. The CIA also states that because the impacts from the proposed action do not overlap with impacts from other actions the impacts are additive rather than cumulative, seemingly ignorant of established cumulative impact assessment practice which considers additive impacts to be a class of cumulative impacts. LTG considers that, given the ongoing decline in biodiversity in Queensland and Australia due to land clearing, climate change and other pressures, any additional impact is significant. Where there is insufficient justification for clearing, as is the case with this Proposed Action (see below), such proposals must be refused. In summary, significant and unacceptable impacts on Koala (endangered), Greater Glider (endangered), Squatter Pigeon (vulnerable) and Brigalow threatened ecological community are predicted in the PER. No acceptable measures are offered to mitigate this impact. **Impacts on water resource are not properly addressed** This Proposed Action has potential to have short, medium and long (permanent) term impacts on water resources. The assessment provided in the PER is minimal, dismissing short and medium term issues because of the scale of	Important breeding habitat areas were identified during the Queensland State Approval process prior to the finalisation of the Environmental Authority (which has now been approved by the State Government). This process involved retaining 280.3 ha of riparian habitat that provides high quality Koala and Greater Glider habitat. This is clear from the disturbance footprint (which used to be 1,756.7 ha and is now 1,476.4 ha) which contains 4 sections removed where habitat is being retained. This habitat contains large food trees and a large number of hollows to provide suitable denning habitat for the Greater Glider and foraging/shelter habitat for the Koala. • **For direct mortality (clearing, traffic related), it is acknowledged by the proponent that mitigation measures such as clearing in stages and taking injured animals to a wild carer or vet are not effective, but "this is expected to be negligibly effective but contributes to a cumulative positive effect." It is not at all clear what a 'cumulative positive effect' actually is, and this mitigation measure cannot be claimed as a means to reduce the significance of the impacts of vegetation clearing.** Vitrinite agrees that this will not reduce the significance of the clearing and there still remains a significant residual impact from clearing to the Koala, Greater Glider, Squatter Pigeon and Brigalow. There are no mitigation measures besides offsets that will reduce this impact to a suitable level as not to be defined as a significant residual impact. Taking injured wildlife to a carer and clearing in stages are expected to have a small positive effect; however, as stated above there are no mitigation measures besides offset that will suitably mitigate clearing of habitat. There are merits to undertaking the above mitigation measures rather than not undertaking them at all. • **For mortality during clearing, a spotter catcher is stated to be highly effective, however no data is offered to support this claim. For example, on other sites, how many animals are 'saved' by spotter-catchers compared to those that are killed or euthanised due to injury? This mitigation measure cannot be claimed to be effective in reducing the significance of the impacts without data demonstrating actual mortality versus saved rates for Koala, Greater Glider and Squatter Pigeon.** Even if one animal is saved by engaging a spotter-catcher, that is an improved outcome compared to not engaging a spotter catcher in the first instance. Implementing the aforementioned strategies, such as clearing in stages, intend to reduce the likelihood of mortality by allowing species to flee the area prior to clearing taking place. • **While it is encouraging to see the concept of continuous improvement reflected in the PER, it is not acceptable to simply nominate that for example 'where necessary, further corrective actions will be developed to improve existing processes'. In order to give any confidence that mitigation of impacts will be taken seriously, specific corrective actions to address possible scenarios where mitigation measures are ineffective should be nominated.** Specific mitigation measures are related to conditions prescribed within the Final EA and therefore corrective actions are to be achieved through consultation with the administering authority (DESI). It is appropriate to investigate the specific circumstances of any given situation so that a tailored solution can be implemented, rather than being forced to implement a premeditated and potentially conditioned response, that may not be entirely appropriate or effective. • **In relation to noise impacts during blasting, it is not clear how adhering to noise levels in the Environmental Authority, which are based on human exposure, will be effective in mitigating noise impacts on threatened species. Further, once the noise impact has occurred, it is not clear how the immediate implementation of "Noise abatement measures" will correct any issues.** As discussed within Section 6.1 of the PER, It is unknown what noise level negatively effects Koala, Greater Gliders or Squatter Pigeons but a study by Baldwin (2007) found that laboratory rodents display clear stress responses to prolonged exposure to sudden noises of 90-100 dB. The noise limits prescribed in the EA require noise to be under 45 dB at any point in time and therefore the noise levels shown in the study are unlikely to occur, especially beyond 100 m from the disturbance footprint. • **During rehabilitation, it is not clear how 'standard mine fire safety and smoking protocols' will stop fires starting in the rehabilitated areas. These measures will also not address the fact that fires, once started, are becoming more intense due to climate change.** Further information on fire management during rehabilitation can be found in the PRCP (Appendix J). For example, • A fire break will be maintained along the western boundary of the Project, to minimise the risk of fires originating within bushland areas of the Harrow Range. • An Emergency Response Plan describes processes in place to control fires that originate on site. See **Table 8-2** of the PRCP. **<u>Cumulative Impact Assessment is deeply flawed</u>**	

	damage caused by other mines, and effectively ignoring long term issues due to the flawed assumption that, after rehabilitation, the site will be restored to pre-development conditions. <u>Water quality issues are ignored</u> The PER focuses only on salinity impacts on water resources. The PER does state that "if subsequent monitoring data indicates that there are other contaminants of concern, the assessment can be updated to include additional water quality parameters" (PER page 333). But, clearly, if the Proposed Action has been allowed to proceed without a proper assessment of water quality impacts, it will be too late to prevent other water quality impacts from occurring. Section 6.4.1.10 indicates that sediment dam releases will occur to East Creek and Hughes Creek. Electrical conductivity (EC) is modelled, but the concentration and load of sediment/suspended solids is not mentioned. It is also not clearly stated whether the EC levels in these discharges meet the WQOs. Impacts of sediment releases from the Proposed Action to surface waters post closure are dismissed on the basis that "the landform evolution modelling determined that there would be negligible sedimentation effects on downstream waterways". In fact, this is not the case. The Landform Modelling Report (Appendix AA) identifies that even with 70% grass cover, erosion risk is moderate over a 100 year simulation (erosion depth of 0.5m), and with 50% grass cover or less, erosion risk is high (erosion depth of at least 0.8m). A high erosion risk is defined as basically a failure of the rehabilitative cover and loss of topsoil. This would lead to exposure of sodic sub soils and waste rock. Contour banks are proposed to ameliorate this, but no residual impact assessment is provided. Given low success rates of establishing grass cover on rehabilitated mine sites (OQMRC, 2023) a much more detailed assessment of the impacts on surface water from an unrehabilitated site is required, including commentary on how contour banks will be maintained in perpetuity if rehabilitation is not successful. Several issues identified in the Geochemical Assessment (Appendix R) do not appear to have been picked up in the PER. Section 4.1 of Appendix R identifies that waste rock (interburden and overburden) is quite alkaline, stating that "pH results indicate that waste rock material at the Vulcan and Jupiter targets will add some alkalinity to any contact water as the pH of deionised water used in the pH tests is typically in the pH range of 5.0 to 6.5." (Appendix R, page 15). This issue is not mentioned in the PER in relation to either groundwater impacts or surface water impacts. In addressing surface water impacts, Section 6.4.1.3 of the PER does identify that "surface runoff and seepage from the sample materials are likely to be pH neutral with moderate excess alkalinity" (PER page 333), however no attempt is made to address the impact of this on the environment. Appendix R also identifies that aluminium and copper levels in some waste rock samples exceeded the 95% species protection levels specified in the ANZECC & ARMCANZ (2000) and ANZG (2018) guidelines however, this issue is dismissed in Section 6.4.1.3 of the PER on the basis that "there are no elements (metals/metalloids) enriched in the sample materials compared to median crustal abundance in unmineralised soils" and that the leachate tests are conservative. However, given that the waste rock material is sodic/dispersive and will be brought to the surface and placed in a way that will allow contact with surface and groundwater in perpetuity, the potential for release of contaminants to the environment cannot be ignored. The PER also seems to be inconsistent with the findings of the Geochemistry Assessment in relation to the potential for acid mine drainage. Section 6.4.1.3 of the PER states that, in relation to 'spoil' "all samples tested had a high factor of safety and negligible risk of generating acid mine drainage" (page 333). This is not consistent with the findings of Appendix R, which identified that some samples of waste rock were in the very low risk rather than negligible risk category, and that coal rejects were low risk (and should be codisposed with NAF waste rock material). It is not clear whether alkalinity and metal concentrations will be included in monitoring as a water management plan is not provided. The PER does mention that on-site monitoring will be required as a condition of environmental authority P-EA-100265081, however given that the proponent, Vitrinite, operated the Vulcan Coal Mine in contravention with the water management conditions of its environmental authority, LTG considers that more confidence in the robustness of water management at the proposed Vulcan South mine is warranted. The Receiving Environment Monitoring Programme (REMP) (Appendix X), does not include testing for copper, alkalinity, major anions and cations, and does not include a commitment to long term monitoring after mine closure. The REMP notes that "specific milestone criteria have been developed to ensure no downstream impacts occur."	The remaining habitat in the landscape and its viability to contain displaced populations **was** assessed within the terrestrial ecology assessment – specifically for the Greater Glider, Koala and Squatter Pigeon. This is considered a cumulative impact assessment and is also contained within Section 9.1.3 of the PER for the Koala, 9.1.2 for the Squatter Pigeon, 9.1.4 for the Greater Glider. This information was taken from the terrestrial ecology assessment (Section 5.3.3 – Appendix M). See below wording taken from the PER: **Koala** The impact of clearing will last until mature food trees have re-established in rehabilitated areas post-mining. Re-colonisation of rehabilitated sites after six years has been observed in wetter climates in south-east Queensland (Cristescu, et al., 2013), but a more conservative estimate of 15 years is adopted here due to the drier climate and slower growth rates expected. As the final blocks of disturbed land can only commence rehabilitation at the cessation of mining activities (nine years after the commencement of the project), the duration of disturbance is estimated to be 24 years. Viable populations of Koalas are expected to be maintained in extensive neighbouring habitats (95.1% of the high-quality habitat within the survey area is being retained, and extensive tracts of moderate-quality habitat occur throughout the adjacent Harrow Range) throughout this disturbance period, providing a source of recruitment to rehabilitated areas in the future. Average Koala densities in the Brigalow Belt are thought to be 0.005 Koalas/ha (Threatened Species Scientific Committee, 2012). Given that the Cherwell-Harrow Range spans over 170,000 ha, the remaining Koala population is expected to exceed 850 individuals. **Greater Glider:** Viable populations of Greater Gliders are expected to be maintained in extensive neighbouring habitats (91.7 % of Greater Glider habitat is retained in the broader landscape) throughout the disturbance period, providing a source of recruitment to rehabilitated areas in the future. No data on population density is available for Greater Gliders within the Brigalow Belt, but the related Greater Glider occurs at average densities of 0.6 to 4 individuals per hectare (Henry, 1984; Kehl & Borsboom, 1984; Nelson, et al., 2018) while the Northern Greater Glider occurs at a density of 3.3 to 3.8 individuals per hectare at the single site (Taravale) in which they have been studied (Comport, et al., 1996). With a conservative assumption that densities within the survey area are on the lower end of published data (i.e., 0.6 per hectare), the 561.8 ha of habitat that will remain uncleared within the survey area supports at least 337 individuals. Furthermore, this population is likely to be connected to others throughout the Harrow Range to the west. **Squatter Pigeon** An additional 170 ha of breeding habitat was or is approved to be removed for the neighbouring Vulcan Coal Mine. Assuming habitat from the Vulcan Coal Mine is not rehabilitated prior to the commencement of Vulcan South, breeding habitat for 102 pairs will be retained in the local landscape throughout the project (assuming each pair occupies 8 ha and 50% of available territories are occupied). The estimated size of this retained local population is highly conservative, as it does not include contiguous habitat west and south of the survey area. It is more likely that habitat for several hundred pairs will be retained in the local region, supporting a viable population that will serve as a source of recruitment for rehabilitated land post-mining. The specific analysis of that particular Appendix S and its contents was at the special request of DCCEEW. **<u>Impacts on water resource are not properly addressed</u>** The PER provides a thorough assessment of impacts to water resources within Section 6.4 (spanning almost 100 pages) as derived from the Surface water Impact Assessment (Appendix I), the Groundwater Impact assessment (Appendix P), Water Resources Cumulative Impact assessment (Appendix T), Additional Surface Water information (Appendix D) and Response to the IESC (Appendix C). The Surface Water Impact Assessment and Groundwater Impact Assessment were prepared by qualified water and hydrogeological specialists, respectively, in accordance with the latest guidelines. Monitoring, mitigation and management measures are provided in the PER, within sections 7.1.2 (Erosion and Sedimentation), 7.1.3 (Groundwater Drawdown and Contamination), and 7.1.4 (Surface Water mitigation measures). Further information has also been made available in Appendix D (Additional surface water information), which serves to provide supporting information concerning the IESC's advice. Overall**,** the water resources in the project area, both surface and groundwater systems, are highly modified by agricultural and surrounding mining activities. The water resources in this location are not of exceptional value and the impacts on them are of limited significance. **<u>Water quality issues are ignored</u>** **The PER focuses only on salinity impacts on water resources. The PER does state that "if subsequent monitoring data indicates that there are other contaminants of concern, the assessment can be updated to include additional water quality parameters" (PER page 333). But, clearly, if the Proposed Action has been allowed to proceed without a proper assessment of water quality impacts, it will be too late to prevent other water quality impacts from occurring.**	

	However it must be noted that simply setting impact criteria does not prevent impacts from occurring. There is no discussion in the REMP or PER as to what corrective actions will be applied in the event that the 'criteria' are exceeded. In any case, once changes are detected in the receiving environment, it may be too late to take corrective action. On page 72 of the Groundwater Impact Assessment (GIA) (Appendix P) it is also acknowledged that there is not yet enough data to set water quality objectives for groundwater monitoring (see also Section 7.1.3 of the PER). No timeframe is given for collecting this information and there is no commitment not to start mining before this information is available. It is not clear whether all of the contaminants of concern will be tested for, or whether monitoring will continue into the post-closure phase. LTG notes other studies that indicate that changes in major ion and metal concentrations can cause changes in aquatic ecosystems (see for example (Ali et al., 2017) (Price & Wright, 2016) and (Wright et al., 2015)). Unless the proponent is willing to undertake a thorough assessment of the potential for contamination of surface water and groundwater over the long term, i.e. post closure, and propose effective monitoring and mitigation measures, this Proposed Action must be refused on the basis of the potential for permanent, long term impacts on water resources. <u>Water supply is not specified</u> An external water requirement of 1,260ML/year in 50%ile years and 1,520 ML/year in 1%ile years is identified in Section 6.4.1.9. The PER states that the proponent will source water from 'neighbouring operations', however much more information is needed on where this water will come from, how it might impact other users, including food production. The quality of the water also needs to be specified, particularly in relation to salinity. <u>Groundwater levels and quality information is lacking</u> The proponent has not undertaken a full assessment of groundwater conditions, acknowledging in its response to the Independent Expert Scientific Committee on Unconventional Gas Development and Large Coal Mining Development (IESC) that it has yet to collect the full set of data required to move beyond a conceptual groundwater model (IESC request item 3), to characterise possible alluvial sediments and aquifer interconnectivity in the Hughes Creek area and other creeks (IESC requests 5 and 6a), and to understand the impacts of highwall mining on groundwater (IESC request 6b). Further, the groundwater model is not currently adequate to conduct post closure groundwater simulations (IESC Item 7c, 8) or a full uncertainty analysis in accordance with IESC guidelines (IESC Item 7d). The IESC points out that most of the monitoring bores will be destroyed during mining. No clear plan is provided for how new bores will be installed, or how baseline data for these bores will be collected. Monitoring bores need to be in place well before any mining activity commences or it will not be possible to set baseline water levels and water quality, or determine trigger levels for the new bores. Section 7.1 of the GIA refers to the need for adaptive management for groundwater drawdown and quality, but no impact triggers are specified, and corrective actions (in the event that triggers are exceeded) are not specified. Thus, the fundamental components of an adaptive management strategy are absent, and it is unclear what, if any, plan the proponent has to manage groundwater impacts during operation. The potential for groundwater levels in the vicinity of the backfilled pits post closure due to enhanced recharge through the spoil has not been fully explored. The proponent seems to be relying on successful rehabilitation of the site as a means to minimise infiltration into the pits, however as discussed below, rehabilitation success rates at coal mines in Queensland are low. As already discussed, the waste and coal reject materials have some geochemical properties, particularly dispersivity, that are a concern. The dispersive properties of the waste rock may mean that there is much higher surface contact between particles of waste and the groundwater, creating more potential for metals to leach. Section 6.6 of the GIA waives away any impact on groundwater quality because of the voids at Saraji and Peak Downs and does not mention potential impacts on groundwater quality identified in the geochemical assessment report. If	This provides a contingency measure should testing indicate unforeseen parameters of relevance. As described above, the surface water impact assessment thoroughly addresses impacts to surface water resources. Additional information was provided following the IESC review which is provided as Appendix D to the PER. **Section 6.4.1.10 indicates that sediment dam releases will occur to East Creek and Hughes Creek. Electrical conductivity (EC) is modelled, but the concentration and load of sediment/suspended solids is not mentioned. It is also not clearly stated whether the EC levels in these discharges meet the WQOs.** As specified within Section 6.4.1.3 "Modelling (Appendix I) predicts that the EC for spills from the sediment dams will be below the water quality objective (720 µS/cm) for baseflows of the Project area." Further information can be found within Section 7.3.10 of the surface water impact assessment. **Impacts of sediment releases from the Proposed Action to surface waters post closure are dismissed on the basis that "the landform evolution modelling determined that there would be negligible sedimentation effects on downstream waterways". In fact, this is not the case. The Landform Modelling Report (Appendix AA) identifies that even with 70% grass cover, erosion risk is moderate over a 100 year simulation (erosion depth of 0.5m), and with 50% grass cover or less, erosion risk is high (erosion depth of at least 0.8m). A high erosion risk is defined as basically a failure of the rehabilitative cover and loss of topsoil. This would lead to exposure of sodic sub soils and waste rock. Contour banks are proposed to ameliorate this, but no residual impact assessment is provided. Given low success rates of establishing grass cover on rehabilitated mine sites (OQMRC, 2023) a much more detailed assessment of the impacts on surface water from an unrehabilitated site is required, including commentary on how contour banks will be maintained in perpetuity if rehabilitation is not successful.** The 70% grass cover is the highest achievable and practical cover design for the Project. It is also the cover design with the lowest possible erosion risk. 100% grass cover is rarely achievable for a rehabilitated site nor is it appropriate as a grass cover of 100% prevents the growth of overstorey and understorey required for the achievement of habitat for Greater Gliders and Koalas. These species need tree cover which one cannot achieve if the landform contains 100% Grass. A percentage cover of 50% protects slopes from erosion (Loch 2000; Waters 2004; Carroll et al. 2010). Cover >70%is required to achieve background rates of erosion on slopes steeper than 10% (AARC 2022). Excessive groundcover inhibits the recruitment of trees and shrubs, and a maximum value of 96% cover was observed within reference sites in stable, unmined vegetation communities (as per the Terrestrial ecology assessment). This cover design was chosen based on trials undertake at the Adjacent Saraji Mine. Trials undertaken at the adjacent Saraji Mine compared vegetation establishment on waste rock (spoil) that received 0 cm, 10 cm or 30 cm of topsoil prior to planting (Kopittke et al. 2004). Grass established at higher densities in the topsoil treatments than on the spoil; however, even on spoil, grass achieved 70% cover. Native trees and shrubs actually established better without topsoil, due to reduced competition with grass, but natural thinning over the first ten years resulted in a final stem density that was equivalent to the topsoil treatments. The waste rock at Saraji is more saline (Kopittke et al. 2004) than that at Vulcan South, suggesting that local waste rock is unlikely to pose a barrier to root growth for local vegetation. Based on these trials, the cover proposed at the Project is expected to be ideal for establishing a productive pasture with a moderate density of native woody vegetation. Erosion will be monitored every two years as well as throughout multiple stages of the rehabilitation milestone criteria monitoring process. See Section 7.1.2 of the PER which outlines erosion mitigation measures, see section 8.3.1.3 which outlines erosion monitoring in accordance with PRCP criteria, also see Appendix W ESCP (erosion and sediment control plan) and the PRCP Schedule which provides when erosion monitoring must be completed by, at which rehabilitation area and to what criteria (Appendix K). **Several issues identified in the Geochemical Assessment (Appendix R) do not appear to have been picked up in the PER. Section 4.1 of Appendix R identifies that waste rock (interburden and overburden) is quite alkaline, stating that "pH results indicate that waste rock material at the Vulcan and Jupiter targets will add some alkalinity to any contact water as the pH of deionised water used in the pH tests is typically in the pH range of 5.0 to 6.5." (Appendix R, page 15). This issue is not mentioned in the PER in relation to either groundwater impacts or surface water impacts.** This is correct. The PER does state this within Section "4.8.1.5 "The static and kinetic geochemical test results presented in the geochemical assessment report indicate that the surface runoff and seepage from NAF mining waste materials is likely to be pH neutral to slightly alkaline and have a low to moderate EC value indicating low to moderate salinity levels (and low to moderate concentrations of dissolved solids). Surface runoff and seepage from mining waste materials is likely to fall within the range for	

	contaminants (including alkalinity) are drawn towards the final voids at Saraji and Peak Downs, this could lead to worsening water quality in these voids. Again, because the Proposed Action results in permanent changes to the landscape and hydrogeology, these issues need to be taken a lot more seriously in considering whether the Proposed Action might have significant impacts on water resources. The GIA also asserts that drawdown will not occur to the west of the proposed pits (where there are GDEs), but does not provide any way of validating this, except for a single bore (MB12) which is up gradient. Cumulative impact assessment on groundwater resources is based on the idea that most of the groundwater impacts are caused by adjacent mines and that these impacts have already been approved which makes the impacts acceptable. LTG notes that approval of a mine, and even compliance with that approval, does not correlate to it having no impacts, and does not mean that further impacts can be added on, however incremental. Cumulative impact assessment requires establishment of thresholds beyond which the combined effects of impacts from multiple sources cannot extend. No attempt has been made to determine such thresholds. <u>Groundwater dependent ecosystems not validated</u> The IESC requested field validation of GDEs, including the potential presence of terrestrial and subsurface GDEs. This validation is not reported on in the PER, and it seems likely that it did not occur. Overall, the assessment provided in the PER and appendices does not adequately demonstrate that there will not be a reduction in the current or future utility of water resources as described in the *Significant Impact Guidelines - Coal seam gas and large coal mining developments—impacts on water resources*. Both environmental and public utility uses may be affected, particularly post closure, given the low likelihood of rehabilitation success. **Prospects for rehabilitation are poor** The proposed action will result in permanent changes to the landform, including flood plains, drainage lines and hydrogeology. Throughout the PER and the supporting studies, there is an erroneous assumption that post closure impacts will be negligible because of the very high effectiveness of mine rehabilitation. Post mining land uses (PMLUs) include low intensity cattle grazing, native ecosystem (riparian and non-riparian) and road and rail corridors. No evidence is provided of where these PMLUs have been successfully implemented and rehabilitation trials are not proposed. Further, the proponent seems to be only committing to managing biodiversity offsets for 20 years, on the basis that rehabilitation can be completed in this time frame. In fact, mine rehabilitation in Queensland has extremely low success rates. Purtill & Littleboy (2023) note that no coal mines in Queensland have ever been rehabilitated to the standard where the mining company would receive its financial assurance bond back. In its most recent annual report, the Queensland Mine Rehabilitation Commissioner identifies that, of the 86,867 hectares of total rehabilitation claimed by mining companies, (historical to the end of CY2023), only 5,822 hectares (seven percent) is actually certified. Certified rehabilitated land represents less than 2 percent of all land disturbed by mining in Queensland, while uncertified rehabilitation accounts for less than one quarter of the total disturbance. In relation to specific conditions at the Proposed Action, Section 5.4 of the Geochemical Assessment (Appendix R) makes a number of recommendations regarding ongoing testing of waste rock and coal rejects for potential acid forming (PAF) characteristics, and careful placement of identified PAF materials during progressive rehabilitation. These recommendations do not seem to have been picked up in the Progressive Rehabilitation and Closure Plan (PRCP) (Appendix J). The PCRP also does not seem to address the dispersive nature of waste rock that was identified in the Geochemistry Assessment, and indeed proposes to use waste rock as rock mulch, and mix waste rock with subsoils as a means to manage the sodic nature of the subsoils. Given the findings of the geochemistry report that the waste rock is also moderately to strongly sodic, it is unclear how this will help the situation. The Geochemistry Assessment also recommends ongoing monitoring for alkalinity and metals. Conversely the PCRP states that "dissolved metal and metalloid concentrations in surface runoff and leachate from bulk mining waste	95% species protection in freshwater aquatic ecosystems (pH 6 to 9) as set out in ANZECC & ARMCANZ (2000) now superseded by ANZG (2023)." As recommended within the geochemistry assessment (Table 5-1 of the geochemistry assessment), contact water will be monitored and managed within the mine water management system as part of Water Plan Management Plan. Surface water monitoring is discussed within Section 7.2.1.2 of the PER. **In addressing surface water impacts, Section 6.4.1.3 of the PER does identify that "surface runoff and seepage from the sample materials are likely to be pH neutral with moderate excess alkalinity" (PER page 333), however no attempt is made to address the impact of this on the environment. Appendix R also identifies that aluminium and copper levels in some waste rock samples exceeded the 95% species protection levels specified in the ANZECC & ARMCANZ (2000) and ANZG (2018) guidelines however, this issue is dismissed in Section 6.4.1.3 of the PER on the basis that "there are no elements (metals/metalloids) enriched in the sample materials compared to median crustal abundance in unmineralised soils" and that the leachate tests are conservative. However, given that the waste rock material is sodic/dispersive and will be brought to the surface and placed in a way that will allow contact with surface and groundwater in perpetuity, the potential for release of contaminants to the environment cannot be ignored.** The potential impacts raised in the statement quoted are further addressed in the PER where it is clarified that "Surface runoff and seepage from mining waste materials is likely to fall within the range for 95% species protection in freshwater aquatic ecosystems (pH 6 to 9) as set out in ANZECC & ARMCANZ (2000) now superseded by ANZG (2023). The levels are within the approved guideline recommendations and therefore there are no significant impacts anticipated. Even though pH is not anticipated to be a risk, water will still be continuously monitored within the water management system as per the EA requirements. This is discussed within Section 7.2. The impact of overland flow will be monitored and mitigated through the testing of metals (identified in the geochemistry assessment to potentially leach from WRDs) and alkalinity within the REMP (see Section 5.3 and Table 1.3). The groundwater monitoring program and water management plan will include these as well. The subsoil will be mixed with waste rock as proposed within the cover design. Commitments are made to apply gypsum to the subsoil/waste rock layer to reduce dispersion. This is described within section 6.3.5 of the PRCP: 'Where dispersive subsoil material is to be utilised in rehabilitation works, it will be tested, and if required, treated with gypsum (calcium sulphate) prior to sowing/planting. ' Please also see Section 7.6.1.3 of the PER, which states that a 'mineral water management plan' must be completed in accordance with the EA stipulations. Conditions within the EA for this plan are provided below: "The Mineral Waste Management Plan required by condition C11 must include at least: • a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; • a program of progressive sampling and characterisation to identify dispersive and nondispersive waste rock, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulphate, acid and alkali producing potential; • a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; • a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; • where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; • details regarding the management of seepage and leachates; and • monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover. • This plan will be reviewed an updated at regular intervals not exceeding two years." **The PER also seems to be inconsistent with the findings of the Geochemistry Assessment in relation to the potential for acid mine drainage. Section 6.4.1.3 of the PER states that, in relation to 'spoil' "all samples tested had a high factor of safety and negligible risk of generating acid mine drainage" (page 333). This is not consistent with the findings of Appendix R, which identified that some samples of waste rock were in the very low risk rather than negligible risk category, and that coal rejects were low risk (and should be codisposed with NAF waste rock material).**	

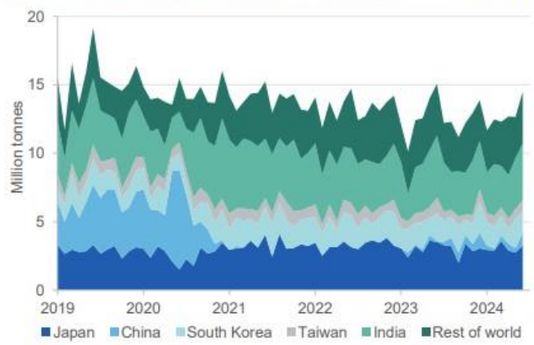
	materials are expected to be low and unlikely to pose a significant risk to the quality of surface and groundwater resources" (PCRP, page 105). On this basis, LTG considers it likely that there will be ongoing impacts from the Proposed Action on water quality, biodiversity and land productivity once mining is complete. The permanent legacy of the site will include sediment laden runoff, potentially also containing high alkalinity levels and various metals, unstable slopes, dust generation and ongoing loss of agricultural productivity and native habitat. None of these impacts have been addressed in the PER. The permanent nature of these impacts is such that the Proposed Action must be refused. **Greenhouse gas emissions will exacerbate climate change impacts** The Proposed Action contributes to the accretion of GHGs in the atmosphere, and the devastating consequences of climate change It is acknowledged in Appendix GG that "the Project is estimated to contribute to 960,000t CO2e of Scope 1 and Scope 2, these are the emissions under operational control of the Project. It is also expected to contribute to 25 MtCO2e in consideration of Scope 3." A detailed breakdown is not provided. In spite of growing awareness that methane is a particularly potent short-lived greenhouse gas (GHG) that is 82.5 times more powerful than carbon dioxide over 20 years, no mention is made of the actual amount of methane likely to be released, or its short to medium term effects on accretion of GHGs. The PER fails to acknowledge the contribution that the project will make to the accretion of GHGs in the atmosphere and the implications of this for human wellbeing, the economy, water resources and biodiversity. The GHG report claims that the emissions from the proposed action will not inhibit either Australia or Queensland from meeting their respective emission reductions targets simply because it is quite a small proportion of total emissions, and because other mines emit larger quantities. However, the PER fails to acknowledge that it is precisely the additive effect of many, many, small GHG emission sources that is causing climate change, which underscores the importance of not allowing individual projects to proceed even if each individual contribution is small. The emissions estimates provided in Table 2 of the Greenhouse Gas appendix indicate that the action will likely be a new entrant to the Safeguard Mechanism from its second year of operation, and continue to emit over the 100,000 tonne designated large facility threshold for the following six years. The PER does not engage at all with the best practice emissions- intensity factor for coal mining that will determine the baseline for the facility under the Safeguard Mechanism should it proceed, nor does it provide emissions-intensity estimates or benchmarks against other coal mines. The PER likewise does not mention the mandatory 4.9% annual emissions decline rate which applies to Safeguard facilities. If this Proposed Action is allowed to proceed, it will further undermine the effectiveness of the safeguard mechanism in protecting Australians from worsening impacts of climate change and in meeting Australia's international obligations. No feasible GHG abatement/mitigation options exist during the life of this coal mine Table 4 of Appendix GG provides some very broad descriptions of 'mitigation and abatement opportunities'. There is no attempt to quantify the amount of greenhouse gas emissions saved by the mitigation and abatement proposals and no engagement with actual abatement measures currently being implemented or committed to in the industry such as pre-mine drainage and electrification. The proponent's listing of switching emissions reporting to NGERs method 2 as its number one "mitigation" action for methane emissions is extremely alarming. Describing a changed reporting method as "the total GHG emissions will be decreased" demonstrates a fundamental and dangerous misunderstanding by the proponent of greenhouse gas mitigation. LTG also notes that the greenhouse assessment provided does not meet the standard now in place in Queensland. The other measures in Table 4 are generic 'business as usual' energy efficiency measures which should be standard in any project of this sort and in any case are not clearly committed. There is no commitment to using renewable energy, and no commitment to any innovative approaches, or research and development.	"all samples" has been updated to "the vast majority'. This section primarily discusses waste rock (spoil). The results of the geochemistry assessment are more fully discussed within Section 4.8 of the PER ('Geochemistry'). **It is not clear whether alkalinity and metal concentrations will be included in monitoring as a water management plan is not provided. The PER does mention that on-site monitoring will be required as a condition of environmental authority P-EA-100265081, however given that the proponent, Vitrinite, operated the Vulcan Coal Mine in contravention with the water management conditions of its environmental authority, LTG considers that more confidence in the robustness of water management at the proposed Vulcan South mine is warranted.** Alkalinity and metal concentrations are included in water monitoring as per the approved Vulcan South Final EA (see Table 7-9 of the PER to see what parameters will be monitored). Water management is also discussed within the REMP (Appendix X). Corrective actions for the potential exceedance of WQO's are outlined in Table 7-4 of the PER and within Section 7.7.1 (surface water corrective actions). **The Receiving Environment Monitoring Programme (REMP) (Appendix X), does not include testing for copper, alkalinity, major anions and cations, and does not include a commitment to long term monitoring after mine closure. The REMP notes that "specific milestone criteria have been developed to ensure no downstream impacts occur." However it must be noted that simply setting impact criteria does not prevent impacts from occurring. There is no discussion in the REMP or PER as to what corrective actions will be applied in the event that the 'criteria' are exceeded. In any case, once changes are detected in the receiving environment, it may be too late to take corrective action.** Surface water quality monitoring and trigger limits associated with closure are provided in the EA, PRCP and the approved PRCP schedule criteria. The trigger limits are set at levels designed to detect and prompt corrective actions prior to serious environmental harm occurring. **On page 72 of the Groundwater Impact Assessment (GIA) (Appendix P) it is also acknowledged that there is not yet enough data to set water quality objectives for groundwater monitoring (see also Section 7.1.3 of the PER). No timeframe is given for collecting this information and there is no commitment not to start mining before this information is available. It is not clear whether all of the contaminants of concern will be tested for, or whether monitoring will continue into the post-closure phase.** **LTG notes other studies that indicate that changes in major ion and metal concentrations can cause changes in aquatic ecosystems (see for example (Ali et al., 2017) (Price & Wright, 2016) and (Wright et al., 2015)).** As monitoring continues , where relevant, trigger limits will be improved. The EA trigger limits are considered to be final (not interim) as the EA has been approved and finalised by the Department of Environment, Science and Innovation. Surface runoff and seepage from waste rock piles, including any rehabilitated areas, will monitored for 'standard' water quality parameters including, but not limited to pH, EC, major anions (sulfate, chloride and alkalinity), major cations (sodium, calcium, magnesium and potassium), TDS and a broad suite of soluble metals/metalloids. See Surface water Impact Assessment (Section 9.7). This will be included in the Water Management Plan. **Unless the proponent is willing to undertake a thorough assessment of the potential for contamination of surface water and groundwater over the long term, i.e. post closure, and propose effective monitoring and mitigation measures, this Proposed Action must be refused on the basis of the potential for permanent, long term impacts on water resources.** The PER provides a thorough assessment of impacts to water resources within Section 6.4 (spanning almost 100 pages) as derived from the Surface water Impact Assessment (Appendix I), the Groundwater Impact assessment (Appendix P), Water Resources Cumulative Impact assessment (Appendix T), Additional Surface Water information (Appendix D) and Response to the IESC (Appendix C). The Surface Water Impact Assessment and Groundwater Impact Assessment were prepared by qualified water and hydrogeological specialists, respectively, in accordance with the latest guidelines. Monitoring, mitigation and management measures are provided in the PER, within sections 7.1.2 (Erosion and Sedimentation), 7.1.3 (Groundwater Drawdown and Contamination), and 7.1.4 (Surface Water mitigation measures). Further information has also been made available in Appendix D (Additional surface water information), which serves to provide supporting information concerning the IESC's advice. Overall the water resources in the project area, both surface and groundwater systems, are highly modified by agricultural and surrounding mining activities. The water resources in this location are not of exceptional value and the impacts on them are of limited significance.	

	LTG notes that the recently released Climate Change Authority Sector Pathways Review report for the resources sector indicates that the industry reports that there are no feasible means to mitigate scope 1 emissions from coal mining until after 2030. That review makes clear that emissions reductions from the coal mining sector come primarily from reduced production, and yet there is no policy in place in Australia to ensure that this reduction occurs and the coal mining sector achieves its share of Australia's emissions reductions to achieve net zero and the temperature goals of the Paris climate agreement. If this Proposed Action is allowed to proceed, there will be hundreds of thousands of additional tonnes of (scope 1) greenhouse gases in the cumulative emissions budget in Australia's nationally determined contribution. Again, this clearly undermines the potential effectiveness of the safeguard mechanism. <u>Scope 3 emissions are not dealt with</u> The safeguard mechanism only deals with emissions in Australia and only covers emissions by industrial facilities emitting over 100,000 tonnes a year. As the PER concedes, the bulk of emissions from this proposal, and the most material contribution it makes to climate change, is scope 3 emissions, for which there is no management and mitigation under the safeguard mechanism. Whether or not the Minister is required by law to consider the impacts of scope 3 emissions on MNES, it is clear that these emissions will have significant impacts on MNES, including listed threatened species and ecological communities, water resources, and the Great Barrier Reef. Scope 3 emissions from the Proposed Action of 25 MtCO2e will expose Australians and people across the planet to the devastating effects of climate change. Utilising a realistic social cost of carbon of $US185/tonne, the Proposed Action will add a burden of about $US4.6 billion to the global population ($AU6.9 billion). <u>The Proposed Action imposes unfair burdens on the most vulnerable</u> The Proposed Action will contribute to the accretion of GHGs in the atmosphere which in turn affects human wellbeing, the economy, biodiversity and water resources. It undermines the Australian Government's international obligations and places an unfair burden on Australians and other people who are most vulnerable to climate change. LTG considers this to be a violation of Australia's own legislative and policy positions on human rights as well as obligations under international human rights treaties signed by Australia. **Economic and social benefits unlikely to outweigh costs and impacts to the community** <u>The social impact assessment does not demonstrate net positive benefits</u> The Social Impact Assessment (SIA) (Appendix EE) is extremely poorly performed and does not demonstrate that there will be any positive social and socio-economic benefits from the Proposed Action. In particular, it does not explore potential negative impacts, or offer reasonable mitigation measures for these. There are no references to literature or good practice guidelines in relation to identifying, evaluating or managing social impacts. The Linkedin profiles of the reviewers of the last three versions of the report (A. Basiaco, D Plucknett and D Moss) do not show any expertise in SIA, or the social sciences more generally. Table 3-2 seems to be setting up an impact significance framework, however the framework does not seem to be in accordance with any good practice guidance. It is a massive oversimplification to assign a 'positive' or 'negative' to each impact, as impacts are likely to be much more complex and subtle. For example, an increase in population might be positive for local retail businesses but negative for lower income families. Thus the same effect may have different consequences depending on the vulnerability of the particular social group that might be affected.	As specified with the Groundwater Impact assessment, Section 6.2.5: Post-closure modelling was not carried out as part of the model predictions. The rationale for not completing post-closure modelling is provided below: I • Following cessation of Project mining, the Project open pits will be backfilled with overburden emplacement. • The backfilling of the Project open pits will cease any evaporative groundwater losses resulting from the project and the local groundwater levels will likely recover to pre-mine conditions. • The BHP Saraji Mine and Peak Downs Mine will include the presence of final pit voids as part of their approved final landform. • The number of, location of, and depth of the BHP final pit voids are currently unknown. There is currently no information in the public domain and a data sharing agreement between Vitrinite and BHP is currently not in place to obtain this information. These BHP mines are extensive and have approval to continue well into the future. • It is likely that pit lakes will form in these BHP final pit voids, however this concept needs to be confirmed with BHP and the elevations of any final void pit lakes is unknown. • The BHP final pit voids will result in evaporative sinks into perpetuity, thus resulting in regional drawdown effects that extend to the west and to the east. • The post closure drawdown effects of the BHP final pit voids are highly likely to extend into the project area and influence local groundwater conditions. • The duration and timing of the Project is insignificant when compared to the historic and approved mining associated with the BHP Saraji Mine and Peak Downs Mine. The magnitude and extent of mining at BHP is significant and the groundwater conditions within the Project area (and in proximity) will be significantly influenced by the presence of large evaporative sinks in the post mining landscape. • Regional groundwater flow is from west to east and any potential leachate that may be introduced via the Project • open pits will be captured in the evaporative sinks of the BHP final voids. The post-closure scenario is heavily dependent upon the closure conditions and approved final landforms at Saraji Mine and Peak Downs Mi**ne.** There is currently no information in the public domain and a data sharing agreement between Vitrinite and BHP is currently not in place to obtain this information. It is not reasonable to expect that numerical modelling is carried out when there is such uncertainty in the post-closure mining environment. **<u>Water supply is not specified</u>** **An external water requirement of 1,260ML/year in 50%ile years and 1,520 ML/year in 1%ile years is identified in Section 6.4.1.9. The PER states that the proponent will source water from 'neighbouring operations', however much more information is needed on where this water will come from, how it might impact other users, including food production. The quality of the water also needs to be specified, particularly in relation to salinity.** Good quality raw water supply has been secured through the Bingegang pipeline. Opportunitie**s** to reuse water from adjacent mines is being explored and would be assessed for suitability prior to use. The adjacent land uses are primarily mining and cattle from surrounding beef production operations will be excluded from operational areas. There is no cropping land in the vicinity. **<u>Groundwater levels and quality information is lacking</u>** **The proponent has not undertaken a full assessment of groundwater conditions, acknowledging in its response to the Independent Expert Scientific Committee on Unconventional Gas Development and Large Coal Mining Development (IESC) that it has yet to collect the full set of data required to move beyond a conceptual groundwater model (IESC request item 3), to characterise possible alluvial sediments and aquifer interconnectivity in the Hughes Creek area and other creeks (IESC requests 5 and 6a), and to understand the impacts of highwall mining on groundwater (IESC request 6b). Further, the groundwater model is not currently adequate to conduct post closure groundwater simulations (IESC Item 7c, 8) or a full uncertainty analysis in accordance with IESC guidelines (IESC Item 7d).** The groundwater impact assessment was updated to address the IESC items. All responses to the IESC including those mentioned above are provided within Appendix C of the PER. **The IESC points out that most of the monitoring bores will be destroyed during mining. No clear plan is provided for how new bores will be installed, or how baseline data for these bores will be collected. Monitoring bores need to be in place well**	

	It is not clear what is meant by probability in relation to impact. Each of the impacts identified will certainly occur, there is no high/medium/low probability in this regard. Perhaps the consultants are referring to uncertainty in relation to whether the impact is positive or negative, or to the consequence? The baseline data is well out of date, with, for example, reliance on 2016 census data for demographic data, and 2018 data on housing affordability and availability. Demographic profiles and socio-economic indicators such as house prices, rents and housing availability fluctuate significantly in the study area due to the strong dependence on the volatile coal mining industry, and it is critical that up-to-date baseline information is provided. There was a major downturn in coal mining in 2012/13, and so the few years after that may not be representative of the current situation and a much longer data set is required. For example, the SIA quotes a median price for rental properties in Dysart as $170/week and $300/week in Moranbah, based on 2018 figures. The website realestate.com.au reported rental property prices of between $340/week and $600/week in Dysart and between $450 and $1280 /week in Moranbah on 26th September 2024. Baseline data is largely presented without context, for example as raw numbers rather than a percentage of total population, or per capita rate, and without comparison to the Queensland average. It is not clear whether demographic data refers to resident or total population, that is, population with or without fly-in-fly-out and drive-in-drive-out workers. A superficial and highly contradictory assessment of social impacts is presented in Section 6 and no real mitigation measures have been proposed. A few examples are provided here to highlight flaws in the assessment; however, each line in the tables in Section 6 contains similar lack of logic and limited understanding of the issues: • For 'source location impacts' how will the mitigation measure of "Recruitment strategy with a preference for local employees" work? This may increase the impact at a local level because competition has been introduced locally where there is a smaller pool of workers. • Line 4 in Table 6-1 refers to "population decline due to diminished tourism demand". There is no mention of this decline, or indeed of the tourism industry, in the baseline section of the SIA. Only two years (2011 and 2016) are used for local population numbers, and there was a significant contraction in coal mining activity in this period, so it is impossible to deduce that there is an overall population decline in any case. • In Table 6-2, the project is identified as having a high impact on demand for early childhood services, although no justification is given for this, and no explanation provided for why the impact on primary and secondary school are assessed as medium and low respectively. Given the statement in the mitigation column that "It is anticipated that the proportion of workers families that will require these services is small", it is hard to know how any assessment has been made. It's also not at all clear how further investigation of the issue by Vitrinite and discussion of the issue with the workforce will mitigate the impact. • In table 6-2 and 6-3 mitigation measures are applied to some (but not all) of the 'low' impacts but not to medium impacts. • In Table 6-3, the impact of inflationary pressure and increased inequality is identified and it is unclear why this potentially significant impact is dismissed as low, while creation of employment opportunities is assigned medium (positive). • Line 3 of Table 6.4 identifies a medium increase of traffic accidents, but confusingly states in the mitigation column that "impact on increase [sic] traffic accidents due to the Project is expected to be minimal." This also contradicts Table 6-6 which identifies that "increased traffic and traffic hazards" is a low negative impact. • In table 6-4, unless the proponent is proposing to provide an ambulance, fire trucks and police force, the project will certainly have an impact on already stretched emergency services. The conclusions in Table 6-4 contradict the conclusions in Section 6.6 which identify increased pressures on health-related emergency services and police. • The impacts on housing and accommodation mentioned in Table 6-5 are contradictory. Increased demand for accommodation and housing is identified as a medium positive impact, but impact on short term accommodation is identified as negative and reduced availability and affordability of housing is a negative low impact. No consideration is given to the potential for lower income households to be priced out of the region, as has previously occurred. It is also not clear how Vitrinite's openness to "discussions should unexpected impacts arise" will assist in mitigating these potentially significant impacts.	**before any mining activity commences or it will not be possible to set baseline water levels and water quality, or determine trigger levels for the new bores.** Since submission of the Groundwater Impact Assessment (2022), monitoring of groundwater levels and quality has continued to further establish a baseline dataset to confirm the understanding of pre-project groundwater conditions. Further, additional monitoring bores have been installed for the project (April 2024) to supplement the groundwater monitoring network and confirm the current conceptual understanding. The newly proposed monitoring bores and network are outlined in Section 7.2.2 of the PER. The groundwater monitoring network is considered to be fit for purpose for this assessment. Future changes to the network or the monitoring plan will be needed which are planned for and outlined in a proposed adaptive management strategy. A data sharing agreement is currently being negotiated between Vitrinite and BHP and this will provide additional groundwater data and confirmation of mining activities (historic, current and future approved) for future model updates. Until the data agreement is finalised, conditions of this agreement are still unknown, and so is the availability of data under this agreement. The data sharing agreement is currently being established between Vitrinite and BHP. This information is located within Appendix C of the PER. **Section 7.1 of the GIA refers to the need for adaptive management for groundwater drawdown and quality, but no impact triggers are specified, and corrective actions (in the event that triggers are exceeded) are not specified. Thus, the fundamental components of an adaptive management strategy are absent, and it is unclear what, if any, plan the proponent has to manage groundwater impacts during operation.** It should be noted that few significant impacts to groundwater are anticipated and therefore the monitoring and mitigation measures proposed are primarily confirmatory. The conditions of the EA facilitate a process of investigation and changed management should the investigation determine this is warranted. **The potential for groundwater levels in the vicinity of the backfilled pits post closure due to enhanced recharge through the spoil has not been fully explored. The proponent seems to be relying on successful rehabilitation of the site as a means to minimise infiltration into the pits, however as discussed below, rehabilitation success rates at coal mines in Queensland are low. As already discussed, the waste and coal reject materials have some geochemical properties, particularly dispersivity, that are a concern. The dispersive properties of the waste rock may mean that there is much higher surface contact between particles of waste and the groundwater, creating more potential for metals to leach.** The nature of the emplacement strategy as recommended by the geochemistry assessment and proposed within the PER is to significantly reduce the chance for any interaction between PAF material and the external environment. See Table 7-5 of the PER and Figure 7-1. "Any carbonaceous waste rock material identified as possibly PAF (and all coal reject materials) will be preferentially stored in the in-pit waste rock dumps when sufficient capacity is available and below predicted post-mining groundwater level, where practical, to reduce the potential oxidation of materials in the longer-term post-closure (Figure 7 1). The extents of any PAF carbonaceous waste rock (and all coal reject materials) transferred to emplacement areas will be tracked with regular surveys. Spatial data files in an appropriate format will be created to record the extents/dimensions of the storage areas. All possibly PAF carbonaceous waste rock and all coal reject materials will be paddock dumped, traffic compacted and covered by NAF overburden to limit the infiltration of air and water into covered materials." As shown within the risk assessment within the geochemistry assessment, this strategy was determined to be effective (See Table E1 of the Geochemistry assessment). Regardless, Groundwater quality will be strictly monitored and the groundwater quality suite (as shown within the EA) includes all parameter**s** picked up on through the geochemistry assessment. Contingency measures are also described within section 5.4.5 of the geochemistry assessment in the unlikely event that AMD is identified in surface runoff and/or seepage from emplacement areas or coal stockpiles, Vitrinite will investigate the potential source of the issue and implement any required additional sampling and testing measures. Remediation options may include addition of agricultural limestone to any identified PAF materials during placement and/or reducing the amount of time that any identified PAF material is exposed to weathering conditions prior to covering with NAF material.	

	• Table 6-6 identifies that workforce health and safety is a negative medium impact, which should surely set alarm bells ringing, given the high accident rates in the coal mining industry already. No mention is made in the SIA of the high frequency rate for serious and fatal accidents at coal mines, as well as long term chronic lung diseases amongst former mine workers. • Legitimate concerns that social and economic benefits of resource sector projects are not distributed evenly amongst residents in local and regional communities, or between genders, and that these projects in fact contribute to growing social inequality, gender inequality, and vulnerability of low income groups to issues such as housing affordability and service provision. • Entrenchment of the vulnerability of local and regional communities to the necessary and inevitable global decarbonisation and further delay to a fair transition for coal mine workers. Sudden cessation of mining as global demand drops is likely to undo any positive economic benefits to workers and local businesses. Critically, the social and socio-economic impacts on employees, local business and contractors and local communities if the project is to shut down due to declining demand for export coal are not explored. This is discussed further under 'lack of justification' below. <u>Economic benefits are claimed but costs and benefits are not quantified</u> An economic assessment has not been provided in the PER, however overall economic (and social) benefits are claimed, for example on page xx of the Executive Summary. provides a simplistic list of benefits and costs to the project, but the list is not accurate or credible. For example, "re-establishing habitat for threatened species and communities" (PER page 552) is listed as a benefit during operation and rehabilitation and decommissioning, in spite of (a) the low likelihood that habitat for threatened species and communities can be recreated and (b) the significant time lag between clearing and attempts at rehabilitation. Improved utilisation of available rail and port capacity is also listed in Table 10-2 as a benefit, but is more likely to be a cost to the community given that the Queensland government provides concessions to port and rail facilities used by the fossil fuel industry, with, for example, $869 million of rail network infrastructure funding in 2023/24.24 Loss of agricultural productivity is not included as a cost, however re-establishment of low intensity grazing after closure is listed as a benefit. Strangely, operational expenditure is listed as both a cost and a benefit, as is landholder compensation. It is not usual to list the proponent's operating expenses as a 'cost' in a cost- benefit analysis since the analysis is supposed to be concerned with costs and benefits to society, not to the proponent. There is double counting of benefits, for example workforce employment is claimed as a social benefit and an economic benefit, and 'local economic inputs from construction workforce and supply chain' and 'construction workforce wages and salaries – local increase in household income' is claimed separately, even though these are essentially the same. Bias is also evident, as many of the costs are downplayed as minor, but no such categorisation is applied to the benefits. No details are given of the amount of royalties and taxes that may be paid, in spite of this being identified as a key justification for the project (Section 3.3 of the PER), and no context is provided in terms of the proportional contribution of royalties and taxes to Queensland and Federal income. LTG notes that both tax and royalty payments are linked to profitability, and as discussed below, diminishing demand for export coal will likely undermine profitability of this Proposed Action. In addition, the Proposed Action is likely to cost Australian taxpayers directly and indirectly, although these costs are not acknowledged in the list of costs provided in Table 10-2. Direct costs include: • the Fuel Tax Credits Scheme • excise concessions on aviation fuel for FIFO workers • Queensland government expenditure on construction and operation of the RG Tanna terminal and rail network infrastructure and other concessions in relation to coal export facilities and rail networks • Subsidies received over the life of the tenements for exploration costs • GST refunds.	The subsoil will be mixed with waste rock as proposed within the cover design. Commitments are made to apply gypsum to the subsoil/waste rock layer to reduce dispersion. This is described within section 6.3.5 of the PRCP: 'Where dispersive subsoil material is to be utilised in rehabilitation works, it will tested, and if required, treated with gypsum (calcium sulphate) prior to sowing/planting. Please also see Section 7.6.1.3 of the PER, which states that a 'mineral water management plan' must be completed in accordance with the EA stipulations. Conditions within the EA for this plan include the below: 7.6.1.3 Mineral Waste Management Plan (C11) "The Mineral Waste Management Plan required by condition C11 must include at least: • a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; • a program of progressive sampling and characterisation to identify dispersive and nondispersive waste rock, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulphate, acid and alkali producing potential; • a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; • a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; • where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; • details regarding the management of seepage and leachates; and • monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover. • This plan will be reviewed an updated at regular intervals not exceeding two years." **Section 6.6 of the GIA waives away any impact on groundwater quality because of the voids at Saraji and Peak Downs and does not mention potential impacts on groundwater quality identified in the geochemical assessment report. If contaminants (including alkalinity) are drawn towards the final voids at Saraji and Peak Downs, this could lead to worsening water quality in these voids. Again, because the Proposed Action results in permanent changes to the landscape and hydrogeology, these issues need to be taken a lot more seriously in considering whether the Proposed Action might have significant impacts on water resources.** A data sharing agreement is currently being negotiated between Vitrinite and BHP which will allow Vitrinite to work together with the adjacent mines to ensure there are minimal impacts from Vitrinite activities on adjacent mines and vice versa. As specified within the PER (Section 6.4.3.6) Impacts of the Project on groundwater quality is considered to be small.: *"Groundwater flow into the Vulcan South and Vulcan North pits will be negligible, and these pits will be essentially dry. Groundwater flow into the Vulcan Main pit will be up to 43 m3/day, which will cause localised drawdown in surrounding aquifers. Table 6-32 summarises the predicted inflows rates and volumes for the proposed VS Vulcan pits. The rate of inflow to the Vulcan pits is consistent with* ***Figure 6-51*** *and shows that the maximum inflow is less than 43 m3/d occurring in Year 5 of mining. The maximum annual volume of predicted inflow to the VCM pit is less than 15 ML/yr.* *Overall, the predicted groundwater seepage to the proposed pits is low and will very likely be lost through evaporation on the pit face or as entrained moisture within the mined coal. Hence seepage to the pit is very unlikely to be observed during the Project.* Overall, Impacts to groundwater quality is considered unlikely due to the minimal groundwater inflow into the pit, poor quality of groundwater as it currently stands and strict mine groundwater monitoring and management. **The GIA also asserts that drawdown will not occur to the west of the proposed pits (where there are GDEs), but does not provide any way of validating this, except for a single bore (MB12) which is up gradient.** It is widely understood that the groundwater flow direction within the Project area and surrounds flow west to east, as per Section 5.3.1 of the Groundwater Impact Assessment (Appendix P)**.** "The groundwater monitoring network was established based on available information relating to the general understanding of groundwater flow conditions (west to east), the coal resource and general geology of the region and the available mining and exploration tenure. The rationale for locating the	

	The proponent has also not indicated whether it intends to seek funding under any of the following taxpayer funded schemes in order to make its Proposed Action profitable: • Working with the Australian Resources Industry on the Pathway to Net Zero • Geoscience Australia's Building Australia's resources wealth program • Northern Australia Infrastructure Facility • Queensland's Low Emissions Investment Partnerships Program • Powering the Region Fund. The most significant indirect costs will arise from the economic impacts of the Proposed Action's contribution to the accretion of greenhouse gas emissions in the atmosphere. Scope 1, 2 and 3 emissions total about 26 MtCO2e, according to Appendix GG of the PER. Utilising a realistic social cost of carbon of $US185/tonne ($AU~275/tonne), this equates to $AU7.15 billion.25 Granted, this relates to the global economy but impacts on the global economy have big implications for Australians, including upward pressure on cost of living (particularly through food scarcity, insurance costs and global transport disruptions, all of which are exacerbated by climate change), and the need to support populations that are displaced due to climate change. Other indirect costs relate to the ongoing impacts on water resources if, as is highly likely, the site cannot be successfully rehabilitated, as well as the need to support workers and families of workers who may be killed, injured or infected as a result of their work. Tax and royalty payments are mentioned as a benefit, but are not quantified. Given that royalty payments are linked to profitability, and profitability of metallurgical coal mining is at risk from contracting global demand, royalty contributions may not be very large. <u>Stranded asset risk is high, with severe social and socio-economic consequences</u> A key concern for this, and all coal projects in Queensland, is the risk of becoming a stranded asset, that is, where the Proposed Action proceeds and is then shut down because of lack of demand and/or low prices. The volatility of the coal market is such that Queenslanders have already experienced these fluctuations, with the last major downturn in 2012/13. Abrupt closure of even one coal mine leaves employees, local and regional businesses and local communities abandoned, with strongly negative social and socio- economic impacts, for example on house prices. The risk for thermal coal mines becoming stranded assets is well documented. However, the risk for metallurgical coal mines is also growing (see further discussion below). Overall, LTG considers that allowing this Proposed Action to proceed will expose workers, local and regional businesses and local and regional communities to unacceptable risk of social and economic impacts. **There is no justification for a new metallurgical coal mine** <u>Coal demand is already dropping</u> The Proposed Action will produce both metallurgical and thermal coal. In its modelling for net zero by 2050, the International Energy Agency identified that demand for metallurgical and thermal coal in the phase-out period to 2050 can be met by existing mines, and that no new mines, or mine expansions are required. This means that approval by the Australian government of any new or expanding coal mine is contrary to Australia's legislated commitment to the Paris temperature goals. The International Energy Agency's Net Zero Roadmap also states that the switch to steel production from non-fossil fuel energy sources must be well underway by 2030. Global demand for thermal coal has likely already peaked. There are a number of signs that demand for metallurgical coal will also diminish in the short to medium term. A number of commentators including the Institute for Energy Economics and Financial Analysis and the International Energy Agency cite rapid advances in producing and recycling steel from hydrogen and electricity rather than coal.	monitoring bores was to have an upstream and downstream bore plus an understanding of groundwater conditions within the Project area and to the north and south. The groundwater This is also described in Section 5.5.5 of the Groundwater Impact assessment: "Based on the literature reviewed and presented in this report, horizontal (lateral) regional groundwater flow is expected to follow the same patterns as topography and the surface water drainage for all hydrogeological units, although the resemblance to surface water drainage for the deeper confined units will be less pronounced as for the shallow unconfined groundwater systems. Near the Project area, the statement above would suggest a west to east groundwater flow, and this is consistent with the data assessed." **Cumulative impact assessment on groundwater resources is based on the idea that most of the groundwater impacts are caused by adjacent mines and that these impacts have already been approved which makes the impacts acceptable. LTG notes that approval of a mine, and even compliance with that approval, does not correlate to it having no impacts, and does not mean that further impacts can be added on, however incremental. Cumulative impact assessment requires establishment of thresholds beyond which the combined effects of impacts from multiple sources cannot extend. No attempt has been made to determine such thresholds.** The model developed to inform the groundwater impact assessment incorporates the cumulative effect of surrounding mining operations in its inherent conceptualisation, calibration and representation of baseline conditions. The fact is that there is limited groundwater within the project area and the geology supports low hydraulic conductivity. Therefore**,** the effects of the project are extremely localised and cumulatively, have little effect on the broader groundwater regime. Cumulative impact modelling of sufficient detail to enable establishment of meaningful criteria would be limited by data availability. <u>**Groundwater dependent ecosystems not validated**</u> **The IESC requested field validation of GDEs, including the potential presence of terrestrial and subsurface GDEs. This validation is not reported on in the PER, and it seems likely that it did not occur.** It is widely recognised in literature which tree species have a propensity to utilise groundwater and to what extent (defined as "terrestrial GDEs). This is described in detail within Section 5.10.4.1 of the PER, Table 5-20 specifically. Terrestrial flora field validation surveys were completed for these species as discussed within Section 4.7.2. Mapping of terrestrial GDEs also considered the depth-to-groundwater data, national GDE mapping and water quality data. **Overall, the assessment provided in the PER and appendices does not adequately demonstrate that there will not be a reduction in the current or future utility of water resources as described in the *Significant Impact Guidelines - Coal seam gas and large coal mining developments—impacts on water resources*. Both environmental and public utility uses may be affected, particularly post closure, given the low likelihood of rehabilitation success.** See discussion above about the rigour of the surface water and groundwater impact assessment. <u>**Prospects for rehabilitation are poor**</u> **The proposed action will result in permanent changes to the landform, including flood plains, drainage lines and hydrogeology.** This is not demonstrated in the surface water impact assessment, Groundwater impact assessment or landform evolution modelling. **Throughout the PER and the supporting studies, there is an erroneous assumption that post closure impacts will be negligible because of the very high effectiveness of mine rehabilitation. Post mining land uses (PMLUs) include low intensity cattle grazing, native ecosystem (riparian and non-riparian) and road and rail corridors. No evidence is provided of where these PMLUs have been successfully implemented and rehabilitation trials are not proposed. Further, the proponent seems to be only committing to managing biodiversity offsets for 20 years, on the basis that rehabilitation can be completed in this time frame.** The Post mining land uses were chosen with specific regard to the soil types within the Project area, the pre mining land uses and the anticipated environmental outcomes for species. A analysis was completed within section 4.3 of the PRCP to determine which post mining land uses are most suitable.	

	This is recognised in the most recent Australian government Resources and Energy Quarterly Bulletin (September 2024) which states that "Downside risk factors include a Chinese led global steel manufacturing slowdown, and a shift towards new low emission steel production facilities, which do not use metallurgical coal as an input". China is now expected to reach peak carbon emissions by 2030, with some commentators thinking that it may have already peaked. This is occurring because of both reductions in demand for steel and rapid growth of renewable energy in China. Data presented in the Australian Government's Resources and Energy Quarterly Bulletin (September 2024) also shows that overseas demand for metallurgical coal is contracting, and the report forecasts a fall in export earnings from $54 billion in 2023–24 to $42 billion by 2025–26, a 25% decrease. **Figure 4.4: Australia's metallurgical coal export volumes, monthly**  Source: ABS (2024) International Trade, Australia (trade tables subscription) <u>The global community wants action on decarbonisation</u> While Australia continues to lag on its commitments under the United Nations Framework Convention on Climate Change, many other countries are working hard on decarbonisation. Most recently, on 22 September 2024, the United Nations Summit for the Future produced a new global 'Pact for the Future' which included agreement on "transitioning away from fossil fuels in energy systems". Opening a new metallurgical and thermal coal mine contravenes Australia's commitments under the United Nations Framework Convention on Climate Change and the Paris Agreement, and is contrary to the goals of the Climate Change Act 2022. International pressure on Australia to stop expanding coal production is likely to increase. Overall, LTG considers that the Proposed Action should not be allowed to proceed as there is no justification for opening a new thermal and metallurgical coal mine and any economic benefits will be strongly outweighed by environmental, social and socio-economic impacts, not least of which is the impact of climate change on the well-being of Australians. <u>Proponent's environmental compliance history</u> Pursuant to Section 136(4) of the EPBC Act, LTG draws the Minister's attention to the proponent's poor record of compliance with environmental laws. Vitrinite's EPBC compliance report from 2023 records several non-compliances with permit conditions of EPBC approval 2020/8676, including clearing land outside the authorised area and failure to report potential breaches. On 22 March 2024, Queensland Coking Coal was issued with an Environmental Protection Order (EPO) under the Queensland *Environment Protection Act 1994* (EP Act) in relation to permit EA0002912. In the EPO, the Department of Environment, Science and Innovation maintained that Queensland Coking Coal had, among other things: • Failed to install and operate adequate measures to monitor and manage releases to water	In order to compare the relative merit of each PMLU option, a scoring system was applied across ten costs and benefits, in accordance with the Progressive Rehabilitation and Closure Plans Guideline (Table 4-1). This awarded a score of 15 for each consideration (cost/benefit), with the sum of all scores across considerations used to compare PMLU options. This assessment revealed that low-intensity grazing and native vegetation communities were the most appropriate PMLUs for the Project (Table 4-1 of the PRCP). The overall scores were similar for both, with grazing being marginally favourable on flat terrain and native ecosystems being marginally favourable in steeper sandstone areas. Trials on a similar cover design at an adjacent mine were used to inform the Project. See Section 6.2.4 of the PRCP: Trials undertaken at the adjacent Saraji Mine compared vegetation establishment on waste rock (spoil) that received 0 cm, 10 cm or 30 cm of topsoil prior to planting (Kopittke et al. 2004). Grass established at higher densities in the topsoil treatments than on the spoil; however, even on spoil, grass achieved 70% cover. Native trees and shrubs actually established better without topsoil, due to reduced competition with grass, but natural thinning over the first ten years resulted in a final stem density that was equivalent to the topsoil treatments. The spoil at Saraji is more saline (Kopittke et al. 2004) than that at Vulcan South, suggesting that local waste rock is unlikely to pose a barrier to root growth for local vegetation. Based on these trials, the cover proposed at the Project is expected to be ideal for establishing a productive pasture with a moderate density of native woody vegetation. **In fact, mine rehabilitation in Queensland has extremely low success rates. Purtill & Littleboy (2023) note that no coal mines in Queensland have ever been rehabilitated to the standard where the mining company would receive its financial assurance bond back. In its most recent annual report, the Queensland Mine Rehabilitation Commissioner identifies that, of the 86,867 hectares of total rehabilitation claimed by mining companies, (historical to the end of CY2023), only 5,822 hectares (seven percent) is actually certified. Certified rehabilitated land represents less than 2 percent of all land disturbed by mining in Queensland, while uncertified rehabilitation accounts for less than one quarter of the total disturbance.** The Queensland State Progressive Rehabilitation and Closure Plan assessment process only came about in 2019. This was put forward by the Queensland Government to improve mining rehabilitation outcomes within the region by ensuring mining companies commit to progressive rehabilitation prior to the commencement of the activity. The PRCP Schedule is a statutory document with requirements on when rehabilitation is achieved for each rehabilitation area, with DESI undertaking frequent audits to ensure this is complete. For this reason, the statistics on rehabilitation outcomes in Queensland are largely reflective of the outdated rehabilitation methodologies from historical mines and reflective of former government guidelines and policies in place. There is no data on the new PRCP process and its outcomes given it is new. Improved rehabilitation performance is anticipated. **In relation to specific conditions at the Proposed Action, Section 5.4 of the Geochemical Assessment (Appendix R) makes a number of recommendations regarding ongoing testing of waste rock and coal rejects for potential acid forming (PAF) characteristics, and careful placement of identified PAF materials during progressive rehabilitation. These recommendations do not seem to have been picked up in the Progressive Rehabilitation and Closure Plan (PRCP) (Appendix J). The PCRP also does not seem to address the dispersive nature of waste rock that was identified in the Geochemistry Assessment, and indeed proposes to use waste rock as rock mulch, and mix waste rock with subsoils as a means to manage the sodic nature of the subsoils. Given the findings of the geochemistry report that the waste rock is also moderately to strongly sodic, it is unclear how this will help the situation.** The emplacement strategy recommended by the geochemistry assessment is described within the PRCP, within Section 6.2.1 on page 100. It is also described within the cover design section 6.2.4. The subsoil will be mixed with waste rock as proposed within the cover design. Commitments are made to apply gypsum to the subsoil/waste rock layer to reduce dispersion. This is described within section 6.3.5 of the PRCP: 'Where dispersive subsoil material is to be utilised in rehabilitation works, it will be tested, and if required, treated with gypsum (calcium sulphate) prior to sowing/planting.' Please also see Section 7.6.1.3 of the PER, which states that a 'mineral water management plan' must be completed in accordance with the EA stipulations. Conditions within the EA for this plan include the below: 7.6.1.3 Mineral Waste Management Plan (C11) "The Mineral Waste Management Plan required by condition C11 must include at least:	

	• Failed to install and operate erosion and sediment control measures as required in its erosion and sediment control plan • Not provided for effective management of actual and potential environmental impacts in its water management plan. These failures extended over at least 12 months with multiple occasions when required measures were not in place and required monitoring and surveillance did not take place. These failures resulted in releases of mine affected water from the mine outside the limits authorised in the Environmental Authority and, as noted in the EPO, a failure "to meet your general environmental duty as you have failed to take all reasonable action to prevent or minimise potential environmental harm associated with the activities at Vulcan Coal Mine". On 17th June 2024, Queensland Coking Coal was issued with a Direction Notice under the EP Act in relation to unauthorised clearing of vegetation and conduct of an environmentally relevant activity outside the approved area on EPC1233. This was in relation to environmental authority EPPR03277115. LTG could not find any acknowledgement of this Direction Notice in the PER, even though it pre-dates the publication of the PER and relates to clearing of vegetation on EPC 1233 that is actually the subject of this EPBC approval process. **Summary** In summary, LTG considers that every aspect of the Proposed Action undermines the principles of ecologically sustainable development (ESD) enshrined in the EPBC Act (Section 3A). In particular: 1. Any short term economic and social benefits are undermined by short and long term adverse environmental, social and economic impacts. 2. Intergenerational equity is not provided for as future generations will be less able to enjoy a healthy, diverse and productive environment due to both the loss of biodiversity and water resources, and the accretion of GHGs in the atmosphere. 3. Loss of biodiversity must be considered permanent due to the low likelihood of success of proposed biodiversity offsets and site rehabilitation. 4. The Proposed Action will permanently alter the landform, hydrological and hydrogeological characteristics of the site and it is unlikely that the site can be adequately rehabilitated. LTG calls on Minister Plibersek to secure the future of Australian biodiversity, water resources and the Great Barrier Reef, and the wellbeing of Australians, by refusing this Proposed Action. Thank you for the opportunity to make this submission. Please do not hesitate to contact Dr Claire Gronow (claire.gronow@lockthegate.org.au, 0451 352 716) with any further questions.	• a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; • a program of progressive sampling and characterisation to identify dispersive and nondispersive waste rock, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulphate, acid and alkali producing potential; • a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; • a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; • where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; • details regarding the management of seepage and leachates; and • monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover. • This plan will be reviewed an updated at regular intervals not exceeding two years." **The Geochemistry Assessment also recommends ongoing monitoring for alkalinity and metals. Conversely the PCRP states that "dissolved metal and metalloid concentrations in surface runoff and leachate from bulk mining waste materials are expected to be low and unlikely to pose a significant risk to the quality of surface and groundwater resources" (PCRP, page 105).** The Geochemistry assessment states that "Whilst significantly elevated metal/metalloid concentrations in contact water are not expected at the Project, it is recommended that the suite of metals/metalloids described in the static and KLC test in this report be included from time to time, where appropriate, in the site water quality monitoring program. " Therefore the assessment concludes that they are not anticipat**ed** to pose a risk. Regardless, metals concentrations are included within the suite of surface water and groundwater parameters set out in the Final EA and are discussed in the REMP. These will also be included within the water management plana and groundwater management plan. Please also see Section 7.6.1.3 of the PER, which states that a 'mineral water management plan' must be completed in accordance with the EA stipulations. Conditions within the EA for this plan include the below: 7.6.1.3 Mineral Waste Management Plan (C11) "The Mineral Waste Management Plan required by condition C11 must include at least: • a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; • a program of progressive sampling and characterisation to identify dispersive and nondispersive waste rock, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulphate, acid and alkali producing potential; • a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; • a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; • where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; • details regarding the management of seepage and leachates; and • monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover. • This plan will be reviewed an updated at regular intervals not exceeding two years."	

		On this basis, LTG considers it likely that there will be ongoing impacts from the Proposed Action on water quality, biodiversity and land productivity once mining is complete. The permanent legacy of the site will include sediment laden runoff, potentially also containing high alkalinity levels and various metals, unstable slopes, dust generation and ongoing loss of agricultural productivity and native habitat. None of these impacts have been addressed in the PER. The permanent nature of these impacts is such that the Proposed Action must be refused. The reader is directed to the responses above. The technical assessments informing the PER, which consider the aforementioned concerns, are believed by the Proponent to be adequate for the requirements of the PER process. **<u>The social impact assessment does not demonstrate net positive benefits</u>** The Social Impact Assessment (SIA) was submitted and accepted by the State Government as part of the Queensland State Environmental Authority approvals process for Vulcan South. The PER guideline for Vulcan South specified that economic and social matters were to be analysed as part of the PER process, and this SIA was included to address that requirement. Provision of this document was done so in consultation with DCCEEW and no further information was requested. The SIA submitted provides an appropriate level of assessment for an impact assessment document that is largely focussed on nationally significant ecological and water related matters. **Greenhouse gas emissions will exacerbate climate change impacts** **<u>The Proposed Action contributes to the accretion of GHGs in the atmosphere, and the devastating consequences of climate change</u>** **It is acknowledged in Appendix GG that "the Project is estimated to contribute to 960,000t CO2e of Scope 1 and Scope 2, these are the emissions under operational control of the Project. It is also expected to contribute to 25 MtCO2e in consideration of Scope 3." A detailed breakdown is not provided. In spite of growing awareness that methane is a particularly potent short-lived greenhouse gas (GHG) that is 82.5 times more powerful than carbon dioxide over 20 years, no mention is made of the actual amount of methane likely to be released, or its short to medium term effects on accretion of GHGs.** A detailed breakdown in provided within Section 4 of Appendix GG, specifically refer to Table 2. Further description is also provided within Appendix A of the greenhouse gas emissions report. Mitigation measures in place are described in detail within the greenhouse gas abatement plan (Appendix HH). **The PER fails to acknowledge the contribution that the project will make to the accretion of GHGs in the atmosphere and the implications of this for human wellbeing, the economy, water resources and biodiversity.** Appendix GG provides an assessment of project impacts compared to national and state emission inventories within Section 5. Given the small contribution and the implementation of mitigation and abatement measures as per Appendix HH, implications of human wellbeing, the economy, the water resources and biodiversity are considered to be marginal at best. This is especially true given the duration of operations will only occur for seven years. **The GHG report claims that the emissions from the proposed action will not inhibit either Australia or Queensland from meeting their respective emission reductions targets simply because it is quite a small proportion of total emissions, and because other mines emit larger quantities. However, the PER fails to acknowledge that it is precisely the additive effect of many, many, small GHG emission sources that is causing climate change, which underscores the importance of not allowing individual projects to proceed even if each individual contribution is small.** Vitrinite acknowledges its small contribution to climate change and this is why the GHG abatement plan was produced (Appendix HH). **The emissions estimates provided in Table 2 of the Greenhouse Gas appendix indicate that the action will likely be a new entrant to the Safeguard Mechanism from its second year of operation, and continue to emit over the 100,000 tonne designated large facility threshold for the following six years. The PER does not engage at all with the best practice emissions- intensity factor for coal mining that will determine the baseline for the facility under the Safeguard Mechanism should it proceed, nor does it provide emissions-intensity estimates or benchmarks against other coal mines. The PER likewise does not mention the mandatory 4.9% annual emissions decline rate which applies to Safeguard facilities. If this Proposed Action is allowed to proceed, it will further undermine the effectiveness of the safeguard mechanism in protecting Australians from worsening impacts of climate change and in meeting Australia's international obligations.**	

		Vitrinite will meet its obligations under the Safeguard Mechanism and associated legislation. This is not a matter that is regulated by the EPBC Act nor is it within the scope of the PER. **<u>No feasible GHG abatement/mitigation options exist during the life of this coal mine</u>** **Table 4 of Appendix GG provides some very broad descriptions of 'mitigation and abatement opportunities'. There is no attempt to quantify the amount of greenhouse gas emissions saved by the mitigation and abatement proposals and no engagement with actual abatement measures currently being implemented or committed to in the industry such as pre-mine drainage and electrification.** Abatement measures are now provided within Appendix HH "G**HG** Abatement Plan". **The proponent's listing of switching emissions reporting to NGERs method 2 as its number one "mitigation" action for methane emissions is extremely alarming. Describing a changed reporting method as "the total GHG emissions will be decreased" demonstrates a fundamental and dangerous misunderstanding by the proponent of greenhouse gas mitigation. LTG also notes that the greenhouse assessment provided does not meet the standard now in place in Queensland.** T**he other measures in Table 4 are generic 'business as usual' energy efficiency measures which should be standard in any project of this sort and in any case are not clearly committed. There is no commitment to using renewable energy, and no commitment to any innovative approaches, or research and development.** Abatement measures with clear commitments are now provided within Appendix HH "GHG Abatement Plan". **LTG notes that the recently released Climate Change Authority Sector Pathways Review report for the resources sector indicates that the industry reports that there are no feasible means to mitigate scope 1 emissions from coal mining until after 2030. That review makes clear that emissions reductions from the coal mining sector come primarily from reduced production, and yet there is no policy in place in Australia to ensure that this reduction occurs and the coal mining sector achieves its share of Australia's emissions reductions to achieve net zero and the temperature goals of the Paris climate agreement. If this Proposed Action is allowed to proceed, there will be hundreds of thousands of additional tonnes of (scope 1) greenhouse gases in the cumulative emissions budget in Australia's nationally determined contribution. Again, this clearly undermines the potential effectiveness of the safeguard mechanism.** As discussed above, Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (Appendix GG of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. Vitrinite will also adhere to internal and external energy and GHG emissions reporting requirements stipulated under the NGER Act and the Safeguard Mechanism. **<u>Scope 3 emissions are not dealt with</u>** **The safeguard mechanism only deals with emissions in Australia and only covers emissions by industrial facilities emitting over 100,000 tonnes a year. As the PER concedes, the bulk of emissions from this proposal, and the most material contribution it makes to climate change, is scope 3 emissions, for which there is no management and mitigation under the safeguard mechanism.** **Whether or not the Minister is required by law to consider the impacts of scope 3 emissions on MNES, it is clear that these emissions will have significant impacts on MNES, including listed threatened species and ecological communities, water resources, and the Great Barrier Reef. Scope 3 emissions from the Proposed Action of 25 MtCO2e will expose Australians and people across the planet to the devastating effects of climate change.** **Utilising a realistic social cost of carbon of $US185/tonne, the Proposed Action will add a burden of about $US4.6 billion to the global population ($AU6.9 billion).20** As discussed above, Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (Appendix GG of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government.	

		Vitrinite will also adhere to internal and external energy and GHG emissions reporting requirements stipulated under the NGER Act and the Safeguard Mechanism. Vitrinite's GHG emission reduction/abatement commitments are provided within table 4 of Appendix HH for all scopes, including scope 3. **<u>The Proposed Action imposes unfair burdens on the most vulnerable</u>** **The Proposed Action will contribute to the accretion of GHGs in the atmosphere which in turn affects human wellbeing, the economy, biodiversity and water resources. It undermines the Australian Government's international obligations and places an unfair burden on Australians and other people who are most vulnerable to climate change. LTG considers this to be a violation of Australia's own legislative and policy positions on human rights as well as obligations under international human rights treaties signed by Australia.** Appendix GG provides an assessment of project impacts compared to national and state emission inventories within Section 5. Given the small contribution and the implementation of mitigation and abatement measures as per Appendix HH, implications of human wellbeing, the economy, the water resources and biodiversity are considered to be marginal at best. This is especially true given the duration of operations will only occur for seven years. Vitrinite has committed to abatement measures within Appendix HH to reduce their contribution to climat**e** change. It is not clear from the submission, what the cause of the unfair burden, but a significant amount of planning, assessment and management has occurred over recent years to ensure the impacts of the project are managed. It should be noted that the project has already been through a full state assessment and approval process and both it and the proposal closure plan (PRCP) are approved by the state government. This would not have occurred if the Project was likely to cause a violation of Australia's own legislative and policy positions on human rights. Vitrinite will also adhere to internal and external energy and GHG emissions reporting requirements stipulated under the National Greenhouse and Energy Reporting Act 2007 and the Safeguard Mechanism. **Economic and social benefits unlikely to outweigh costs and impacts to the community** Vitrinite has prepared a Greenhouse Gas Abatement Plan which is now included within the PER as an appendix (Appendix HH). The GHG Abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. The GHG assessment and abatement plan demonstrates that the Project does not prevent state and nation emissions reduction targets from being met. The project will make a significant contribution to the state through royalties and taxes which will contribute to social infrastructure across the state. Capital and operational expenditure will also make a significant contribution to local and regional economies. **<u>The social impact assessment does not demonstrate net positive benefits</u>** **The Social Impact Assessment (SIA) (Appendix EE) is extremely poorly performed and does not demonstrate that there will be any positive social and socio-economic benefits from the Proposed Action. In particular, it does not explore potential negative impacts, or offer reasonable mitigation measures for these. There are no references to literature or good practice guidelines in relation to identifying, evaluating or managing social impacts. The Linkedin profiles of the reviewers of the last three versions of the report (A. Basiaco, D Plucknett and D Moss) do not show any expertise in SIA, or the social sciences more generally.** LinkedIn should not be considered the most up to date, accurate source of experience to refer to. The Social Impact assessment was written in accordance with the Social Impact Assessment Guideline (Department of State Development, Manufacturing, Infrastructure and Planning [DSDMIP], 2018) and other relevant policies and publications. This was then reviewed and approved by DESI as part of the Vulcan South EA Application and public consultation process. DESI has now approved the Final EA.	

		Table 3-2 seems to be setting up an impact significance framework, however the framework does not seem to be in accordance with any good practice guidance. It is a massive oversimplification to assign a 'positive' or 'negative' to each impact, as impacts are likely to be much more complex and subtle. For example, an increase in population might be positive for local retail businesses but negative for lower income families. Thus the same effect may have different consequences depending on the vulnerability of the particular social group that might be affected. **It is not clear what is meant by probability in relation to impact. Each of the impacts identified will certainly occur, there is no high/medium/low probability in this regard. Perhaps the consultants are referring to uncertainty in relation to whether the impact is positive or negative, or to the consequence?** **The baseline data is well out of date, with, for example, reliance on 2016 census data for demographic data, and 2018 data on housing affordability and availability. Demographic profiles and socio-economic indicators such as house prices, rents and housing availability fluctuate significantly in the study area due to the strong dependence on the volatile coal mining industry, and it is critical that up-to-date baseline information is provided. There was a major downturn in coal mining in 2012/13, and so the few years after that may not be representative of the current situation and a much longer data set is required. For example, the SIA quotes a median price for rental properties in Dysart as $170/week and $300/week in Moranbah, based on 2018 figures. The website realestate.com.au reported rental property prices of between $340/week and $600/week in Dysart and between $450 and $1280 /week in Moranbah on 26th September 2024.** **Baseline data is largely presented without context, for example as raw numbers rather than a percentage of total population, or per capita rate, and without comparison to the Queensland average. It is not clear whether demographic data refers to resident or total population, that is, population with or without fly-in-fly-out and drive-in-drive-out workers.** **A superficial and highly contradictory assessment of social impacts is presented in Section 6 and no real mitigation measures have been proposed. A few examples are provided here to highlight flaws in the assessment; however, each line in the tables in Section 6 contains similar lack of logic and limited understanding of the issues:** • **For 'source location impacts' how will the mitigation measure of "Recruitment strategy with a preference for local employees" work? This may increase the impact at a local level because competition has been introduced locally where there is a smaller pool of workers.** • **Line 4 in Table 6-1 refers to "population decline due to diminished tourism demand". There is no mention of this decline, or indeed of the tourism industry, in the baseline section of the SIA. Only two years (2011 and 2016) are used for local population numbers, and there was a significant contraction in coal mining activity in this period, so it is impossible to deduce that there is an overall population decline in any case.** • **In Table 6-2, the project is identified as having a high impact on demand for early childhood services, although no justification is given for this, and no explanation provided for why the impact on primary and secondary school are assessed as medium and low respectively. Given the statement in the mitigation column that "It is anticipated that the proportion of workers families that will require these services is small", it is hard to know how any assessment has been made. It's also not at all clear how further investigation of the issue by Vitrinite and discussion of the issue with the workforce will mitigate the impact.** • **In table 6-2 and 6-3 mitigation measures are applied to some (but not all) of the 'low' impacts but not to medium impacts.** • **In Table 6-3, the impact of inflationary pressure and increased inequality is identified and it is unclear why this potentially significant impact is dismissed as low, while creation of employment opportunities is assigned medium (positive).** • **Line 3 of Table 6.4 identifies a medium increase of traffic accidents, but confusingly states in the mitigation column that "impact on increase [sic] traffic accidents due to the Project is expected to be minimal." This also contradicts Table 6-6 which identifies that "increased traffic and traffic hazards" is a low negative impact.** The Social Impact Assessment (SIA) was submitted and accepted by the State Government as part of the Queensland State Environmental Authority approvals process for Vulcan South. The PER guideline for Vulcan South specified that economic and social matters were to be analysed as part of the PER process, and this SIA was included as part of that requirement. No further information was requested by DCCEEW concerning the SIA. It provides an appropriate overview of the likely social and economic impacts of the project and their likely reach. It should be noted that the project is a small-scale, short-term mining operation to be implemented in a very well-established mining community. • **In table 6-4, unless the proponent is proposing to provide an ambulance, fire trucks and police force, the project will certainly have an impact on already stretched emergency services. The conclusions in Table 6-4 contradict the conclusions in Section 6.6 which identify increased pressures on health-related emergency services and police.** The site will have an onsite fire and emergency services crew and vehicle that will be available 24/7 to address onsite incidents.	

		• **The impacts on housing and accommodation mentioned in Table 6-5 are contradictory.** • **Increased demand for accommodation and housing is identified as a medium positive impact, but impact on short term accommodation is identified as negative and reduced availability and affordability of housing is a negative low impact. No consideration is given to the potential for lower income households to be priced out of the region, as has previously occurred. It is also not clear how Vitrinite's openness to "discussions should unexpected impacts arise" will assist in mitigating these potentially significant impacts.** • **Table 6-6 identifies that workforce health and safety is a negative medium impact, which should surely set alarm bells ringing, given the high accident rates in the coal mining industry already. No mention is made in the SIA of the high frequency rate for serious and fatal accidents at coal mines, as well as long term chronic lung diseases amongst former mine workers.** • **Legitimate concerns that social and economic benefits of resource sector projects are not distributed evenly amongst residents in local and regional communities, or between genders, and that these projects in fact contribute to growing social inequality, gender inequality, and vulnerability of low income groups to issues such as housing affordability and service provision.** • **Entrenchment of the vulnerability of local and regional communities to the necessary and inevitable global decarbonisation and further delay to a fair transition for coal mine workers. Sudden cessation of mining as global demand drops is likely to undo any positive economic benefits to workers and local businesses.** The Social Impact Assessment (SIA) was submitted and accepted by the State Government as part of the Queensland State Environmental Authority approvals process for Vulcan South. The PER guideline for Vulcan South specified that economic and social matters were to be analysed as part of the PER process, and this SIA was included as part of that requirement. No further information was requested by DCCEEW concerning the SIA. It provides an appropriate overview of the likely social and economic impacts of the project and their likely reach. It should be noted that the project is a small-scale, short-term mining operation to be implemented in a very well-established mining community. **Critically, the social and socio-economic impacts on employees, local business and contractors and local communities if the project is to shut down due to declining demand for export coal are not explored. This is discussed further under 'lack of justification' below.** The Vulcan South coal product is a Premium Low Volatile (PLV) Hard Coking Coal (HCC) for which there is high market demand. Wood Mackenzie (2024), in its reporting on Vitrinite coal products has provided the following commentary on demand for this product. The global seaborne metallurgical coal market is expected to increase gradually from 299 Mt in 2022 to 373 Mt by 2050, growing at a rate of 0.8% p.a. The global seaborne HCC market is expected to increase by 0.7% p.a. from 199 Mtpa in 2022 to 243 Mtpa by 2050. India and south-east Asia (notably Indonesia and Vietnam) are expected to support HCC imports over the forecast with ongoing build out of blast-furnace steel and coke making capacity and limited options for substitution. China remains an anchor to the market, with imports expected to remain firm owing to a requirement to continue imports of high-quality coking coal for blending as domestic high-quality reserves are anticipated to fall over time. In the longer term, growth in steelmaking capacity and output, largely in India and south-east Asia, as well as the need for new projects, is expected to place increase pressure on supply through to at least 2050. Substitutions to traditional steel making processes are expected to increase over the coming decades however are not anticipated to have a significant impact on demand for HCC through to 2050. Vitrinite has supreme confidence in the demand for the Vulcan South product, particularly over the shorter life of the project (less than a decade). **<u>Economic benefits are claimed but costs and benefits are not quantified</u>** **An economic assessment has not been provided in the PER, however overall economic (and social) benefits are claimed, for example on page xx of the Executive Summary. provides a simplistic list of benefits and costs to the project, but the list is not accurate or credible. For example, "re-establishing habitat for threatened species and communities" (PER page 552) is listed as a benefit during operation and rehabilitation and decommissioning, in spite of (a) the low likelihood that habitat for threatened species and communities can be recreated and (b) the significant time lag between clearing and attempts at**	

		rehabilitation. Improved utilisation of available rail and port capacity is also listed in Table 10-2 as a benefit, but is more likely to be a cost to the community given that the Queensland government provides concessions to port and rail facilities used by the fossil fuel industry, with, for example, $869 million of rail network infrastructure funding in 2023/24.24 Loss of agricultural productivity is not included as a cost, however re-establishment of low intensity grazing after closure is listed as a benefit. **Strangely, operational expenditure is listed as both a cost and a benefit, as is landholder compensation. It is not usual to list the proponent's operating expenses as a 'cost' in a cost- benefit analysis since the analysis is supposed to be concerned with costs and benefits to society, not to the proponent. There is double counting of benefits, for example workforce employment is claimed as a social benefit and an economic benefit, and 'local economic inputs from construction workforce and supply chain' and 'construction workforce wages and salaries – local increase in household income' is claimed separately, even though these are essentially the same. Bias is also evident, as many of the costs are downplayed as minor, but no such categorisation is applied to the benefits.** **No details are given of the amount of royalties and taxes that may be paid, in spite of this being identified as a key justification for the project (Section 3.3 of the PER), and no context is provided in terms of the proportional contribution of royalties and taxes to Queensland and Federal income. LTG notes that both tax and royalty payments are linked to profitability, and as discussed below, diminishing demand for export coal will likely undermine profitability of this Proposed Action.** **In addition, the Proposed Action is likely to cost Australian taxpayers directly and indirectly, although these costs are not acknowledged in the list of costs provided in Table 10-2. Direct costs include:** • **the Fuel Tax Credits Scheme** • **excise concessions on aviation fuel for FIFO workers** • **Queensland government expenditure on construction and operation of the RG Tanna terminal and rail network infrastructure and other concessions in relation to coal export facilities and rail networks** • **Subsidies received over the life of the tenements for exploration costs** • **GST refunds.** **The proponent has also not indicated whether it intends to seek funding under any of the following taxpayer funded schemes in order to make its Proposed Action profitable:** • **Working with the Australian Resources Industry on the Pathway to Net Zero** • **Geoscience Australia's Building Australia's resources wealth program** • **Northern Australia Infrastructure Facility** • **Queensland's Low Emissions Investment Partnerships Program** • **Powering the Region Fund.** **The most significant indirect costs will arise from the economic impacts of the Proposed Action's contribution to the accretion of greenhouse gas emissions in the atmosphere. Scope 1, 2 and 3 emissions total about 26 MtCO2e, according to Appendix GG of the PER. Utilising a realistic social cost of carbon of $US185/tonne ($AU~275/tonne), this equates to $AU7.15 billion.25 Granted, this relates to the global economy but impacts on the global economy have big implications for Australians, including upward pressure on cost of living (particularly through food scarcity, insurance costs and global transport disruptions, all of which are exacerbated by climate change), and the need to support populations that are displaced due to climate change.** **Other indirect costs relate to the ongoing impacts on water resources if, as is highly likely, the site cannot be successfully rehabilitated, as well as the need to support workers and families of workers who may be killed, injured or infected as a result of their work.**	

		Tax and royalty payments are mentioned as a benefit, but are not quantified. Given that royalty payments are linked to profitability, and profitability of metallurgical coal mining is at risk from contracting global demand, royalty contributions may not be very large. The Social Impact Assessment (SIA) was submitted and accepted by the State Government as part of the Queensland State Environmental Authority approvals process for Vulcan South. The PER guideline for Vulcan South specified that economic and social matters were to be analysed as part of the PER process, and this SIA, along with further commentary in the PER was included to address that requirement. No further information was requested by DCCEEW concerning the SIA. It provides an appropriate overview of the likely social and economic impacts of the project and their likely reach. It should be noted that the project is a small-scale, short-term mining operation to be implemented in a very well-established mining community. The social infrastructure required to support he additional opportunities and costs associated with the project are well-established. Vitrinite has engaged heavily with the local council on matters such as housing and infrastructure and the company is a major sponsor and contributor to local sporting and community groups. Vitrinite has completed a Greenhouse Gas Emissions Assessment Report for the Project (Appendix GG of the PER) which includes discussion of mitigation and abatement opportunities to reduce greenhouse gas emissions and therefore contributions to climate change related impacts. Vitrinite has further developed these mitigation opportunities and has prepared a Greenhouse Gas Abatement Plan, specifically for the Project. This is provided in Appendix HH of the Final PER. The GHG Abatement Plan has been approved and its implementation is conditioned in the project Environmental Authority issued by the State Government. **<u>Stranded asset risk is high, with severe social and socio-economic consequences</u>** Due to the relatively short duration of the proposed action, it is considered unlikely that demand for the product will fluctuate to the extent that the project would become unviable before the project is due for completion. Further economic justification is provided below in the response to 'Coal demand is already dropping'; in summary, there remains high market demand for the project's coal products, a situation which is not expected to change for the following 20 years at least. Also see response below under 'coal demand is already dropping'. **<u>Coal demand is already dropping</u>** The Vulcan South coal product is a Premium Low Volatile (PLV) Hard Coking Coal (HCC) for which there is high market demand. Wood Mackenzie (2024), in its reporting on Vitrinite coal products has provided the following commentary on demand for this product. The global seaborne metallurgical coal market is expected to increase gradually from 299 Mt in 2022 to 373 Mt by 2050, growing at a rate of 0.8% p.a. The global seaborne HCC market is expected to increase by 0.7% p.a. from 199 Mtpa in 2022 to 243 Mtpa by 2050. India and south-east Asia (notably Indonesia and Vietnam) are expected to support HCC imports over the forecast with ongoing build out of blast-furnace steel and coke making capacity and limited options for substitution. China remains an anchor to the market, with imports expected to remain firm owing to a requirement to continue imports of high-quality coking coal for blending as domestic high-quality reserves are anticipated to fall over time. In the longer term, growth in steelmaking capacity and output, largely in India and south-east Asia, as well as the need for new projects, is expected to place increase pressure on supply through to at least 2050. Substitutions to traditional steel making processes are expected to increase over the coming decades however are not anticipated to have a significant impact on demand for HCC through to 2050. Vitrinite has supreme confidence in the demand for the Vulcan South product, particularly over the shorter life of the project (less than a decade). **<u>The global community wants action on decarbonisation</u>** See above response above for the justification for the project as a metallurgical coal mine. Also see Vitrinite commitments to GHG abatement measures within Appendix HH. **<u>Proponent's environmental compliance history</u>**	

		Vitrinite acknowledges these compliance matters. Whist they are relatively minor in nature, Vitrinite takes them seriously. Vitrinite has continued to work with the relevant department to resolve the matters and to put measures in place to mitigate the risk of reoccurrence. Vitrinite remains in compliance with the conditions of those compliance notices. The bulk sampling was authorised pursuant to special conditions attached to EPC 1233. The approval process for State government authorisation of those activities, under the EP Act, included a significant residual impact assessment that determined a significant residual impact would not occur. This assessment was accepted by the State government. The sampling area and associated infrastructure layout was planned specifically to avoid areas of high value. The EPBC Act referral as published for the Vulcan South project confirms: Small scale resource definition and sampling activities will continue within the project area while the Vulcan South Mine assessment and approval process proceeds. These activities will continue in accordance with associated State government approvals. These activities are not part of the action and are not of a scale that require separate referral.	