

Peer Review Summary Comments on MNES viability

The following table provides a summary of peer reviewer species matter experts' assessment of the cumulative impact of the Proposal to the viability of the five relevant MNES considered in the CIA.

Species matter expert	MNES	Peer reviewer assessment of viability
Rick Southgate	Greater Bilby	<p>The cumulative impact likely to occur with the expansion of mining has been difficult to access based on the assessment conducted. This will remain the case until a more robust indication of distribution and extent of habitat suitability can be defined and the description of the threat layer is better resolved.</p> <p>It is likely the direct cumulative impact of BHPBIO mining operations on the viability of the bilby population in the Pilbara bioregion from pits and OSA, infrastructure, railway will be minor relative to the indirect cumulative impacts. The major impacts will likely occur indirectly through cattle management on the pastoral leases held by BHPBIO, the development of infrastructure to support pastoralism (more development of bores, roads etc directly possibly supported by BHPBIO or indirectly from royalties to regions) and altered fire regimes resulting from mining operations and pastoralism. Expansion of this pattern will likely cause greater habitat degradation and increase overall predation pressure. Agriculture that may develop from dewatering and associated weed spread may also play a part. Weeds spread much further away from roads than 500 m (as suggested by the modelling assumptions), as occurs particularly down drainage lines.</p> <p style="text-align: right;">(Southgate, R., pers. comm., 2015)</p>
Eddie van Etten	Hamersley Lepidium	<p>The most important question here is: is the threat of extinction greater with planned future mining? Although there is a likely loss of many thousands of hectares in the most preferred habitat of <i>Lepidium catapycnon</i> with future mining, this loss is small relative to the widespread distribution of the species and the current impacts of mining. It is unlikely the predicted further ~4% reduction in 'core' (most likely) habitat will further threaten the species given there will still likely be many large and widespread populations throughout the Pilbara outside future disturbance footprints which will remain viable over the long-term.</p> <p>The predicted impacts on the species are mostly due to clearing for mining and they do not factor in the potential for successful restoration of the species in mined areas. Although more research on the seed ecology/biology of the species is warranted, it is not an unreal expectation for the species to be successfully restored in mine rehabilitation areas, especially if the species is given high priority in terms of direct seeding and/or planting of tubestock.</p> <p style="text-align: right;">(van Etten, E., pers. comm., 2015)</p>

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Mike Bamford	Northern Quoll	<p>For the Northern Quoll, the greatest risk to viability remains the Cane Toad, with feral predators and fire also of concern. Grazing and weeds may have an effect. Cumulative impacts associated with BHP operations are thought unlikely to have the landscape scale impacts that drive population viability. Identifying interactions between BHP operations and the key threatening processes is important.</p> <p style="text-align: right;">(Bamford, M., pers. comm., 2015)</p>
Kyle Armstrong	Pilbara Leaf-nosed Bat	<p>To answer this question, I feel it is informative to consider two separate things:</p> <ol style="list-style-type: none"> 1. A simple compilation of known roosts with approximate colony size estimates throughout the region, with the proportion of colonies and rough estimate of specified for leases held by BHP—as a summary of the current potential for existing BHPBIO operations to impact the species. Given that information on confirmed or suspected roosts was not specified in the modelling approach, this is not explicitly and clearly identifiable in the “existing impact” component of the CIA modelling; 2. The CIA model as it is presented, with particular attention paid to the proportion of ironstone country that will be impacted by BHPBIO operations. <p>Given what I currently know of the existing level of representation of the PLNB in current BHPBIO operating leases / project areas, the proportional representation of both the number of confirmed or suspected roosts and numbers, is relatively low. The largest identified colonies are either in deteriorating old gold and copper mines, or a very small number of caves in ironstone and metamorphosed sandstones outside current mining interests. However, some important occurrences are known (e.g. around Yarrie in particular), and these are relevant to consider in the context of threats to all other known or suspected roosts. If the other roosts are secure, the priority for protecting those caves around Yarrie would not be as high.</p> <p>With regard to the second point, there is still much potential for new roosts in ironstone country to be found, as much of it is unexplored for the PLNB. We know that most caves in the Pilbara are too shallow to support colonies of the PLNB, but there is still the possibility of additional but undiscovered large colonies in rare deeper structures. If these are within zones of mining impact, they will hopefully be identified as part of the derived proposal process.</p> <p>Thus, viability of the MNES attributable to the cumulative BHPBIO operations probably represents a small proportion of the overall threat allocation for this taxon in the Pilbara, but significant local losses contributing to an overall level of decline sufficient for IUCN threatened status listing could still occur without exploratory survey, mitigation and management.</p> <p style="text-align: right;">(Armstrong, K., pers. comm., 2015)</p>

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Mark Fitzgerald	Pilbara Olive Python	<p>There remains substantial and probably unavoidable uncertainty concerning the “viability” of Pilbara Olive Python attributable to BHP Billiton Iron Ore operations, particularly given the time frame under consideration.</p> <p>Given the observed persistence of both Pilbara Olive Python and the nominate species (Olive Python <i>Liasis olivaceus</i>) in post-mining and other anthropogenically altered landscapes, e.g. quarries (pers. obs.), the circumstances of mine closure management and attributes of post-mining landscapes are considered to be important factors affecting viability of the Pilbara Olive Python, yet these matters are explicitly excluded from the CIA.</p> <p>Management of particular habitat features both during and post-mining are considered likely to have important implications for the survival of individual pythons, and Pilbara Olive Python populations, and thus for the viability of the Pilbara Olive Python within the Proposal area.</p> <p>This includes the exclusion of Cane Toads from waterbodies within mining areas, retention of large slabs of rock, and concrete (for python nest sites) and recognition of the potential importance of retaining shelter site structures likely to be used by Pilbara Olive Python in mine closure plans. These can include surface water structures, scrap metal dumps, and other mine infrastructure, where practicable.</p> <p>While CSIRO estimate a high probability of persistence of the Pilbara Olive Python in the region (CSIRO 2014,,p37), it is unclear whether the impact of proliferating pit lakes was considered, and the threat from Cane Toads was in my view underestimated. Without detailed information on the demographic status of the python and more reliable assessment of impacts from climate change, predictions about viability of the species are unavoidably speculative.</p> <p>In conclusion, while persistence of the Pilbara Olive python within the Pilbara Bioregion is considered likely, the viability of the species within the BHPBIO Proposal lands will likely depend upon timely implementation of effective threat management.</p> <p style="text-align: right;">(Fitzgerald, M., pers. comm., 2015)</p>