MINERAL RESOURCES

J5 and Bungalbin East Iron Ore Proposal
Response to Submissions – Attachment 9
WA Offsets Template

J5 and Bungalbin East Iron Ore Project

Existing environment/ Impact	Mitigation			Significant Residual Impact	Offset Calculation Methodology				
	Avoid and minimise	Rehabilitation Type	Likely Rehab Success		Types	Risk	Likely offset success	Time Lag	Offset Quantification
575 ha of land clearing									
Loss of 17,346 individuals (19.7%) of the threatened *Tetratheca aphylla* subsp. *aphylla* .	Proposal footprint reduced from 780 ha to 575 ha. Impact to Tetratheca aphylla subsp. aphylla reduced by one third from 29.8% to 19.7%	Three open pits and three waste rock landforms will be created. One open pit (Bungalbin East, southern node) will be partially backfilled to the level of the eastern crest. Topsoil and subsoil will be recovered, stockpiled and spread over final surfaces, including backfill and pit floors. The objective will be to re-establish local native vegetation. The Rehabilitation and Mine Closure Plan (Appendix 12-D) identifies four rehabilitation landscape units and the vegetation communities proposed for each. There will be special measures for the re-establishment of *Tetratheca aphylla* subsp. *aphylla* .	Can the environmental values be rehabilitated/Evidence? Success has been achieved elsewhere with a similar species (*Tetratheca paynterae* subsp. *paynterae* at Windarling) but replacement of almost 17,346 plants is not feasible. Operator experience in undertaking rehabilitation? MRL commissioned preliminary investigations into the propagation. Plants were successfully established from the soil seed bank and from cuttings. Time lag? Significant rehabilitation will occur at mine closure but translocations, if adopted, could be attempted earlier as part of progressive rehabilitation. Credibility of the rehabilitation proposed (evidence of demonstrated success). Challenging but feasible.	*Tetratheca aphylla* subsp. *aphylla* is a threatened species under both the *Wildlife Conservation Act 1950* and *Environment Protection and Biodiversity Conservation Act 1999* . While implementation of the Proposal will require removal of 17,346 plants, in excess of 70,575 plants will remain. Furthermore, the available information suggests propagation and re-establishment of this species in rehabilitated areas or by translocation at other sites is achievable. Nonetheless, given the current status of the species, MRL considers there will be a significant residual impact.	Research (funding for preparation and implementation of an Interim Recovery Plan)	Low	High - Interim Recovery Plans are routinely used to manage species of conservation significance. Contribution is intended to cover both preparation and implementation of the Plan. Findings of research and monitoring associated with the Plan will be applied directly in rehabilitated areas.	Scoping and development of the Plan with DPaW can commence immediately following project approval.	$100,000 pa for 5 years (i.e. $500,000) as a cash contribution
					Surrender of E77/842-I and other MRL exploration tenure within the MMHARCP	Low	High - The Minister for Mines has the authority to grant a section 19 reserve over the land to prevent mining act tenure being applied for. There are no other competing land uses other than conservation and recreation. The area is vacant crown land and has no pastoral lease or Native Title claim.	Can be implemented immediately following approval.	40,121 (46%) Tetratheca aphylla subsp. aphylla plants
Impacts to individual vegetation units contained within the PSRN supergroup (6 and 7) and which host taxa of conservation significance	Proposal footprint reduced from 780 ha to 575 ha. The impact to PSRN6 reduced from 37.2% to 33.2%. The impact to PSRN7 reduced from 36.3% to 22.7%. The impact to PSRN23 reduced from 13.3% to 1.1% and as such is no longer considered significant.		Rehabilitation is unlikely to be successful in replicating the vegetation units at that level of detail (i.e. the precise species mix of the vegetation types).	The significant residual impact to PSRN6 is 20.0 Ha (33.2%) and PSRN7 10.8 Ha (22.7%).					22.2 Ha (36.9%) of PSRN6 vegetation 5.5 Ha (11.6%) of PSRN7 vegetation
Removal of up to 351.4 ha (6.3 %) of the Helena and Aurora Range vegetation complexes (banded ironstone formation) PEC within the Mt Manning and Helena-Aurora Range Conservation Park (MMHARCP) through land clearing and potential indirect impacts.	The majority of impacts are associated with clearing for access to the iron ore resource with limited potential for avoidance. Impact also includes potential indirect impacts which can be managed and minimised. Mineral Resources Limited (MRL) would expect overall impact to be less than that assessed. The following procedures will be used to minimise impacts associated with land clearing: ・MRL-EN-PRO-0004 Land Clearing Procedure ・MRL-EN-PRO-0005 Site Disturbance Permit Procedure ・MRL-EN-PRO-0007 Weed ・Hygiene and Control MRL-EN-PRO-0012 Dust Management Procedure. A monitoring program will be implemented to ensure unexpected impacts are detected quickly and corrective actions taken.		Can the environmental values be rehabilitated/Evidence? Other mining operations in banded iron formations have had some success with rehabilitation (see Section 12.2.5 of PER). Operator experience in undertaking rehabilitation? Limited direct experience by the proponent. What is the type of vegetation being rehabilitated? Re-establishment of native vegetation is the objective. Components of revegetation will depend on the rehabilitation landscape unit (see Table 8-1 of the Rehabilitation and Mine Closure Plan) Time lag? Rehabilitation of waste rock landforms will occur progressively while other rehabilitation will occur at closure. Proven successful establishment of revegetation is expected to take not less than 5 years. Credibility of the rehabilitation proposed (evidence of demonstrated success). Challenging but evidence from elsewhere (Section 12.2.5 of PER) suggests it is achievable.	Almost all disturbed surfaces will be rehabilitated. Walls of open pit voids will not be rehabilitated. Aim is to reintroduce local vegetation and, to the extent possible, restore the conservation values. However, as some local landforms will be permanently altered and some species may not be readily established from sown seed or the soil seed bank, complete re-establishment of all vegetation components is not feasible. In summary, the potential for replacement of conservation values through rehabilitation is uncertain and a net loss of high value vegetation will occur.					2807 Ha (50%) of the HAR PEC.
					Off-site rehabilitation (rehabilitation of historical mineral exploration disturbance within the Helena-Aurora Range).	Low	High - techniques required are basic, comprising minor earthworks, weed control, and basic rehabilitation.	A program can be developed and works conducted immediately following project commencement.	Estimated cost of $250,000 based on MRL's experience in rehabilitation exploration disturbance elsewhere throughout the state.