Koolyanobbing Iron Ore Expansion

Portman Iron Ore Ltd

Report and recommendations
of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 1082
December 2002

ISBN. 0 7307 6720 5
ISSN. 1030 - 0120
Assessment No. 1374

Summary and recommendations

Portman Iron Ore Limited proposes to expand the existing Koolyanobbing iron ore mine by commencing new mining at Windarling Range and Mt Jackson and linking the new minesites to Koolyanobbing by a haul road or railway. This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal.

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

Relevant environmental factors

The EPA decided that the following environmental factors relevant to the proposal required detailed evaluation in the report:

(a) Conservation of biodiversity; and

(b) Conservation of landscape and geo-heritage values.

There were a number of other factors which were relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 of this report provides sufficient evaluation.

Conclusion

The EPA has considered the proposal by Portman Iron Ore Limited to expand the existing Koolyanobbing iron ore mine by commencing new mining at Windarling Range and Mt Jackson and linking the new minesites to Koolyanobbing by a haul road or railway.

The EPA is aware of the outstanding conservation significance of the ranges in this area which, because they have been isolated over geological time, are bio-geographical "islands" with distinct and often unique species and communities of plants.

The nature conservation values of these ranges are also recognized by CALM. Both Windarling Range and Mt Jackson are included in CALM's (1994) recommended western extension of the Mt Manning Nature Reserve.

In assessing the proposal the EPA became aware of the issue of landscape and geo-heritage values but considered biodiversity to be the critical issue.

The EPA has a practice of consulting with proponents on their proposals, and this is particularly important when elements of the environment of highest environmental significance are likely to be impacted by a proposal.

The high quality flora survey work undertaken by Portman Iron Ore Limited has provided a wealth of information about the Declared Rare Flora species *Tetratheca paynterae* in the Windarling Range as well as the vegetation communities. Both *Tetratheca paynterae* and the vegetation communities are unique to that range.

The EPA is aware that consideration of impacts to Declared Rare Flora is not only a responsibility of the EPA in its assessment process, but also a requirement for consideration by the Minister under the *Wildlife Conservation Act 1950.*

The presence of the Declared Rare Flora *Tetratheca paynterae* is also a trigger for assessment under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.* The Commonwealth has determined that the proposal is a "controlled action" and has accredited the State environmental assessment process. However, the Commonwealth will determine its position on the proposal as a separate decision, taking into account the information provided in this report.

The EPA has been informed by CALM that if mining were to proceed in the Windarling Range as proposed, the impacts on the Declared Rare Flora would change its conservation status from "endangered" to "critically endangered" under the internationally recognized criteria established by the IUCN. This conclusion applies even in the case of the proponent's proposed second option which reduces the impact on *Tetratheca paynterae* from 89% to 60%. In addition, CALM has advised that the impact of the proposal on the unique vegetation communities of the Windarling Range, even under the proponent's second option, would result in one vegetation community becoming "critically endangered" and two others becoming "endangered" under the IUCN criteria.

The EPA could not responsibly recommend to the Minister that a proposal be judged to be environmentally acceptable where that proposal would remove plants of a species to an extent that the species would become "critically endangered". Accordingly, the EPA is of the view that there should be no mining at Windarling Range unless, through an appropriate and comprehensive research program, it can be demonstrated that other measures can be adopted to ensure protection of *Tetratheca paynterae* and the vegetation communities in the wild. The EPA offers a word of caution that, even with an extensive research program, it may not be possible to achieve a successful outcome.

The EPA commends Portman Iron Ore Limited for its professional approach in relation to the environmental significance of the Windarling Range. The EPA is of the view that mining, as proposed at Mt Jackson, could take place provided conditions were introduced pursuant to the *Environmental Protection Act 1986* to ensure 'best practice' in environmental outcomes, including protecting biodiversity values.

If, following the determination by the Minister for the Environment and Heritage in relation to the current proposal, there is a request for the EPA to undertake an assessment of a revised proposal which excludes the Windarling Range, the EPA would ensure that this was achieved in an expeditious manner, within the requirements of the *Environmental Protection Act 1986* and the EPA's Administrative Procedures.

Other Advice

During the course of the EPA assessment, information was provided about the importance of the mining operation to the activities of the Port of Esperance and the region. The EPA did not consider this information as part of its assessment, but it is appropriate that the EPA make the Minister aware that there are matters outside the scope of this assessment which may be relevant to the Government's decision-making process in relation to the proposal by Portman Iron Ore Limited.

Recommendations

The EPA submits the following recommendations to the Minister for the Environment and Heritage:

1. That the Minister notes that this assessment report is about the proposal by Portman Iron Ore Limited to expand the existing Koolyanobbing iron ore mine by commencing new mining at Windarling Range and Mt Jackson and linking the new minesites to Koolyanobbing by a haul road or railway.
2. That the Minister considers the report on the relevant environmental factors of the conservation of biodiversity, and conservation of landscape and geo-heritage values, as set out in Section 3.
3. That the Minister notes that the proposal being assessed is to establish mines at both Mt Jackson and Windarling Range and that whilst the mining impacts on biodiversity could be managed to meet the EPA's objectives at Mt Jackson they could not meet the EPA's objectives at Windarling Range.
4. That the Minister notes that the Windarling Range, which is an important part of the proposal, is the habitat of the Declared Rare Flora species *Tetratheca paynterae* which is classified as "endangered" under the internationally recognized criteria established by IUCN and that, if implemented, the proposal would have impacts at Windarling Range which would change the status of *Tetratheca paynterae* to "critically endangered".
5. That the Minister notes that the DRF species *Tetratheca paynterae* is only found at Windarling Range.
6. That the Minister notes that there are a number of vegetation communities which are unique to Windarling Range, and that these communities would also be substantially impacted by the proposed mining: one community would be classified "critically endangered" and two communities would be classified "endangered" under the criteria established by the IUCN.
7. That the Minister notes that the proponent has engaged King's Park and the University of Western Australia to undertake studies on *Tetratheca paynterae*

with a view to demonstrating that conservation of the species in the wild could be achieved, with the ultimate objective of re-establishing the species in suitable habitats after mining. However, the EPA notes that the research would need to be extended to include the unique vegetation communities and offers a word of caution that, even with an extensive research program, it may not be possible to achieve a successful outcome. The EPA considers that any research program on *Tetratheca paynterae* or the vegetation communities should take into account the advice of CALM and include CALM's assessment of the outcomes.

8. That the Minister notes that the EPA has concluded that, based upon the impact of the proposal on the Declared Rare Flora *Tetratheca paynterae* and the unique vegetation communities in the Windarling Range, mining should not be undertaken in the Range unless, through an appropriate and comprehensive research program, it can be demonstrated to the satisfaction of the Minister on advice from CALM that other measures can be adopted to ensure conservation of *Tetratheca paynterae* and the vegetation communities in the wild.

9. That the Minister notes that the EPA is of the view that mining could take place at Mt Jackson provided conditions were introduced pursuant to the *Environmental Protection Act 1986* to ensure 'best practice' in environmental outcomes, including protecting biodiversity values.

10. That the Minister notes that the EPA has not included in this Bulletin "conditions and procedures to which the proposal should be subject, if implemented" because the EPA holds the view that the proposal as described should not be implemented.

11. That the Minister notes the EPA's other advice presented above and in Section 4.

12. That the Minister notes that the EPA commends Portman Iron Ore Limited for its professional approach in relation to the environmental significance of the Windarling Range.

13. That the Minister notes that if, following the determination by the Minister for the Environment and Heritage in relation to the current proposal, there is a request for the EPA to undertake an assessment of a revised proposal which excludes the Windarling Range, the EPA would ensure that this was achieved in an expeditious manner, within the requirements of the *Environmental Protection Act 1986* and the EPA's Administrative Procedures.

14. Taking into account the points above, the EPA recommends that the Minister not issue a statement that the proposal as described may be implemented.

Contents

Tables

Figures

Appendices

1. Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal by Portman Iron Ore Limited, to expand the Koolyanobbing mine by mining at Windarling and Mt Jackson and linking the new minesites to Koolyanobbing by a haul road / railway.

Further details of the proposal are presented in Section 2 of this report. Section 3 discusses the environmental factors relevant to the proposal. Section 4 provides Other Advice by the EPA, Section 5 presents the EPA's conclusions and Section 6, the EPA's Recommendations.

Appendix 4 contains a summary of submissions and the proponent's response to submissions and is included as a matter of information only and does not form part of the EPA's report and recommendations. Issues arising from this process and which have been taken into account by the EPA appear in the report itself.

2. The proposal

This proposal is for the expansion of the Koolyanobbing Iron Ore operation with the construction and development of new iron ore mines based on seven deposits in two areas to the north of Koolyanobbing. The location is shown in Figure 1. Mining of these deposits would increase the annual production rate from 3.5 million tonnes per annum to 8 million tonnes per annum over the next three to five years. The iron ore would be transported then crushed and screened at Koolyanobbing and loaded on trains for transport to Esperance for shipping. The transport phase from Koolyanobbing to Esperance is not included in the proposal being assessed.

The expansion project has two main components (Figures 2 – 4):

- Open cut mining of at least seven new pits (deposits J2 & J3 at Mt Jackson and W1-W5 at Windarling) and construction of associated waste rock dumps and infrastructure.
- Construction of a haul road (with possible subsequent upgrade to a railway) consisting of a 114 kilometre link between Koolyanobbing and the proposed mine at Windarling with an additional 11 kilometre spur line connecting Mt Jackson.

Ore and waste rock would be mined by conventional open cut methods of blasting and excavation, with material being loaded onto trucks and transported to stockpile areas.

In order to create an iron ore product that is suitable to be sold to Asian markets it would be necessary to blend ores from the various deposits. This means that deposits from each location would be mined concurrently and in quantities dependent on blending requirements.

Facilities proposed at Windarling and Mt Jackson (Figures 3 and 4) include:

- ore stockpiles at each mine area;
- load-out facilities for transport of ore to Koolyanobbing for further processing; and
- a heavy vehicle maintenance workshop and associated infrastructure at a central location.

The expansion would also require additional and/or enhanced facilities at the existing Koolyanobbing operation. These include expansion of existing:

- crushing, screening and stockpiling facilities;
- mine offices; and
- train-loading facilities.

The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the proposal is provided in Section 3 of the Koolyanobbing Iron Ore Expansion PER (Portman Limited, 2002) .

Table 1: Summary of key proposal characteristics[1]

Component	Element	Description
Mining Operations	Locations	Mt Jackson and Windarling
	Estimated mine pit area	Mt Jackson 18.3 ha, Windarling 207 ha
	Ore type	Hematite-geothite
	Mining rate	Staged expansion to 8 Mtpa over 3 to 5 years
	Estimated total production	80 Mt
	Proposed operation commencement	2003
	Anticipated decommissioning	2012
	Proposed waste dump no.( ) and area	Mt Jackson (2) - 41 ha; Windarling (2) - 219 ha
	Ore stockpile areas	Mt Jackson – 15 ha; Windarling – 34 ha
	Proportion of waste to be backfilled	Nil
	Stripping ratio (waste:ore)	4:1
	Area of roads	Mt Jackson – 18.2 ha Windarling – 15.8 ha
	Estimated total area of disturbance	Mt Jackson – 93 ha; Windarling 480 ha
Processing requirements	Processing at Mt Jackson and Windarling	Primary crushing at both sites – possibly single mobile unit covering the two sites.
Changes to existing facilities at Koolyanobbing	Extension of general facilities	Mine offices
	Expansion of processing facilities	Secondary crushing, screening, stockpiling and train loading.
Transport corridor	Length	114 km main line – Koolyanobbing to Windarling 11 km spur line to Mt Jackson
	Estimated area of disturbance	500 ha approx.
	Initial haul road	30 300 tonne road trains per day
	Train movements - proposed	4 per day
General	Workforce (rail and mine)	Construction – 200; Operation - 180
	Project duration	Operation 10 years Construction 6 months
	Workforce accommodation	Accommodation village for 80+ people Area of disturbance 25 ha
	Infrastructure	Power source diesel generator Water source – potable water trucked or piped from Koolyanobbing
	Water supply requirements	Transport corridor construction – 3500 kL/day Minesite construction – 2000 kL/day Operation – Potable and domestic supplies - Bore water for dust suppression

Since release of the PER, a number of modifications to the proposal have been made by the proponent. These include:

- the reduction of the mine size at Windarling to reduce the impact on the Declared Rare Flora *Tetratheca paynterae* from 89% to 60%, as per the proponent's second option alluded to in the PER;
- replacement of the railway line between the proposed minesites and Koolyanobbing with a haul road (the railway remains a future option).

The proponent has provided an additional document to better define the second mining option and its impacts. This is included within this report as Appendix 5.

[1] Information in this table is based on the proponent's second option.

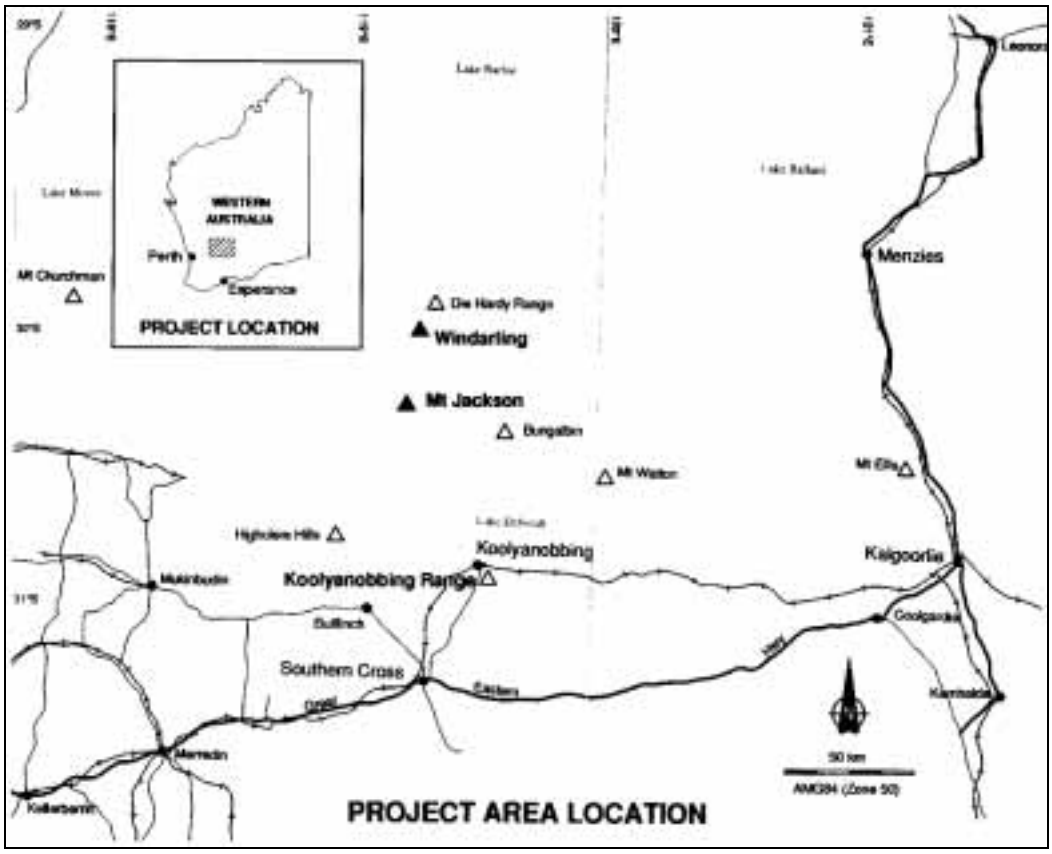

Figure 1: Location of Proposal

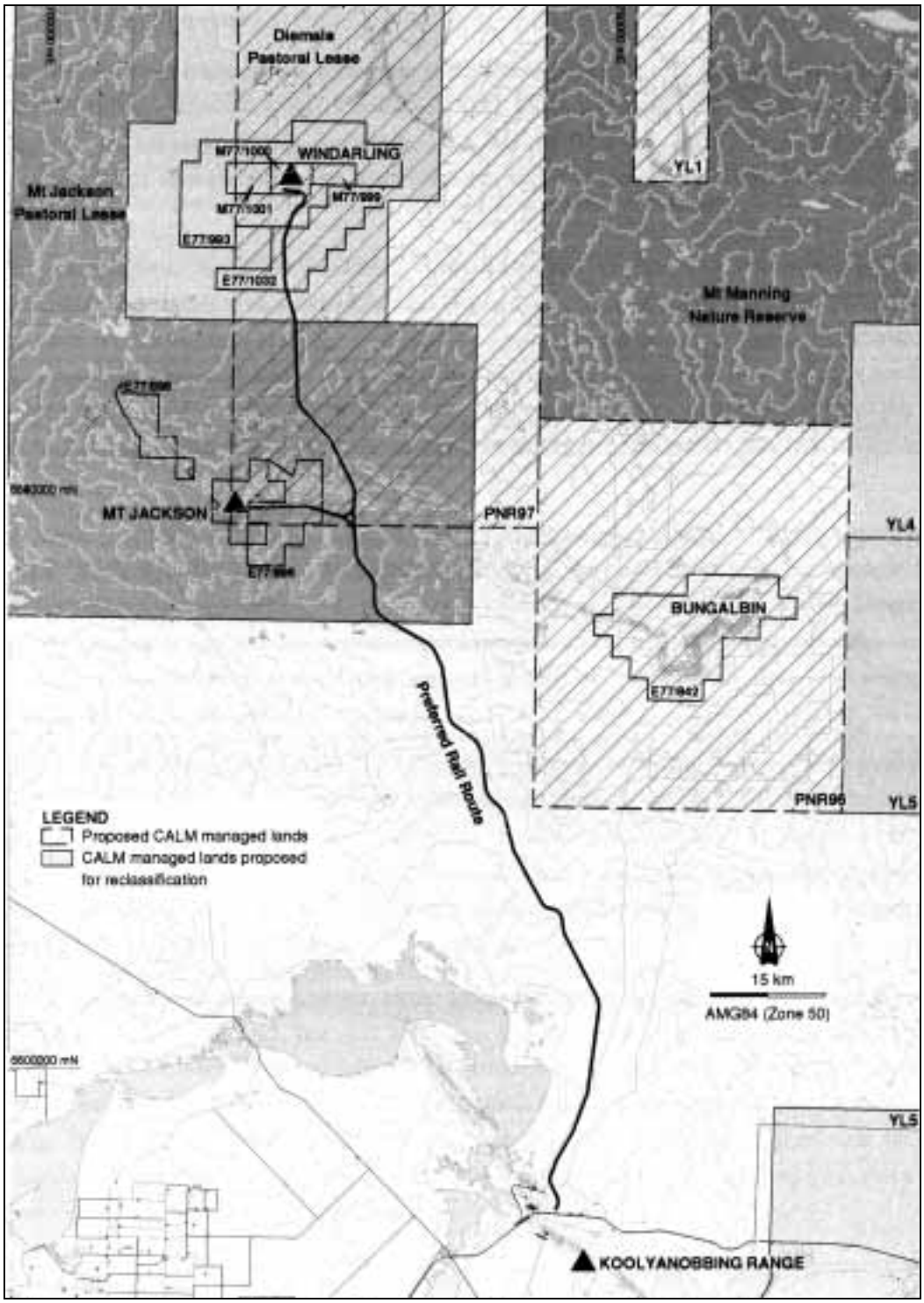

Figure 2: Location of Proposal Elements and land Tenure[2]

[2] Although the transportation corridor is shown as a rail route here, the proposal is to initially establish a haul road, with the possibility of construction of a railway at a later stage.

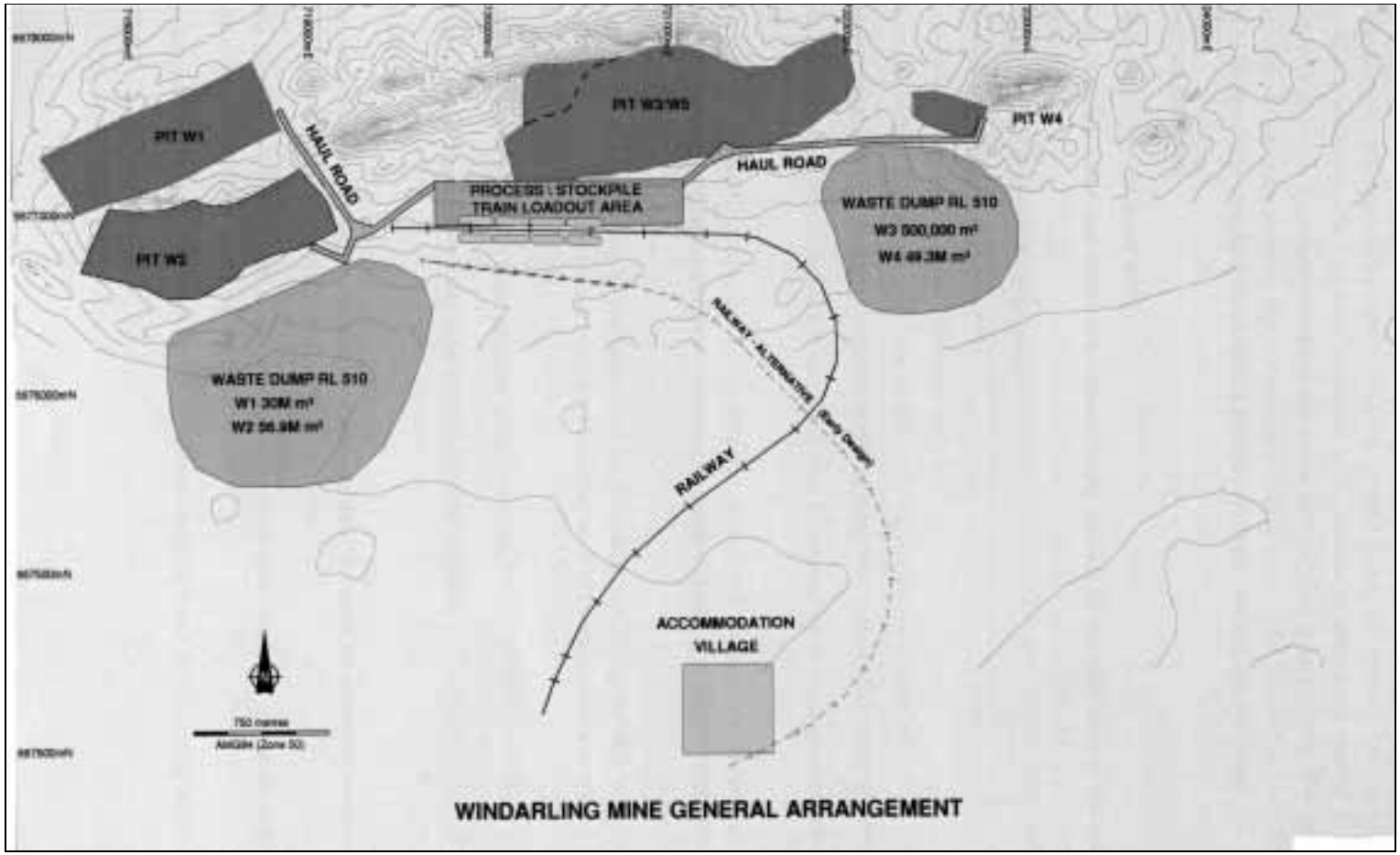

Figure 3: Windaring Mine General Arrangement[3]

[3] Dotted lines in Pit W3/W5 indicate the reduced size of the pit for the alternate option which reduces the impact on *T. paynterae.*

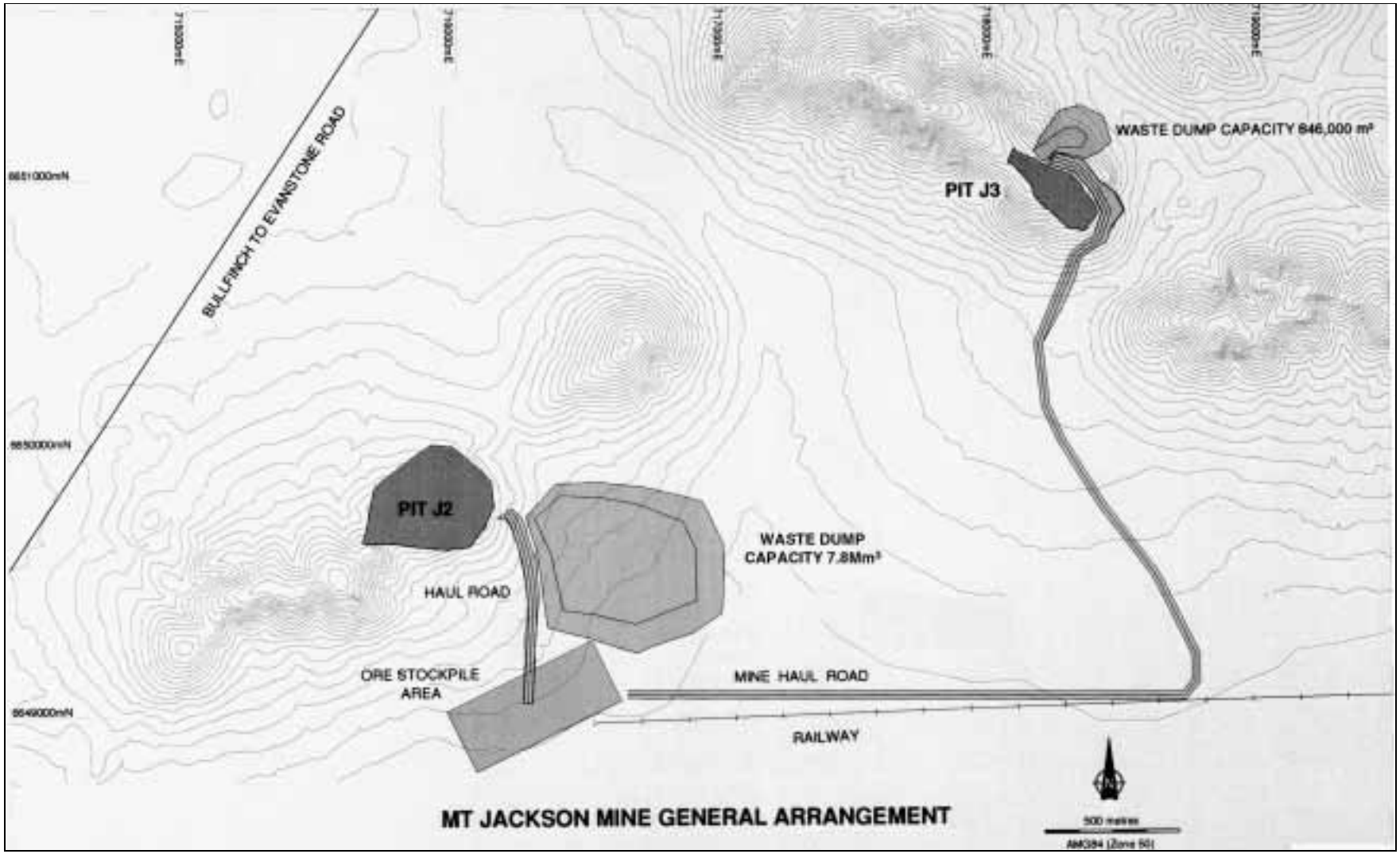

Figure 4: ***Mt Jackson Mine General Arrangement***

3. Relevant environmental factors

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal and the conditions and procedures, if any, to which the proposal should be subject. In addition, the EPA may make recommendations as it sees fit.

The identification process for the relevant factors selected for detailed evaluation in this report is summarised in Appendix 3. A number of these factors, such as noise and dust emissions, are very relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

It is the EPA's opinion that the following environmental factors relevant to the proposal require detailed evaluation in this report:

(a) Conservation of biological diversity; and

(b) Conservation of landscape values and geo-heritage values.

The above relevant factors were identified from the EPA's consideration and review of all environmental factors generated from the PER document and the submissions received, in conjunction with the proposal characteristics.

Details on the relevant environmental factors and their assessment are contained in Sections 3.1 - 3.2. The description of each factor shows why it is relevant to the proposal and how it will be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

3.1 Conservation of biological diversity

Description

The majority of the land associated with this proposal has been recommended by the Department of Conservation and Land Management (CALM) for inclusion in the Mt Manning Nature Reserve since 1994 (CALM, 1994) (Figure 2).

The proposal would require clearing of 93 hectares (ha) of native bush at Mt Jackson and 490 hectares at Windarling. This would impact on both Declared Rare Flora (DRF) and geographically restricted vegetation communities. The transport corridor would require clearing of approximately 500 ha.

The proponent's preferred option, as described in detail in the PER, would have resulted in removal of 89% (2536 individuals) of the Declared Rare Flora (DRF) species *Tetratheca paynterae*, the majority being from the W3 pit area at Windarling. This species is confined to the weathered ironstone ridges that are being targeted for mining by the proposal.

After considering the submissions made in response to the PER, the proponent decided to progress instead the second option alluded to in the PER, in order to reduce the impact on *Tetratheca paynterae*. This would be accomplished by reduction of the mining footprint at Windarling.

The second option would result in removal of 60% of the *Tetratheca paynterae* population, leaving intact 1060 of the original 2852 individual plants. This represents a 50% loss of the estimated 4 hectares (ha) containing the *Tetratheca paynterae* population.

Other species of conservation significance are *Ricinocarpus brevis* (Priority 1) and *Jacksonia jackson* (Priority 2). The second option would result in 28% (2240 individuals) removal of *R. brevis* at Windarling and 7% of the total population of *J. jackson* in the Jackson Range.

There are a number of mixed shrubland communities that occur on the banded ironstone outcrops and slopes at Windarling and Mt Jackson that are considered restricted. Although not currently listed formally as Threatened Ecological Communities (TECs), recent vegetation surveys (Gibson and Lyons, 1997a,b,c: Gibson et al, 1997; Mattiske Consulting, 2001c) have highlighted their significance. Vegetation communities on the uplands and ridges of the Windarling and Mt Jackson areas have been found to be distinct from those on other ranges in the project area and the region generally (Portman, 2002). These vegetation communities (designated S1 to S9) are described on pp77 - 81 of the PER document.

The second option would have the following impacts on these significant banded ironstone shrublands:

Windarling

- S4 - 45% loss, 20.2 ha remaining;
- S6 - 70% loss, 2.9 ha remaining;
- S9 – 40% loss, 12 ha remaining

Mt Jackson

- S1 – 2% loss, 26.4 ha remaining
- S3 – 6% loss, 4.3 ha remaining
- S5 – 5% loss, 3.2 ha remaining

Clearing specifications for the transportation corridor and associated borrow pits (used for construction purposes) had not been clarified by the proponent at the time of release of this report. No Declared Rare Flora were recorded along the transportation corridor. Three priority species were recorded: *Lepidium genistoides* (P2), *Sowerbaea multicaulis* (P4) and *Davesia purpurascens* (P4) (Portman, 2002).

Submissions

Declared Rare Flora

The CALM submission stated that removal of 89% of the DRF species *Tetratheca paynterae*, as per the proponent's preferred option, poses a serious threat of extinction of this species and is unacceptable. The proposal would result in the species being re-ranked as "critically endangered" under IUCN criteria[4].

Environment Australia expressed concern about the proposed management of *Tetratheca paynterae.* Successful translocation, with proven long term survival of *Tetratheca paynterae*, was seen as being essential prior to destruction of the source population. It was suggested that the required research could take 5-6 years or more.

Similarly, public submissions generally focused on loss of DRF and rejected the notion of a staged approach to the mining proposal in order to allow concurrent research into survival and rehabilitation of *Tetratheca paynterae*. A concern was that once the capital investment for the proposal had been made and the mine was operating, it would be unlikely that the proponent would be forced to abandon the mine if the research showed that the species could not be propagated/translocated for long term survival.

Vegetation Communities

A submission from CALM pointed out that the area has proven, significant conservation values which were not well explained in the PER. The area has been identified in a number of documents for inclusion in the conservation reserve system because of its rich flora and fauna diversity.

The shrubland communities of each of the ironstone ridges are unique to each individual range. They are considered by CALM to be unique at a national level.

CALM advised that, prior to preparation of the PER, only limited information was available and consequently none of the plant communities are officially listed. However, based on the additional information from the PER, if the proposal were to proceed, the communities S4, S6 and S9 would fulfil the criteria for listing as Critically Endangered and S2 as Endangered Threatened Ecological Communities[5].

[4] All submissions were based on the proponent's preferred option. CALM has since advised that the proponent's second option would also result in *T. paynterae* becoming "critically endangered" under the IUCN system. The IUCN categories were developed by the International Union for Conservation of Nature and have become widely used internationally by both governmental and non-governmental organisations. The categories and criteria are intended to be an easily and widely understood system for classifying species at high risk of global extinction.

[5] CALM's submission was based on the proponent's preferred option. CALM has since advised that, if the second option were to proceed, the S6 community would fulfil the criteria for listing as "critically endangered" and the S4 and S9 communities would fulfil the criteria for listing as "endangered".

CALM further submitted that any approvals for this project would need to include conjunctional progression of secure reserves with necessary management areas and excisions for mining, if required, so that the majority of the area becomes a nature reserve.

Public submissions made similar points to those of CALM (above) and emphasised the high degree of local endemism (uniqueness) of vegetation communities. The loss of 30-78% of significant vegetation communities was seen as unacceptable. There was a call for CALM to proceed with its longstanding proposals for nature reserves in the proposed mining areas. In the case of the proposal proceeding, a substantial bond was called for because the duration of the proposal would be too short to completely demonstrate the success or otherwise of rehabilitation of such factors as vegetation structure and flora and fauna biodiversity. Ongoing weed control was seen as an issue.

Assessment

The areas considered for assessment of this factor are the banded ironstone ridges and slopes of the Windarling and Jackson ranges within the context of the wider Koolyanobbing region.

The EPA's environmental objective for this factor is to maintain the abundance and diversity of species, and geographic distribution and productivity of vegetation communities. In particular, it is to protect Declared Rare Flora consistent with the provisions of the *Wildlife Conservation Act 1950* and, on behalf of the Commonwealth, the provisions of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth).*

In making its assessment EPA has taken into account that the proponent is currently providing support and funding for a 3 year *Tetratheca paynterae* research program undertaken collaboratively by Kings Park and the Centre for Land Rehabilitation, University of Western Australia. The research program aims to demonstrate:

- local translocation;
- regional translocation;
- rehabilitation on pit walls, ore strike face and waste dumps; and
- ex-situ preservation, tissue culture, seed stores, and establishment in botanic gardens.

Furthermore, the proponent has noted that there are other DRF species and Threatened Ecological Communities, not related to this proposal, which are in need of research and conservation programs and has offered to fund and support other conservation programs to the value of $500,000 over 5 years. This might include, where practical, purchase of land, such as at the Die Hardy Ranges, for addition to the conservation estate.

The EPA has taken into account advice from CALM, Environment Australia and the EPA Service Unit Terrestrial Ecology Section and this advice is reflected in the following paragraphs.

CALM acknowledges the significant effort that the proponent has made to minimize the conservation impact on *Tetratheca paynterae* in progressing the second option of the proposal. Notably, the population reduction due to direct impact has been reduced from 89% to 60% and a conservation package offered as an offset. Nevertheless, it remains possible that the extent of destruction and disturbance of the unique habitat for the plant species, even taking into account the revised offsets, would still drive the species into extinction. The IUCN[6] species threat classification would rise from "endangered" to "critically endangered" under *both* mining options. It is impossible to state categorically what mining impact could be sustained by *Tetratheca paynterae*. Even if there was scope to reconfigure the mining plan to eliminate less than 50% or 40% of the existing plants, survivorship of the existing plants would still be uncertain. Both proposed mining options would change the IUCN conservation status of the species from "endangered to "critically endangered".

While the concept of Net Benefit to Conservation is now being actively developed and refined in cooperation with the mining sector it is not accepted by CALM and the EPA that one species should be traded off against another as proposed in the offset package. Nor is it accepted that a species surviving *ex-situ*, but lost from the wild, is an adequate conservation outcome.

Based on the firm information available to CALM and taking into account the precautionary principle, the second mining option does not satisfy the requirement to conserve *Tetratheca paynterae* with adequate certainty. Should the proponent be able to demonstrate successful translocation and establishment of the species at suitable sites in the immediate vicinity of the proposed mine, while also further reducing direct habitat loss at Windarling, there may, however, be a prospect for this position to change at some future date. The data to demonstrate a high level of success do not, however, exist at present. The pronouncement of success for establishment of new sub-populations would need to be extended over several seasons and may be beyond the scope of the current mining proposal.

Environment Australia also expressed concern over the likely impact on *Tetratheca paynterae* and pointed out that the total population of *Tetratheca paynterae* will be impacted by the proposal, not just that proportion which is directly removed. The remainder would be exposed to a range of factors including dust, changed wind conditions, increased exposure and disturbance to habitat.[7] For this reason, based on past experience, years of research may be required before sufficient information is available to consider potential impacts of the proposal on the species. Successful translocation needs to be completed prior to the destruction of the source population. The time frame involved may be prohibitive to the proponent.

Most translocation operations suffer a high rate of failure and Environment Australia foresees many potential problems for the proponent in the event of attempting to carry out successful translocation of *Tetratheca paynterae.* It is highly likely that suitable sites for translocation will be difficult to find. While there may be some suitable

[6] The IUCN categories were developed by the International Union for Conservation of Nature and have become widely used internationally by both governmental and non-governmental organisations. The categories and criteria are intended to be an easily and widely understood system for classifying species at high risk of global extinction.

[7] In total 219 hectares will be cleared adjacent to the remaining 2 hectares of *T. paynterae* habitat.

habitat on other outcrops in the area, each hilltop has its own endemic species of *Tetratheca*. The introduction of *Tetratheca paynterae* to new sites must pose no threat to the persistence of other taxa or communities. The proposed translocation site must not already support a species of *Tetratheca* as this may lead to hybridization and/or genetic swamping of *Tetratheca paynterae* or the endemic *Tetratheca* species. The introduction may also threaten other taxa through disruption of interactions, disruption of ecosystem processes, introduction of pests and diseases, or physical disturbance during the translocation operation.

The reproductive biology and genetic diversity of *Tetratheca paynterae* are largely unknown. The proposal may directly or indirectly impact on the pollination and/or seed dispersal vectors of this species. The species could consist of anything from a small number of genetic clones to a large number of genetically distinct individuals. Until this kind of information is known, the potential impacts of the proposal on the long term survival of the remaining 40% of this species cannot be predicted.

Based on:

- the combined advice of CALM and Environment Australia;
- the absence of the required research into the long term impact of the proposal on the species; and
- the lack of demonstrated long term survival of *Tetratheca paynterae* post translocation,

the EPA advises that the impact of the proposal on *Tetratheca paynterae* is environmentally unacceptable at W3, W4, and W5 pits at Windarling.

Based on advice from CALM, impacts of the proposal on the S2, S4, S6 and S9 vegetation communities at Windarling are also of concern. These communities are generally small and restricted in area. As a consequence they are considered significant at a national level. None of these is presently known to occur in any conservation reserves, although CALM has made a series of proposals, predating the mining proposal, that the area be included in the conservation reserve system (CALM 1994). CALM has advised that, if the proponent's second mining option were to proceed, the S6 community would fulfill the criteria for listing as "Critically Endangered" and the S4 and S9 communities would fulfill the criteria for listing as "Endangered".

The EPA Service Unit Terrestrial Ecology Section has advised that it is likely that rare fauna (particularly invertebrates that have low mobility) may be associated with the banded ironstone ridges targeted by the proposal. In the geological past the ranges were once continuous, but the erosion process has separated the ridges over geological time so that they have become bio-geographical "islands". Relictual species of both flora and fauna which were confined to each of these "islands" would have separated genetically over time. While the proponent's fauna survey did not identify the presence of rare invertebrates, it remains possible that extended trapping effort might do so.

CALM's Goldfields Region Regional Management Plan 1994-2000 (CALM, 1994) recommended the extension of the Mount Manning Range Nature Reserve to include both Mt Jackson and Windarling. The justification given was the existence of important flora populations potentially threatened by degradation of their habitat.

This recommendation followed a recommendation made in a report (Henry-Hall, 1990) to the EPA Red Book Task Force in 1990. Keighery *et al* (1995) and Gibson & Lyons (1997a) later supported this recommendation. Besides recommending the extension of the Mt Manning Nature Reserve, Henry-Hall (1990) recommended upgrading the Reserve (and therefore the proposed extensions) from Class C to Class A. Currently the classification remains at Class C.

The EPA Service Unit Terrestrial Ecology Section has advised that, on the basis of the new information provided in the PER flora survey, the case for inclusion of Windarling in the Mt Manning Range Nature Reserve is now even more compelling. The new information has highlighted that *Tetratheca paynterae* and the restricted vegetation communities are indeed unique to Windarling. Furthermore, given the limited knowledge available, the existence of DRF and restricted vegetation communities associated with the ironstone ridges at Windarling is probably a good indicator of their general importance to relictual species of both flora and fauna of low mobility.

While it is true that both of the areas of the proposed mining extensions (Windarling and Mt Jackson minesites) are areas that have been recommended for inclusion in the Mt Manning Nature Reserve, the EPA has focused on Windarling as the area where it is critical to avoid disturbance and preferably to keep the area intact as a single ecological unit. This is because the actual impacts of the mining proposal will be far less at Mt Jackson where there will be no direct loss of DRF species and direct loss of restricted vegetation communities will be 2-6% in comparison to 40-70% at Windarling.

To date the proponent has not clearly defined the clearing requirements for the transport corridor and associated borrow pits, which would be used for construction purposes. However, the EPA is aware that the lowland area of the transport corridor is generally of less environmental significance than the banded ironstone ridges and their slopes. No Declared Rare Flora were recorded along the transportation corridor. Three priority species were recorded: *Lepidium genistoides* (P2), *Sowerbaea multicaulis* (P4) and *Davesia purpurascens* (P4) (Portman, 2002). The clearing of approximately 500 ha is nevertheless a substantial impact and the impacts and management would need to be clearly defined for consideration by the EPA prior to implementation.

Summary

Having particular regard to the following matters:

a) the major direct impact on the DRF species *Tetratheca paynterae*, due to mining at Windarling, which would cause the IUCN status of the species to be raised from "endangered" to "critically endangered";

b) the uncertainty as to the long term survival of the remnant population of the DRF species *Tetratheca paynterae* after implementation of the proposal;

c) the uncertainty as to the long term success of attempts to translocate *Tetratheca paynterae;*

d) the impacts of the proposal on unique vegetation communities which are found only at Windarling and are significant at a national level (the S6 community would become "critically endangered" and the S4 and S9 communities "endangered" under the IUCN species threat criteria); and

e) the earlier recommendation for Windarling and Mt Jackson to be included in the Mt Manning Range Nature Reserve,

it is the EPA's opinion that the proposal in its current form cannot meet the EPA's objective of maintaining biological diversity.

3.2 Conservation of landscape values and geo-heritage values

Description

The proposal targets the banded ironstone ridges of Mt Jackson and Windarling. These ironstone ridges are what make the region visually spectacular. There are unique landforms and these are associated with their own unique flora. The area has remained uncleared following European settlement and the majority of the area covered by the proposal has been recommended by CALM for inclusion in conservation estate as a western extension to the Mt Manning Nature Reserve (CALM, 1994).

Subsequent to the PER the proponent commissioned a supplementary landscape study (Portman, 2002b) using methodologies employed in other recent broad-scale studies undertaken in Western Australia (see Cleary *et al* 1999, CALM 1997). This study concluded that the proposal will have a moderate (regional) to high (local) impact on features of visual aesthetic significance and a moderate (regional) to high (local) impact on wilderness quality.

In an effort to put the loss of the mining areas at Windarling and Mt Jackson into a regional context, Portman carried out a survey and established a database of the geological features in the region that could be considered significant (Portman, 2002c). There are six main ranges in the Koolyanobbing region which were investigated by Portman. Within these, the survey sought to establish the abundance and distribution of rocky outcrops and monoliths and it was found that there are 161 significant outcrops in the region. Of these the proposal will remove 19.3% at Windarling and 3.7% at Mt Jackson.

The majority of the outcrops and monoliths are in the Windarling (49%) and Helena Aurora (Bungalbin) Ranges (33%). The Jackson Range comprises 9%. When compared with the other ranges of the region, the Windarling Range has its own characteristic landscape (Portman, 2002c).

Submissions

CALM has pointed out that the PER does not adequately address the impacts on tourism and recreation.

Public submissions focussed on the unique features of Windarling and the general wilderness value of the area. The geological features of Windarling Peak were considered by some to be more emotive and precious than the Pinnacles and Wave Rock and more scenically outstanding than the Valley of the Giants. It was felt that the area has wilderness value and its location in proximity to the interstate highway makes the area accessible for tourism.

The project area holds special value to those that have camped and explored in the area, some since 1978. A special appreciation for the associated Aboriginal and European history, unusual flora and fauna and the wilderness and landscape values has been acquired.

It was noted that no studies have been undertaken into the potential for ecotourism and Windarling and Mt Jackson were seen to have geo-heritage value.

Assessment

The area considered for assessment of this factor are the Windarling and Jackson Ranges within the context of the wider Koolyanobbing region.

The EPA's environmental objective for this factor is to manage and mitigate impacts to landscape values.

The EPA acknowledges that the assessment of landscape and geo-heritage values has an element of subjectivity and that, to date, there have been no studies carried out on the potential for eco-tourism in the region. This type of study is not seen as the responsibility of the proponent, and so in order to be in a position to provide advice, the EPA visited the proposal area at Windarling (W3) and Mt Jackson as well as flying over the proposal areas to experience the values first hand. Based on this visit, photographic presentations by interested parties and the proponent's supplementary landscape reports (carried out subsequent to the PER) the EPA formed the opinion that:

- the proposal will have a moderate (regional) to high (local) impact on features of visual aesthetic significance and a moderate (regional) to high (local) impact on wilderness quality;
- current use of the area for its wilderness and geo-heritage values is probably relatively low; and
- the potential of the area for future eco-tourism is unknown and value judgment varies between individuals.

Summary

Having particular regard to the following matters:

a) that opinion on the significance of the landscape and geo-heritage values of the proposal area has an element of subjectivity; and
b) that biodiversity is a significant issue at Windarling, regardless of the landscape and geo-heritage issue,

it is the EPA's opinion that, while landscape and geo-heritage values are important considerations, the overriding environmental factor is the impact on biodiversity.

4. Other Advice

During the course of the EPA assessment, information was provided about the importance of the mining operation to the activities of the Port of Esperance and the region. The EPA did not consider this information as part of its assessment, but it is appropriate that the EPA make the Minister aware that there are matters outside the scope of this assessment which may be relevant to the Government's decision-making process in relation to the proposal by Portman Iron Ore Limited.

5. Conclusions

The EPA has considered the proposal by Portman Iron Ore Limited to expand the existing Koolyanobbing iron ore mine by commencing new mining at Windarling Range and Mt Jackson and linking the new minesites to Koolyanobbing by a haul road or railway.

The EPA is aware of the outstanding conservation significance of the ranges in this area which, because they have been isolated over geological time, are bio-geographical "islands" with distinct and often unique species and communities of plants.

The nature conservation values of these ranges are also recognized by CALM. Both Windarling Range and Mt Jackson are included in CALM's (1994) recommended western extension of the Mt Manning Nature Reserve.

In assessing the proposal the EPA became aware of the issue of landscape and geo-heritage values but considered biodiversity to be the critical issue.

The EPA has a practice of consulting with proponents on their proposals, and this is particularly important when elements of the environment of highest environmental significance are likely to be impacted by a proposal.

The high quality flora survey work undertaken by Portman Iron Ore Limited has provided a wealth of information about the Declared Rare Flora species *Tetratheca paynterae* in the Windarling Range as well as the vegetation communities. Both *Tetratheca paynterae* and the vegetation communities are unique to that range.

The EPA is aware that consideration of impacts to Declared Rare Flora is not only a responsibility of the EPA in its assessment process, but also a requirement for consideration by the Minister under the *Wildlife Conservation Act 1950.*

The presence of the Declared Rare Flora *Tetratheca paynterae* is also a trigger for assessment under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.* The Commonwealth has determined that the proposal is a "controlled action" and has accredited the State environmental assessment process. However, the Commonwealth will determine its position on the proposal as a separate decision, taking into account the information provided in this report.

The EPA has been informed by CALM that if mining were to proceed in the Windarling Range as proposed, the impacts on the Declared Rare Flora would change its conservation status from "endangered" to "critically endangered" under the internationally recognized criteria established by the IUCN. This conclusion applies even in the case of the proponent's proposed second option which reduces the impact on *Tetratheca paynterae* from 89% to 60%. In addition, CALM has advised that the impact of the proposal on the unique vegetation communities of the Windarling Range, even under the proponent's second option, would result in one vegetation community becoming "critically endangered" and two others becoming "endangered" under the IUCN criteria.

The EPA could not responsibly recommend to the Minister that a proposal be judged to be environmentally acceptable where that proposal would remove plants of a species to an extent that the species would become "critically endangered". Accordingly, the EPA is of the view that there should be no mining at Windarling Range unless, through an appropriate and comprehensive research program, it can be demonstrated that other measures can be adopted to ensure protection of *Tetratheca paynterae* and the vegetation communities in the wild. The EPA offers a word of caution that, even with an extensive research program, it may not be possible to achieve a successful outcome.

The EPA commends Portman Iron Ore Limited for its professional approach in relation to the environmental significance of the Windarling Range. The EPA is of the view that mining, as proposed at Mt Jackson, could take place provided conditions were introduced pursuant to the *Environmental Protection Act 1986* to ensure 'best practice' in environmental outcomes, including protecting biodiversity values.

If, following the determination by the Minister for the Environment and Heritage in relation to the current proposal, there is a request for the EPA to undertake an assessment of a revised proposal which excludes the Windarling Range, the EPA would ensure that this was achieved in an expeditious manner, within the requirements of the *Environmental Protection Act 1986* and the EPA's Administrative Procedures.

6. Recommendations

The EPA submits the following recommendations to the Minister for the Environment and Heritage:

1. That the Minister notes that this assessment report is about the proposal by Portman Iron Ore Limited to expand the existing Koolyanobbing iron ore mine by commencing new mining at Windarling Range and Mt Jackson and linking the new minesites to Koolyanobbing by a haul road or railway.

2. That the Minister considers the report on the relevant environmental factors of the conservation of biodiversity, and conservation of landscape and geo-heritage values, as set out in Section 3.

3. That the Minister notes that the proposal being assessed is to establish mines at both Mt Jackson and Windarling Range and that whilst the mining impacts on biodiversity could be managed to meet the EPA's objectives at Mt Jackson they could not meet the EPA's objectives at Windarling Range.

4. That the Minister notes that the Windarling Range, which is an important part of the proposal, is the habitat of the Declared Rare Flora species *Tetratheca paynterae* which is classified as "endangered" under the internationally recognized criteria established by IUCN and that, if implemented, the proposal would have impacts at Windarling Range which would change the status of *Tetratheca paynterae* to "critically endangered".

5. That the Minister notes that the DRF species *Tetratheca paynterae* is only found at Windarling Range.

6. That the Minister notes that there are a number of vegetation communities which are unique to Windarling Range, and that these communities would also be substantially impacted by the proposed mining: one community would be classified "critically endangered" and two communities would be classified "endangered" under the criteria established by the IUCN.

7. That the Minister notes that the proponent has engaged King's Park and the University of Western Australia to undertake studies on *Tetratheca paynterae* with a view to demonstrating that conservation of the species in the wild could be achieved, with the ultimate objective of re-establishing the species in suitable habitats after mining. However, the EPA notes that the research would need to be extended to include the unique vegetation communities and offers a word of caution that, even with an extensive research program, it may not be possible to achieve a successful outcome. The EPA considers that any research program on *Tetratheca paynterae* or the vegetation communities should take into account the advice of CALM and include CALM's assessment of the outcomes.

8. That the Minister notes that the EPA has concluded that, based upon the impact of the proposal on the Declared Rare Flora *Tetratheca paynterae* and the unique vegetation communities in the Windarling Range, mining should not be undertaken in the Range unless, through an appropriate and comprehensive research program, it can be demonstrated to the satisfaction of the Minister on advice from CALM that other measures can be adopted to ensure conservation of *Tetratheca paynterae* and the vegetation communities in the wild.

9. That the Minister notes that the EPA is of the view that mining could take place at Mt Jackson provided conditions were introduced pursuant to the *Environmental Protection Act 1986* to ensure 'best practice' in environmental outcomes, including protecting biodiversity values.

10. That the Minister notes that the EPA has not included in this Bulletin "conditions and procedures to which the proposal should be subject, if implemented" because the EPA holds the view that the proposal as described should not be implemented.

11. That the Minister notes the EPA's other advice presented above and in Section 4.

12. That the Minister notes that the EPA commends Portman Iron Ore Limited for its professional approach in relation to the environmental significance of the Windarling Range.

13. That the Minister notes that if, following the determination by the Minister for the Environment and Heritage in relation to the current proposal, there is a request for the EPA to undertake an assessment of a revised proposal which excludes the Windarling Range, the EPA would ensure that this was achieved in an expeditious manner, within the requirements of the *Environmental Protection Act 1986* and the EPA's Administrative Procedures.

14. Taking into account the points above, the EPA recommends that the Minister not issue a statement that the proposal as described may be implemented.

Appendix 1

List of submitters

Organisations:

Environment Australia
Department of Conservation and Land Management
Department of Mineral and Petroleum Resources
Department of Indigenous Affairs
Shire of Yilgarn
Water and Rivers Commission
Conservation Council of Western Australia
Goldfields Land and Sea Council
Wildflower Society of Western Australia

Individuals:

K. Biggs
V. Clarke
S. Danton
J & J Kavanagh
T MacPhearson
R. Parker
S. Parker
R. Paynter, N. Ennis, F. Boase, D. Atwell, C. Miles, B. Boase, S. Bixall, R. Boase, B. Boase
D. Perret
B. Ryan

Appendix 2

References

CALM, 1994. Goldfields Region Regional Management Plan 1994-2004. Management Plan No.27.

CALM, 1997. *Leeuwin-Naturaliste Landscape Assessment Study, Stage 1 Report*, Leeuwin-Naturaliste Ridge Planning Review

Cleary, J., Cowan, L. and Koch, P., 1999. *Shark Bay World Heritage property Landscape Study*, Draft report CALM.

Gibson N. and Lyons M.N., 1997a. *Floristic survey of the Mount Manning Range of the Eastern Goldfields of Western Australia,* Unpublished report for the Australian Heritage Commission prepared by the Department of Conservation and Land Management.

Gibson N. and Lyons M.N., 1997b. *Floristic survey of the Hunt Range, Yendilberin and Watt Hills of the Eastern Goldfields of Western Australia*, Unpublished report for the Australian Heritage Commission prepared by the Department of Conservation and Land Management.

Gibson N. and Lyons M.N., 1997c. *Floristic survey of Highclere Hills of the Eastern Goldfields of Western Australia*, Unpublished report for the Australian Heritage Commission prepared by the Department of Conservation and Land Management.

Gibson N., Lyons M.N. and Lepschi B.J., 1997. *Flora and vegetation of the Eastern Goldfields ranges, Part I Helena and Aurora Range,* CALMScience 2:231-246.

Henry-Hall N.J., 1990. *Nature conservation reserves in the Eastern Goldfields, Western Australia (Southern two thirds of CTRC System 11).* Unpublished Report to EPA Red Book Task Force.

Keighery G.H., Milewski A. V. & Hall N.J., 1995. Vegetation and flora. In: The biological survey of the Eastern Goldfields of Western Australia. Part 12. Barlee-Menzies study area. *Records of the Western Australian Museum Supplement* 49: 183-207.

Mattiske Consulting Pty Ltd, 2001. *Review of vegetation on Portman Iron Ore proposed expansion areas,* Unpublished report commissioned by Portman Iron Ore Ltd.

Portman Iron Ore Ltd, 2002a. Koolyanobbing Iron Ore Expansion Project Public Environmental Review.

Portman Iron Ore Ltd, 2002b. Koolyanobbing Expansion Project: Landscape supplementary study. Unpublished report prepared by John Cleary Planning.

Portman Iron Ore Ltd, 2002c. Koolyanobbing Expansion Project: Rocky outcrop and monolith landscape impact assessment. Unpublished report prepared by Ecologia Environment.

Appendix 3

Summary of identification of relevant environmental factors

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
CONSERVATION OF BIOLOGICAL DIVERSITY			
Terrestrial flora – vegetation communities	Under the second option (70% of W3 option) the following apply: Clearing of native bush: 93 ha at Mt Jackson; 490 ha at Windarling. Includes significant loss of geographically restricted vegetation communities at Windarling: 30% S2 community; 45% S4 community; 70% S6 community; 40% S9 community. At Mt Jackson there will be the following losses: 2% S1 community; 6% S3 community; 5% S5 community. The impacts of clearing for the transportation corridor have yet to be defined. No DRF have been identified in the transportation corridor, however, three priority species have been found *Lepidium genistoides* (P2), *Sowerbaea multicaulis* (P4) and *Davesia purpurascens* (P4). The indirect impact of altered runoff on significant flora has not been defined.	<u>CALM</u> The area has proven significant conservation values and this was not well explained in the PER. The area has been identified in a number of documents for inclusion in the conservation reserve system because of its rich flora and fauna diversity. The shrubland communities of each of the ironstone ridges are unique to each individual range. They are considered unique at a national level. Prior to the PER only limited information was available and consequently none of the plant communities are listed. However, based on the additional information from the PER, if the proposal were to proceed, the communities S4, S6 and S9 would fulfil the criteria for listing as "critically endangered" and S2 as "endangered" (based on the proponent's preferred option). Any approvals for this project need to include conjunctional progression of secure reserves with necessary management areas and excisions for mining, if required, so that the majority of the area becomes a nature reserve. Clearing specifications for the railway line / haul road need to be clearly defined. The extent to which mining would alter the local hydrology and indirectly impact on significant flora is unclear. <u>Public</u> Public submissions made similar points to those of CALM (above) and emphasised the high degree of local endemism (uniqueness) of the vegetation communities. The loss of 30-70% of significant vegetation communities was seen as unacceptable. There was a call for CALM to proceed with its longstanding proposals for nature reserves in the proposed mining areas.	**"Terrestrial Flora –vegetation communities" is considered to be a relevant environmental factor and is considered further under "Conservation of biodiversity".**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Rare and Priority Flora	Under the second option (70% of W3 option) the following apply: *Tetratheca paynterae* (DRF) 60% (1792 individuals taken, 1060 individuals remaining) of the total population is to be removed. 50% (2 hectares) of the total population area is to be removed. The majority is from the W3 pit area at Windarling. *Ricinocarpus brevis* (Priority 1) 28% (2240 individuals, 5888 remaining) of the total population to be removed. 28% (11.3 hectares) of the total population area is to be removed. The majority is from the W3 pit area at Windarling. *Jacksonia jackson* (Priority 2) 7% (3600 individuals) of the total population in the Jackson Range to be removed.	CALM Removal of 89% (proponent's preferred option) of the DRF species *T. paynterae* poses a serious threat to the extinction of this species and is unacceptable. The proponent's second option (to remove 60% of *T. paynterae)* would result in the species being re-ranked as critically endangered under IUCN criteria. Environment Australia Successful translocation that ensures long term survival of *T. paynterae* needs to be accomplished prior to destruction of the source population**.** The required research could take 5-6 years or more. Public The notion of a staged approach to the mining proposal in order to allow concurrent research into survival and rehabilitation of *T. paynterae* is not acceptable. The capital investment for the proposal is huge and the proponent has stated that the economic justification depends on access to at least 70% of the Windarling deposits. Once the mine is operating it is unlikely that the proponent will be forced to abandon the mine if the research shows that the species can not be propagated/translocated for long term survival.	**"Protection of rare and priority flora" is considered to be a relevant environmental factor and is considered further under "Conservation of biodiversity".**
Terrestrial fauna	Limited loss of fauna habitat. Regional impact on fauna is expected to be minor. Potential for increased loss of fauna due to road deaths, introduced species and increase in feral fauna associated with increase in human activities.		Based on advice from the EPA Service Unit Terrestrial Ecology section there is potential for rare invertebrates, which may not have been identified by the fauna survey, to be associated with the banded ironstone ridges. **"Protection of terrestrial fauna" is considered to be a relevant environmental factor and is considered further under "Conservation of biodiversity".**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Terrestrial fauna – specially protected (threatened) fauna	*Leipoa ocellata* (Malleefowl) Possible loss of individuals from road deaths. Nesting grounds will not be impacted by proposal. *Falco peregrinus* (Peregrine Falcon) Proposal will alter cliff and ridge habitat of possible small number of resident individuals. Overall impact negligible. *Cacatua leadbeateri* (Major Mitchell Cockatoo). The transportation corridor may reduce the number of nesting hollows through loss of trees in Eucalypt woodland. Potential impact negligible. *Morelia spilota imbricata* (Carpet Python). Limited loss of sheltered sites in the ranges but species expected to be widespread in low densities in surround Eucalypt woodlands.	<u>Environment Australia</u> Environment Australia has reviewed the Malleefowl Conservation Plan and has no concerns with the plan.	The proposal has the potential to negatively impact on the local Malleefowl population; however the proponent's Malleefowl Conservation Plan should more than offset any impacts by targeting reduction of feral animals that predate on Malleefowl. **"Terrestrial fauna – specially protected (threatened) fauna" is not considered to be a relevant environmental factor.**
Other biodiversity issues	The proponent has developed a Draft Memorandum of Understanding for corroborative management of Windarling, Mt Jackson and the Helena-Aurora Range with CALM. The proposed EMP includes actions relating to weed control.	<u>CALM</u> The key components of the Draft Memorandum of Understanding for collaborative management of the Windarling, Mt Jackson and Helena-Aurora Range area should be made part of the Ministerial Conditions and/or part of the proponent's formal commitments. The proponent needs to develop an appropriate offset package to ameliorate biodiversity impacts. The proponent needs to establish a bushfire detection and brigade infrastructure to deal with fire emergencies in the area and adjacent lands. <u>Public</u> The term of the EMP (duration of life of the project) is too short for rehabilitation and monitoring of such factors as vegetation structure, flora and fauna biodiversity and weed control. A substantial bond should be required.	In light of the EPA's recommendations "Other biodiversity issues" is not considered to be a relevant environmental factor requiring further evaluation by the EPA.

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
CONSERVATION OF LANDSCAPE VALUES			
Landscape and geo-heritage values	Loss of some unique ironstone ridge landforms through mining, especially at Windarling (65% of range, 560ha). This is a Red Book area.	CALM The PER does not adequately address the impacts on tourism and recreation. Public The unique features of Windarling Peak are more emotive and precious than the Pinnacles and more scenically outstanding than the Valley of the Giants. Mount Jackson and Windarling Peak are unique and yet there is no recognition of this in the PER. The area has wilderness value and location in proximity to the interstate highway makes the area accessible for tourism. The project area holds special value to those that have camped and explored in the area, some since 1978. A special appreciation for the associated Aboriginal and European history, unusual flora and fauna and the wilderness and landscape values has been acquired. No studies have been undertaken into the potential for ecotourism. Windarling and Mt Jackson are seen to have heritage value, although presently it is not possible to heritage list landform features.	**"Landscape and geo-heritage values" is considered to be a relevant environmental factor.**
Decommissioning and rehabilitation	Waste dumps will be constructed and rehabilitated in accordance with DMPR guidelines for Mining in Arid Environments (DME,1996). Waste dumps to be profiled in context of surrounding landforms. Mine voids, waste dumps and rail formation cuts and fills will remain after closure.	MPR The rail formation should be completely removed after mine closure. Public A condition should be imposed so that mine voids are backfilled. Open mine voids pose a threat to fauna and could lead to an increase in groundwater salinity. The man made catchments created by the proposal should be preserved and the impounded runoff used to grow perennial fodder plants. Waste rock material that contains phosphorous and sulphur could be spread on the flat country for fertiliser. Revegetation could include useful timber (eg sandalwood) or perennial fodder plants for cattle.	Decommissioning and rehabilitation are largely management issues and discussion is best integrated with other factors**.** **In light of the EPA's recommendations in regard to other issues "Decommissioning and rehabilitation" is not considered to be a relevant environmental factor for further evaluation by the EPA.**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
MAINTENANCE OF SURFACE WATER FUNCTION AND QUALITY			
Watercourses	No dewatering is planned for the mine sites. And there are no watercourses in the vicinity.	Public Could the watercourse off Windarling south through boundary to Marda Battery be impacted?	As the area is subject to low rainfall there are no major watercourses in the area. Occasional runoff from the ranges will be altered in the area of the proposal with possible impacts on flora. Impacts on biodiversity are considered separately. **"Watercourses" is not considered to be a relevant environmental factor.**
Surface water quality	The transportation corridor and roads may result in an increase in surface water runoff. Dust suppression may result in some localised increase in salinity adjacent to haul roads. There will be no acid mine drainage discharge.	WRC/CALM The PER indicates that saline groundwater is to be used for dust suppression. The EMP should include monitoring of the effects of saline water dust suppression along haul roads. It should also include management practices that will be implemented to address this issue.	Surface water quality can be monitored and management procedures included in the EMP. **"Surface water quality" is not considered to be a relevant environmental factor.**
MAINTENANCE OF GROUNDWATER FUNCTION AND QUALITY			
Groundwater quality/quantity	No mine dewatering required. Ore body is above the water table which is 50 m below ground level. Groundwater is saline to hypersaline 1000-1500kL/day required for dust suppression creating localised drawdown only with no predicted effect on vegetation. Saline water overspray from road dust suppression may have localised adverse effects on fringing vegetation.	WRC Exploration for, and abstraction of, groundwater with the area requires approval by the WRC by way of a groundwater licence. Potential impacts associated with groundwater abstraction have been adequately assessed and the proposed monitoring should ensure that these impacts will be managed satisfactorily. Public Would Pigeon Rock aquifer be lowered?	This proposal does not include dewatering of the mine void as mining will be limited to above the water table. Some water abstraction will take place in order to provide water for dust control. Monitoring of the groundwater and management procedures will ensure that drawdown does not reach undesirable levels. The ore body above the water table is oxidised and there will be no acid mine drainage discharge. **"Groundwater quantity" is not considered to be a relevant environmental factor.**
MINIMISATION AND MANAGEMENT OF EMISSIIONS AND WASTE			
Particulates / dust	Some generation of dust from construction works, pre-mine development, mining and crushing of ore and use of gravel haul roads inevitable. Potential impacts localised.		The proposed minesite and facilities are to be situated in a remote area and dust emissions can be managed. **"Dust/particulates" is not considered to be a relevant environmental factor.**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Noise	There will be noise from construction, earthmoving equipment, blasting, ore processing, and rail transport. Social impact will be limited by isolation from communities (>65 kilometres to Bullfinch and Koolyanobbing). Some animal populations may relocate away from noise source.		The proposed minesite and facilities are to be situated in a remote area and the impacts of noise emissions can be managed. **"Noise" is not considered to be a relevant environmental factor.**
Solid waste	There will be a landfill at Windarling which will also cater for waste from Mt Jackson. Sources of waste will be the accommodation village at Windarling, administration buildings and workshops. Sewage will be treated in a waste water treatment plant at Windarling. Septic tanks will be used at Mt Jackson which has only a minor requirement..	Public The volume of waste should not be referred to as insignificant.	Disposal of solid wastes (refuse) from the accommodation village and mining facilities can be managed. Management procedures will be included in the EMP. The 320Mt of waste mentioned in the PER and challenged in submissions refers to the mass of waste rock (overburden) not to refuse. **"Solid waste" is not considered to be a relevant environmental factor**.
EFFECT ON SOCIAL SURROUNDINGS			
Aboriginal culture and heritage	No sites will be directly impacted although some may be within a few kilometres.	DIA DIA initially advised that there were a number of conflicting opinions and issues in relation to Aboriginal heritage and culture at Mt Jackson and Windarling that required investigation. After completing the investigation DIA notified EPA that there was insufficient information available to determine that Mt Jackson and Windarling are Aboriginal sites within the meaning of the *Aboriginal Heritage Act 1972.* Public The proponent has not disclosed a number of potential aboriginal heritage sites.	Based on advice from DIA **"Aboriginal Culture and Heritage" is not considered to be a relevant environmental factor.**
Non-indigenous heritage	No predicted impacts.	There is a lost grave of Johnson (or Johnston) at Deception Hill at the north end of the diorite spur.	Nothing is listed on any of the relevant registers. **"Non Indigenous Heritage" is not considered to be a relevant environmental factor.**

Appendix 4

Summary of Submissions and Proponent's Response[8] to Submissions

[8] The proponent's comments in response to the summary of submissions have been integrated into the one report and appear in italics after each point.

Proponent's Response to the Summary of Submissions for the Koolyanobbing Iron Ore Expansion PER – Portman Limited

Most submissions were concerned with the threat to biodiversity, loss of landscape values and potential loss of Aboriginal heritage sites. In summary the key issues raised were:

1. Apparent inconsistencies and/or omissions
   - 1.1 Mine size
   - 1.2 Inconsistent production and transport figures
   - 1.3 A history of understatement
2. Project justification
3. Biological diversity
   - 3.1 General
     - 3.1.1 Vegetation clearing
     - 3.1.2 Offset package
     - 3.1.3 MOU between Portman and CALM
     - 3.1.4 Effect of altered hydrology on rare flora
     - 3.1.5 Weed control/EMP
   - 3.2 Terrestrial flora
     - 3.2.1 Vegetation communities
     - 3.2.2 Declared rare and priority flora
     - 3.2.3 Conservation reserves
     - 3.2.4 Threatened Flora Management and Conservation Plan
4. Landscape values
   - 4.1 Landscape evaluation
   - 4.2 Current ecotourism
   - 4.3 Future ecotourism
5. Decommissioning and rehabilitation
6. Watercourses
7. Surface water quality
8. Groundwater quantity/quality
9. Aboriginal culture and heritage
10. Non indigenous heritage
11. Evaluation of alternatives
12. Other

Note: Proponent responses are in italics.

1 Apparent Inconsistencies and/or Omissions

1.1 Mine size

1.1.1 This project has the potential to grow considerably larger than specified in the PER. For instance, will other areas over which Portman holds tenements, or for which it is negotiating Land Use Agreements, be included at a later date (eg Bungalbin, Pigeon Rock, Mt Walton and Mayfield)?

The purpose of the PER document is to address environmental issues associated with the current proposal. It is up to the proponent, not third parties to determine the scope of the project. Approvals are sought to the extent asked for and the scope of the project, including exclusions, have been clearly stated in the PER Section 1.4 Project scope and Timing. It is indicated there that the two main components of the project are the mine areas at Mt Jackson and Windarling and the transportation corridor. Future projects (if any) would be subject to future approvals and would be assessed as part of a separate process.

1.1.2 Although Portman insists there is no intention to mine below the water table at this stage, the ore bodies do extend below the water table. Is it Portman's intention to make an application to mine deeper (thus requiring dewatering) at some time in the future?

Portman reiterates that it is up to the proponent to determine the scope of the project and this has been outlined in the PER. The PER specifically states that mining below the water table is not within the scope of the current PER document (Summary and Section 1.4.1 Project Exclusions). It is standard practice to denote the scope of the Environmental Review and the issue of mining below the water table is seen as something that will need to be addressed when deeper mining is required. Section 3.2.3 Dewatering indicates that 'At a stage when mining is planned for below the groundwater table then approval on environmental issues associated with dewatering, including management of saline water, will need to be addressed'.

Staged approvals processes have been acceptable to the EPA in the past, an example of a precedent is the Marandoo project, an iron ore mine located in an environmentally sensitive area, with reserves below the water table, where approvals for mining above the water table only were requested and given. At this point approvals are sought to develop ore bodies above the water table at Mt Jackson and Windarling. If Portman intends to mine below the water table at a later date then approval will have to be sought.

1.1.3 Portman has sought to downplay the scope of operations, even going so far as to describe the project as a series of "small-scale open cut iron ore mining operations." Notably there was a failure to explicitly identify in the text of the PER that the W3/W5 pit will measure 0.8 km x 2km (around two thirds the size of the Super-Pit directly east of Kalgoorlie). This will make the W3/W5 pits one of the largest excavations in Western Australia, hardly fitting the description of 'small'.

The intent of describing operations as small scale in an iron ore mining context was to differentiate the proposed pits from Pilbara operations e.g. Mt. Whaleback, Mt. Tom Price, Paraburdoo which are an order of magnitude larger. There is no attempt to conceal the size of the proposed mining area at W3/W5 and it is represented in Figure 3.4 with a clear indication of scale.

1.1.4 The "Indicated" tonnes for W3 has been omitted from Table 2.1. What is the correct figure?

The "Indicated" tonnes for W3 has not been 'omitted' from Table 2.1. The reason for the lack of an indicated tonnes figure for W3 is because the resource at W3 is all within the inferred category. Similarly the inferred value for J2 has not been included in the Table.

1.1.4 It is not clear whether the 209.6 ha area is for W1-W4 as stated (Table S1) or if there is a misprint and it is meant to be for W1-W5. Does W5 cover an additional area or not?

209.6 ha is the total predicted area of impact for Windarling. W5 has been included with W3, i.e. they are treated together. Refer also to Figure 3.4 which indicates Pit W3/W5.

1.2 Inconsistent production and transport figures

1.2.1 There seems to be some inconsistencies in production estimates given in the PER and other Portman reports and briefings.

The Quarterly Report (for the period ending 30 Sept 2001) about the purchase of Mayfield iron ore deposit (located to the SW of the Mt Jackson site) indicates that the ores from the area would need to be blended ("shandied") at a rate of 2.5 Mtpa from the expansion and 5.5 from other sources possibly including the Bungalbin Western and Eastern deposits.

The PER document gives the following estimates:

"Portman are proposing to increase their iron ore production rate from approximately 3.5 Mtpa to 8 Mtpa over the next 3 to 5 years by continuing to mine at Koolyanobbing whilst expanding the project to include known iron enriched deposits to the north." (p11)

"At Koolyanobbing approximately 3.5Mt are mined annually, with a waste to ore ratio of 3:1 and a lump to fine product ratio of 47:53." (p24)

If 3.5 Mtpa are to come from Koolyanobbing then 4.5 Mtpa will need to come from the Windarling and Jackson sites to give a total of 8 Mtpa.

Please state which estimate is correct and how there came to be different estimates.

None of these estimates are necessarily 'correct' if that is taken to mean that they should be completely accurate figure. These are estimates based on a proposal that is in its formative stages and concern megatonnes, i.e. millions of tonnes of ore. The proposed project is an ongoing enterprise and exploration and drilling in the area is ongoing. As a consequence geological models for the tenements are constantly being updated and revised estimates are made for the size of the deposits. The figures quoted in the PER were the most up to date at the time of publication, and may well change (albeit slightly) in the future.

In developing a project, plans can change as new information comes to light. For example Bungalbin has now been eliminated from Portman's plans. Because the PER differs from an earlier Quarterly Report it is not reasonable to accuse the proponent of inconsistencies.

The information in the PER regarding anticipated production is correct, and as quoted Portman are proposing to increase their iron ore production rate from approximately 3.5 Mtpa to 8 Mtpa over the next 3 to 5 years by continuing to mine at Koolyanobbing whilst expanding the project to include known iron enriched deposits to the north.

1.2.2 On p28 the PER states that "Transportation of ore to Koolyanobbing is scheduled for the first half of 2003. Portman is ultimately proposing to mine the two areas concurrently, facilitating blending to render the ore suitable for export to Asian markets. Mining in the region may yield up to 80 Mt (Note 77.9 Mtpa estimated in Table 2.1) of saleable iron ore. The life span of the project is estimated to be up to 10 years, with decommissioning potentially in 2012 based on current scheduling and planning."

This statement can be interpreted to read as 8 Mtpa being *transported to* Koolyanobbing to be mixed with additional ore from the existing Koolyanobbing site, and this is without the possible inclusion of the Bungalbin Western and Eastern deposits or Mayfield.

In addition to the above statement Table 2.1 on page 35 gives a deposit size estimate of 77.9 Mt at Mt Jackson/Windarling and 109 Mt at Koolyanobbing. This is a total of 186.9Mt to be mined over 10 years, which calculates to 18.7 Mtpa not 8 Mtpa. Alternatively, at an 8 Mtpa shipping rate the mine life would be 23 years. This is without the inclusion of Bungalbin Western and Eastern deposits, Mayfield deposits or the deposits below the water table.

Can the proponent please explain the apparent inconsistencies and why the project seems to be larger than stated.

It is unclear as to where the estimate of 186.9Mt for the project has been derived. Certainly it is not evident in the PER document. Table 2.1 clearly indicates that the total deposit size is 109Mt. (Mt Jackson + Windarling = 77.9Mt; Koolyanobbing 31.1 Mt). These calculations of anticipated mine life, etc. are therefore based on an incorrect figure of 186.9 Mt which has nothing to do with the quoted figures in the PER. The only inconsistency appears to be between the submission and the information contained in the PER.

In addition, dividing total resources by a project life to estimate annual production is not correct. A significant proportion of total resource will not be mined because it is not of blendable grade.

As stated in the PER, Portman estimates that the life of the project would be approximately 10 years. It should however be pointed out that it is unlikely that the project would operate for exactly 10 years. Mining projects are subject to change as are any major projects, and it may for example require longer than anticipated to get

the project up and running. The most accurate production estimates will only be obtainable once mining commences, but the figures in the PER are the most accurate possible predicted figures based on the information currently available.

The project's volume parameters are clear – up to 8Mt per annum from existing Koolyanobbing operations in combination with Mt Jackson/Windarling proposed operations.

1.2.3 The Mine Manager, Mr Phil Knowland, (Monday, April 22, 2002) indicated that whilst the drillings that had been done mainly to 200 metres, that the company had drilled a couple of holes to 300 metres and that there was no indication of magnetite influence at that depth (i.e. no beneficiation would be needed). Mr Knowland also indicated that the ore body was still relatively high in iron and low in phosphorous with variable sulphur. Accordingly, there is an indication that the ore reserves are larger than stated and that the ore body extends well below the water table. This is could be construed to be at odds with the statements on page 64 which state in reference to the W2 and 3 deposit *"The base of hematite enrichment has not been defined"*. Please explain these apparent contradictions.

Discussions with Phil Nolan (Knowland) or any other party are not part of the PER process, however a response to these statements will be made.

Portman do not believe there are contradictions with regard to resource estimates in the PER. No one disputes that ore bodies extend beyond the water table. This proposal is to mine above the water table.

1.2.4 Should there be extra reserves this then tends to justify the rail expenditure to the Koolyanobbing Iron Ore Expansion. Rail notionally costs $1 million per kilometer, arising at a total of some $100 million for the rail infrastructure to the project expansion. Not included in this cost is the provision or hire of a locomotive fleet and or any additional rolling stock that may need to facilitate movement from the expansion to Koolyanobbing. This is an immense capital cost for a *"ten-year project producing up to 8 Mtpa from a combination of the Koolyanobbing and northern deposits"*. Please comment on whether or not the cost of the rail infrastructure has actually been justified on a larger project.

It is not the proponents responsibility in the PER to justify or explain the projects economics or financial risks. The PER describes the scope of the project for which approval under the Environmental Protection Act 1986 and the Environment Protection & Biodiversity Conservation Act 1999 is sought.

The cost of implementing the project has not been based on a larger project, but it does require mining of the W3 deposit in order to be considered viable.

1.3.1 A history of understatement

1.3.1.1 It has been alleged that Portman has consistently understated their case in all developments to date in relation to the Koolyanobbing development. Please comment on the following statements which have been given in support of this allegation:

- The 1993 CER conducted on behalf of the Esperance Port Authority in relation to the shipping of Portman Iron Ore through the Esperance Port, in the Summary stated: "*The Esperance Port Authority is examining a proposal to export 1.5 million tonnes of iron ore per annum for Portman Mining Ltd*". At the same time Portman Mining in their report to the Stock Exchange were stating: *"Portman Mining expects to commence mining at Koolyanobbing by mid l993 at an initial rate of 2.0 mtpa."* and "*The proposed plant will be able to be upgraded to 3 mtpa if future ore sales can be increased*".

- Even before the end of that CER process in 1993 there were already new plans being proposed for land reclamation and the extension of the port facility to cater for expanded iron ore shipments. *(Residents for Esperance Development, Submission on Esperance Iron Ore Port Facility, Assessment of Proposed Changes to Assessment No 781)*

- Portman Limited had shipped to date (Quarterly Report for period ending 30 Sept 2001) 2.45 Mtpa from the Esperance Port (expected annual tonnage 3.2 Mtpa) and had identified that that they wished to realise a 6 Mtpa rate by the end of financial year 2002.

How the company's efforts to develop its business over the past decade can be used to attack the PER is incomprehensible. These statements are not of relevance to the PER process.

1.3.1.2 Photographs of the Windarling Range have been taken in a way which makes the range appear insignificant.

Please comment briefly here on the rationale behind the photographs used leaving a fuller discussion until Item 4 Landscape Values.

From locations on the Bullfinch-Evanston Road the Windarling Range does not appear as a significant feature. It is only observable from elevated locations along the road and is generally obscured by vegetation.

These issues are discussed more fully under Item 4 Landscape Values and within the Visual Amenity Study appended to the PER on the CD distributed with the document.

1.3.1.3 Windarling is the area of greatest impact to the landscape. Computer profiles of this area would likely be least favourable to Portman. Please explain why they have been left out of the PER, whereas Mt Jackson profiles have been included, and provide the missing profiles.

During preparation of the Visual Amenity Study computer profiles were generated for Windarling from viewpoints along the Bullfinch-Evanston Road but no detail could be observed at that distance so they were not included in the PER. However they were within the Visual Amenity Study appended to the PER on the CD distributed with the document.. It was not considered useful to include viewscapes of distant hills that provided no discernible information. Photographs of the proposed Mt Jackson operations were included in the because they clearly showed impact to the visual amenity of the area from the Bullfinch-Evanston Road.

2. Project Justification

2.1 The following points relate to concerns that the economic justification for the proposal may be marginal and may therefore not justify the environmental cost. A change in the economic fundamentals may lead to premature closure of the mine after irreversible impacts to the unique landscape, possible Aboriginal Heritage sites and rare flora have been made. Furthermore, the fly-in fly-out basis of the work force will limit the benefit to the local community. There may also be alternative resources that could be utilised with less environmental impact. Please comment on the robustness of the project justification with specific reference to the following submissions:

Portman have taken economic considerations into account in assessing the viability of the project. Portman believes the project to be economically viable and to be a valuable contributor to regional growth as outlined in the PER. Driving forces behind the development of the project are outlined in Section 2.1 Project Justification.

- The U.S. has recently put a 30% import tariff on steel products. Portman selling ore to China will have more difficulty with the addition of these tariffs. All it takes is an import duty and exchange rate fluctuation with the addition of competitive capacity in the Pilbara, such as (BHP area "C" expansion etc.) to jeopardise the project **.**

Portman does not believe imposition of US steel tariffs will have any impact on its business in China. Portman is fully aware of ongoing developments in the iron ore industry both in Western Australia and overseas.

- What about gold? A Portman representative has been quoted as responding to a query on 22 April 2002, with a statement that the iron formations at Windarling were absolutely barren of gold content. However, it has been asserted that sampling at W3 revealed gold content of 0.2gpt. If the entire 8Mt per year of exported iron ore contained this amount of gold (value $A27,500,000) the State would be missing royalties of a substantial amount.

This is a significant prize which it may be possible to access without removal of surface features including declared rare flora .

There are no issues associated with gold. The project is concerned with an iron ore mining operation proposal and these comments are spurious. Portman fails to understand the relevance of unsubstantiated estimates of gold values to the PER process.

- The industry trend is employing personnel on a fly in fly out basis utilising contractors, which do not contribute any permanent benefits to the regional community. In an ABC radio statement at 1.00 pm on 17 April 2002, Mr. Nick Eifler, Chief Executive Officer Shire of Yilgarn/Southern Cross, when commenting on the Bounty Mine closure in Southern Cross (that will be laying off 180 employees) stated that the closure will not affect the Southern Cross community to any extent because it was essentially a fly-in fly-out operation .

Portman believe that the project will result in benefits to local communities, the Shire and the State. Refer to the Shire of Yilgarn submission below:

- Substantial project investment and opportunities for continuing/additional employment in the Yilgarn do not arise frequently and advantage must be taken of them if and when these opportunities arise.

  In common with many of our regional areas in Western Australia, the Yilgarn Shire has experienced inexorable albeit slow decline of economic activity supporting services that larger regional centers and urban communities often take for granted. Portman's proposed expansion program will bring additional employment opportunities to the Yilgarn Shire, both directly and indirectly, by providing turnover to existing businesses and by providing opportunity for new enterprises.

  Benefits arising from the developments to the region, the State of WA and to the Commonwealth of Australia will significantly outweigh any negative impacts from such a proposal. **(Shire of Yilgarn)**

Portman agrees with the above comments regarding growth opportunities in the Yilgarn.

3. Biological Diversity

3.1 General

3.1.1 Vegetation clearing

3.1.1.1 Clearing specifications for the railway line corridor need to be clearly defined. **(CALM)**

Clearing specifications (including location and size of proposed borrow pits) will be clarified once the final route is selected and a detailed study of surface conditions and available resources for fill has been undertaken. Detailed environmental assessment on the final route will be carried out to the satisfaction of CALM.

3.1.1.2 There is no mention in the PER of ensuring salvage of products such as sandalwood, craft timber, saw-logs, burls, craft products and firewood. There should be consultation with the Forest Product Commission and time allowed to salvage ahead of clearing. **(CALM)**

Agreed. The Forest Products Commission will be consulted prior to clearing in regard to possible salvage operations.

3.1.2 Offset package

3.1.2.1 The proponent needs to develop an appropriate offset package to ameliorate biodiversity impacts. **(CALM)**

It is not clear at this stage what CALM defines as an 'appropriate offset package' but clearly negotiations with CALM are required in order to conserve biodiversity in the project area and surrounds. Associated issues are discussed in relation to the proposed Memorandum Of Understanding(MOU) between Portman and CALM (Point 3.1.3) and Conservation Reserves (3.2.3). The Department of Mineral and Petroleum Resources is also in negotiation with CALM over land tenure in the general area (3.3.2).

CALM may wish to suggest an offset package and this can be examined by the proponent and may become a component of the MOU.

In CALM's full submission they mention:

> *Shared management of Mt Manning Nature Reserve and the preparation and implementation of an Area Management Plan.*

The preparation of a Biodiversity Management Plan for the area has been noted in the draft MOU.

> *Purchase of pastoral leases (Mt Jackson and Diemals) as additional conservation reserves.*

This option is currently under consideration by Portman but is dependent on the involvement of other stakeholders.

Research and active management on Tetratheca and significant ecological communities.

Research into Tetratheca has been initiated including genetic studies and investigation of substrate requirements. See section 3.2.2 for further details.

3.1.3 MOU between Portman and CALM

3.1.3.1 The key components of the Draft Memorandum Of Understanding for collaborative management of in the Windarling, Mt Jackson and Helena-Aurora Range area should be made part of the formal Ministerial Conditions and/or part of the proponent's formal commitments. **(CALM)**

Agreed. The key components of the MOU should be incorporated as commitments in the PER. This would include:

Management Plans to be developed in consultation with and for agreement between Portman and CALM:

Biodiversity Management Plan
Mining EMP (prepared as supporting document for PER)
Threatened Flora Management and Conservation Plan (prepared in draft form as supporting document for PER)
Malleefowl Conservation Plan (prepared as supporting document for PER and endorsed by Environmental Australia)
Conservation Tenure Implementation Plan

Other Commitments will need to be discussed and agreed with CALM in relation to the preparation of a final MOU.

3.1.4 Effect of altered hydrology on rare flora

3.1.4.1 The extent to which mining would alter the local hydrology and indirectly impact on significant flora is unclear. **(CALM)**

Many of the rare species, and in particular Tetratheca populations, occur on the raised portions of the ironstone ranges. These areas essentially consist of bare rock or support skeletal soils, and therefore 'local hydrology' is restricted to water that collects in the soil, cracks and crevices in the rocks. There is the potential for positions lower in the landscape to be influenced by local hydrological changes, but in general it can be stated that there is poor development of surface drainage features of any kind in the area due in part to low rainfall.

3.1.5 Weed Control/Environmental Management Plan

3.1.5.1 The surveyed occurrence of introduced species was extremely low due to the relatively undisturbed state of this area. The incidence and occurrence of weeds will be significantly increased as a result of this proposal, posing a threat to flora at both the species and ecosystem level. The aim to protect *Tetratheca* cannot be fulfilled, as the term of this plan is 10 years. Furthermore, this proposal has the potential to severely degrade this relatively pristine area at an ecosystem level.

It is agreed that the incidence of introduced species in the project area is relatively low, although 12 introduced flora species were recorded. It is the intention of Portman to ensure that weeds are not spread into the area, in particular the weedy species Eragrostis curvula, Acetosa vesicaria and Brassica tournefortii (PER Section 5.9.5).

The PER is designed to demonstrate to the EPA that each environmental issue can be adequately managed and best endeavors have been made to minimise and avoid environmental impacts. Proposals to mitigate weed impacts are detailed in the PER and a Commitment has been made to develop and implement a Weed Management Plan for the project.

3.1.5.2 As can be seen on p.84 of the PER the area is relatively free of weeds. It is stated in referring to the aggressive weeds that 'many of these species rely on wind blown seed or seed carried in vehicle tyres and therefore any disturbance of native vegetation areas should be minimized and a strict weed hygiene plan will need to be implemented'. This is very easy to say but much harder and can be costly to implement and maintain. One only has to see the Portman Mining existing operations to see they are not committed to weed control. Acknowledging that they did not start the mining operations at Koolyanobbing there is however little evidence of an improvement since Portman took over the operations. Weeds are a significant issue at the site. There are a lot of words in the Environmental Management Plan but it has not been demonstrated that it is practiced at the Koolyanobbing operations.

As mentioned above, a Weed Management Plan will be prepared and implemented prior to commencement of the project.

Weed management procedures would also be implemented at Koolyanobbing and appropriate weed quarantine practices should be implemented in surrounding areas to ensure that weeds are not spread into the Mt Jackson and Windarling areas.

3.1.5.3 The isolation of the Mt Jackson and Windarling sites has been their best protection against weeds thus far. Portman should acknowledge that the ingress of mining equipment into the area will end this isolation. The EPA should insist on either the successful eradication of weeds from Portman's existing mining areas or the completion of the Weed Management Plan for assessment by the EPA prior to approval being recommended.

The isolation has not been complete as there are roads and tracks throughout the area and much of it is pastoral country. Areas near Bullfinch also include agricultural lands (wheat and sheep) and weed incursion has occurred to some degree along roads and tracks. Nonetheless weed introduction and spread is a major issue that has been identified and discussed in the PER and EMP for the project.

It is agreed that a Weed Management Plan should be prepared prior to commencement of the proposed development.

Weed eradication from the existing Koolyanobbing operations should also be implemented.

3.1.5.4 The term of the EMP is – "[from] prior to commencement and [to] remain in force for the duration of the life of the project, predicted [to be] 10 years". Success indicators and criteria of a monitoring plan reflecting the rehabilitation of disturbed areas should include; weed/native vegetation species, biodiversity, nutrient cycling, hydrological balance, site stability and resilience as indicators of pre-disturbance ecosystem functions. These matters should be included in the company's EMP. Weed management should be a major component of the EMP with strict monitoring and control criteria. A substantial bond should be put in place as part of the EMP compliance requirements. The 10 year commitment to this plan is totally inadequate. Portman must be able to demonstrate rehabilitation according to strict success indicators, and commitment and liability should extend beyond their 10 year occupancy.

Agreed. A ten year time frame may be too short for completion criteria to be acceptable to the State and Portman would agree to a longer review period. Mine Closure would require substantial post operation rehabilitation works that may take several years. This would include ongoing monitoring of rehabilitation works and further establishment of vegetation where required. Section 6.8 of the PER Decommissioning and Rehabilitation includes discussion of the proposed Rehabilitation Programme including topsoil stockpile management, seed sourcing from local vegetation and rehabilitation monitoring. After 10 years the State and Portman will be in a much better position to judge whether and how the weed control program will develop.

A ten year period is too short for some completion criteria but not for others eg safety, removal of mine infrastructure, landforming, topsoil return and ripping. Completion criteria for the rehabilitation monitoring would include native vegetation species composition and vegetation structure, presence/absence of weed species, biodiversity (flora and fauna), and site stability as indicators of pre-disturbance ecosystem functions.

3.2 Terrestrial flora

3.2.1 Vegetation communities

3.2.1.1 The area has proven significant conservation values and this was not well explained in the PER. The area has been identified in a number of documents for inclusion into the conservation reserve system because of its rich flora and fauna diversity.

The conservation values and biodiversity of the area is discussed in summary form in the PER and in considerable detail in the associated Fauna Assessment Survey, Flora Review and Vegetation Review documents provided on the CD with the PER. These are source documents that fully document the biological values of the area following intensive survey and collation of all available information for the project area. They

describe past surveys and provide lists of all flora species and vertebrate fauna species recorded in the area.

The PER also explains the past progress and current status of CALM's recommendations for expansion of conservation reserves in the area (Section 5.14.3 Conservation Estate). Portman is of the opinion that reservation of areas can be progressed in order to conserve conservation values whilst still allowing for multiple uses including mineral production. Progressing conservation tenure arrangements is one of the principal components of the MOU between Portman and CALM.

> The shrubland communities of each of the ironstone ridges are unique to each individual range. These communities are generally small and restricted in total area. As a consequence each of these communities should be considered **significant at a national level.** None of these communities is known to occur in any conservation reserves. **(CALM)**

It is acknowledged in the PER that representative vegetation needs to be retained. The majority of vegetation in the area (including ironstone range communities) will be retained under the current proposal.

Detailed discussion of the vegetation of the ranges is provided in the PER (Section 5.8) including the distribution and conservation value of the community types (5.8.5) and significant ecological communities (5.8.6).

3.2.1.3 The most heavily impacted vegetation types are the shrubland communities at the Windarling deposit (area of community to be affected S2=30%, S4=55%, S6=78%,S9=42%).

> None of the plant communities for the Windarling area are currently listed as Threatened Ecological Communities (TECs), as the detailed information needed for such as assessment has only been produced as a result of the PER. If the current proposal were to go ahead then the communities S4, S6, and S9 would fulfill the criteria for listing as Critically Endangered and S2 would fulfill the criteria for listing as Endangered **(CALM)**.

Impacts to all vegetation communities will be minimised as detailed in the management sections of the project EMP. It is considered that sufficient areas (>50%) of restricted vegetation communities will be retained to ensure their survival with the exception of community S6. Modification of the pit at W3 to retain adequate areas of community type S6 may be possible in an alternative mining scenario. Adequate representation of this community type would be required in combination with retention of a sufficient population of Tetratheca paynterae at Windarling.

Whilst the State proposes to introduce Legislation to address TECs in the future and CALM retains a prospective list of TECs, the Federal Government already has the statute to declare TECs under the EPBC Act. The vegetation communities in the project area are not currently declared as TECs.

3.2.2 Declared rare and priority flora

3.2.2.1 The proposal to remove 89% of the plants of the declared rare flora *Tetratheca paynterae* poses a serious threat of extinction for this species, and is environmentally unacceptable. **(CALM)**

The WA Wildlife Conservation Act allows the Minister for the Environment to permit the "taking' of DRF for specified purposes and in specified numbers. There are some situations in which the taking of DRF plants has been permitted.

A Simcoa Operations proposal, reported on in EPA Bulletin 1027 was successful in obtaining EPA and CALM endorsement for the "taking" of rare flora on their proposed mine extension near Moora. However, the Company also proposed a comprehensive Conservation Package to offset this damage including relinquishing of interests in a nearby area to allow it to be transferred to an 'A' class reserve for the purposes of nature conservation. Simcoa also committed to undertaking rehabilitation trials with any DRF species removed by their mining operations.

It is agreed that loss of greater than 85% of a species has the potential to significantly increase the risk of extinction. Alternative mining proposals at Windarling may facilitate survival of this species (Point 3.2.2.2) and in the first stage Portman are providing funds to research the biology and genetic structure of Tetratheca populations.

In order to guarantee survival of this rare flora species information on the biology of Tetratheca paynterae is to be collected and studies on soil surface requirements and propagation techniques for this species are being instigated. These include the following studies at present:

> *Investigations proceeding into defining soil characteristics in the general area of occurrence of Tetratheca spp. in the Windarling Range (Associate Professor David Jasper, Centre for Land Rehabilitation, University of Western Australia). The study is proposed as part of the first phase of a more general program of research on the conservation and restoration of Tetratheca spp. This study will focus on the 'W3' site, and adjacent similar ridges in the Windarling Ranges.*
>
> *The overall objective of this program of work will be to define the nature of soil profiles currently supporting populations of Tetratheca paynterae on W3, and similarly for adjacent soils on W3 and similar sites on nearby ridges. As a result, there will be greater understanding of the biology of T. paynterae, and of the potential for establishing new populations in adjacent areas.*

Investigations are also being initiated to look at options for preservation and translocation of Tetratheca species. The Science Laboratory at the Botanic Gardens and Parks Authority are to be involved in research focussed on practical outcomes in the conservation, restoration and translocation of the DRF species Tetratheca paynterae, T. harperi and T. aphylla. Research will be conducted in the core areas of:

(i) conservation genetics,
(ii) propagation,
(iii) ex situ storage of germplasm,
(iv) restoration ecology, and
(v) in situ conservation and translocation.

The research project will require the appointment of a full-time senior researcher (Post-Doctoral) and a full-time research assistant, for a period of three years. Three years would therefore be required before results become available.

A delay of 5-6 years in accessing the Windarling deposits will render the project uneconomic. Production of saleable ore requires blending of ores from a number of deposits. Quarantining the W3 deposit for 5-6 years will limit the availability of blending ores to such an extent to make the project an unviable proposition. Portman would therefore require that research into Tetratheca paynterae is ongoing simultaneously with mining operations.

3.2.2.2 It is not possible to provide a detailed assessment of the impact on the nature conservation values of the alternative proposal at Windarling Range of (60% population impact on *T. paynterae*) but the impact is likely to be significant. The proponent needs to provide the same level of detail as seen in the PER for their preferred option. However, mining would result in *T. paynterae* being re-ranked as critically endangered under IUCN criteria. (CALM)

The alternative proposal was devised relatively recently as a response to concerns about the status of rare Tetratheca species at Windarling and as such has not been fully developed. Portman will develop a more detailed proposal that takes into account the detailed mapping of the local distribution of this species at Windarling.

The project would not be economically viable without the inclusion of W3 in the operation hence an alternative scenario has been proposed to mine 70% of the W3 deposit, thereby directly impacting only approximately 60% of the population of T. paynterae at Windarling. The remnant 40% would comprise of approximately 1,060 plants. This may be a more environmentally acceptable option and investigations into the ecological requirements of Tetratheca paynterae could progress during this period. It would allow data on the biology and reproduction of the species to be collected, on the soil conditions required for successful growth and on likely pollinators. Approval for further mining would depend on the results of the research to be undertaken by Portman, peer review of this research and recommendation by EPA.

Portman believes a staged approach to mining operations offers a solution acceptable to all parties. The concept should not be dismissed.

As mentioned by CALM in their submission it is difficult to make an estimate of viable population size for Tetratheca paynterae, however, given the relatively small size of the known extant population and its restricted distribution it is likely that a population of approximately 1,060 individuals would be viable whilst maintaining sufficient genetic diversity. Modifications to the mine plan at Windarling could be made so as to ensure survival of a sufficient number of individuals.

The number of individuals required to avoid extinction of a species varies greatly depending on the species. CALM has prepared Threatened Species Recovery Plans for several species of plant where only a few individuals were known in the wild. As an example, Interim Recovery Plan No 40 for the Pinnate-leaved Eremophila (Eremophila pinnatifida) addresses three populations totaling 21 plants.

3.2.2.3 The combined project area includes occurrences of:

- One plant species listed as Endangered under the EPBC Act
- One plant species listed as Vulnerable under the EPBC Act
- Two species listed as Declared Rare Flora under the Wildlife Conservation Act
- Twelve flora species listed as Priority Flora species under the Wildlife Conservation Act
- One flora species listed as Vulnerable under the EPBC Act
- One flora species listed as Schedule 1 under the WA Wildlife Conservation Act
- One flora species listed as Schedule 2 under the WA Wildlife Conservation Act
- At least one flora species listed as Schedule 3 under the WA Wildlife Conservation Act
- At least four flora species listed as Schedule 4 under the WA Wildlife Conservation Act
- One flora species listed as a CALM priority 4 species.

On the basis that:
Priority species are not listed under the Act (State or National).
A flora species is the same as a plant species.
DRF's are all Scheduled
The information has been summarised as follows:

- One plant species listed as Endangered under the EPBC Act
- One plant species listed as Vulnerable under the EPBC Act
- Two species listed as Declared Rare Flora under the Wildlife Conservation Act
- Twelve Priority Flora species as listed by CALM

Given the patchy and incomplete knowledge of the biodiversity from this area, the list above gives an indication of some of the values which will be placed under threat from mining.

The knowledge of the biodiversity of the area has been greatly enhanced by the studies of flora and fauna undertaken on behalf of Portman as part of the preparation for the PER process. As a result of these surveys it is now understood that, as detailed in the PER, two species listed under the EPBC Act, two state DRF species and 12 Priority Flora species were recorded from the project area. Of these the most pertitnent species in relation to project planning are Tetratheca harperi (DRF), T. paynterae (DRF), Ricinocarpus brevis (P1) and Jacksonia jackson (P2), as listed in PER Table 5.13. Due to the variety of Rare and Priority Flora species from the area Portman have tended to concentrate on those species most at risk, both directly and indirectly, from the proposed development. Known locations of other species are not

likely to be impacted by the proposal. If suitable areas are retained for the species most at risk then other Rare and Priority species should also be protected.

> The impacts on both DRF and Priority species are unacceptably high for this proposal. Impacts only reach acceptable levels if the W3 deposit is removed.

As stated previously the project is not considered to be economically viable without the inclusion of the W3 deposit. In order for the project to be viable and biodiversity values to be retained a compromise needs to be reached between mining sufficient ore and retaining adequate populations of Declared Rare Flora in the area.

The PER is designed to demonstrate to the EPA that each environmental issue can be adequately managed and best endeavors have been made to minimise and avoid environmental impacts. Measures have been proposed in the PER to minimise impacts to Rare and Priority Flora. These are outlined in PER Section 6.2 and in the Threatened Flora Management and Conservation Plan which outlines specific strategies for species of Tetratheca. It is up to the EPA to decide if it will recommend to the Minister that either of the two proposed options, the "Preferred Option" of 100% mining of the W3 orebody and 85% impact to the Windarling T. paynterae and the "Alternate Option" of 70% mining of the W3 orebody and 60% impact to the Windarling T. paynterae, the project is environmentally acceptable on the basis of meeting EPA objectives for Significant Flora.

3.2.3 Conservation Reserves

3.3.1 There is a need for government to progress long-standing tenure proposals in this area to facilitate conservation through (secure) reservation in the conservation reserve system. Any approvals for this project need to include conjunctional progression of these reserves, with necessary management areas and excisions for mining if required, so the majority of the area becomes a Nature Reserve. **(CALM)**

Extensions to conservation reserves including CALM recommendations are discussed in Section 5.14.3 of the PER document.

The proponent agrees in principal with the extensions of the Mt Manning Nature. Establishment of reserves in the areas of Mt Jackson and Windarling would include leases held by Portman hence there would need to be ongoing discussion with relevant agencies concerning reserves in these areas and arrangements for possible mining activities.

Portman have also considered the option of purchase of the Mt Jackson and Diemals pastoral leases and conversion of these areas into the conservation estate, with exclusion of areas at Mt Jackson and Windarling for the purposes of mineral extraction. This process is dependent on ongoing discussions with stakeholders concerning land tenure in the area.

The area located within the proposed extensions to the Mount Manning Nature Reserve is geologically highly prospective for iron ore (and precious and base metals). However the prospects of single large ore bodies able to sustain a project are slight and it is vital to Portman to have access to multiple smaller orebodies. Portman has defined a nominal area of influence within a 150km radius to the north of Koolyanobbing with the objective of exploring for iron ore deposits. The ongoing success of the Koolyanobbing operation is dependent upon gaining reasonable access to this area and identifying and mining economic deposits.

Considerable State funds have been invested in upgrading railway and port (Esperance) infrastructure to enable competitive transport and shipping activities to be developed. This expenditure has been largely underpinned by the Koolyanobbing project.

The Koolyanobbing project has the potential to provide very significant economic and social benefits to the State through royalties, taxes, employment and local area development over an extended period of time.

Portman supports the concept of multiple land uses, however the development and operation of long term exploration and mining activities (in an environmentally responsible manner) is essential.

3.3.2 **Before** mining is contemplated in the area, CALM should implement the proposed expansions of the Mt Manning reserve, ensuring that the ironstone range areas of highest conservation value are included in the reserve system so that all parties are aware of future limitations to mining operations.

Portman agrees in principal with the extension of the Mt Manning Reserve to include the central portion, thereby protecting an ironstone range area. The southern extension (PNR96) to include Bungalbin Hill would also be acceptable. This process should probably occur prior to the commencement of mining but is dependent on relevant parties coming to the table and declaration of the area as a Nature Reserve. This could take some time and Portman feel that it is necessary to commence development of the northern tenements in the near future.

CALM cannot implement recommendations to expand Mt Manning Nature Reserve alone. This is a Government process that involves the Department of Land Administration (DOLA), the Local Authority (Shire of Yilgarn) and Department of Minerals and Petroleum Resources (DMPR) as well as CALM.

The Department of Mineral and Petroleum Resources (MPR) is in negotiation with CALM over proposed extensions to the Mt Manning Nature Reserve. The proposed Nature Reserve extensions impact on the Bungalbin, Windarling, Mt. Jackson and Mt. Manning iron resources as well as numerous gold resources. The area also hosts significant potential for future iron, gold, base metal and nickel development. MPR is recommending management regimes that accommodate development of current and future mineral resources and do not exclude future development in areas of significant mineral prospectivity.

3.3.3 The mining proposal at Windarling and Mt Jackson is environmentally unacceptable and must not proceed. The proposal by CALM to extend the Mt Manning Nature Reserve to the west (PNR97), incorporating Windarling Peak, the Die Hardy Range, Mt Jackson and surrounding areas should proceed (PER, p.111). Furthermore, the "doughnut-shaped" Mt Manning Reserve should be extended to include the upland banded ironstone and greenstone formations of the Mt Manning Range itself, and its associated endemic flora elements.

This comment is covered in the Points above. These are CALM recommendations and obviously Portman would be proposing a modification so that mining can take place at certain locations in the area.

3.4 Threatened Flora Management and Conservation Plan

The following submissions relate to the Threatened Flora Management and Conservation Plan which was made available on CD as an addendum to the PER. The points made by Environment Australia were mirrored in public submissions.

3.4.1 Environment Australia notes that Action 6.1 involves the undertaking of studies on the ecology, reproductive biology and genetics of the species. Environment Australia is not prepared to consider the effect of the proposed development on the long-term conservation of the *Tetratheca* species until these studies are completed. Previous experience suggests that these studies may take 5 to 6 years to complete.

Studies on Tetratheca are currently being undertaken (Point 3.2.2.1). A delay of 5-6 years in accessing the Windarling deposits will render the project uneconomic.

Action 7.1 deals with *Tetratheca* translocation research issues. This action will be dependent on the outcomes of Action 6.1. CALM has an appropriate system for assessment of translocations and this is Environment Australia's preferred model.

A translocation proposal would need to be submitted and reviewed by two independent scientists. If it were approved the translocation would need to be successful **before** the destruction of the source population takes place.

Environment Australia foresees many potential problems for the proponent in the event that the proponent receives approval to translocate *Tetratheca* plants.

It is highly likely that suitable sites for translocation will be difficult to find. While there may be some suitable habitat on other caprock outcrops in the area, each hilltop has its own, endemic species of *Tetratheca*. The introduction of *T. paynterae* to the new sites must pose no threat to the persistence of other taxa or communities. The proposed translocation site must not already support a species of *Tetratheca*, as this may lead to hybridisation and/or genetic swamping of *T. paynterae*, or the endemic *Tetratheca* species. The introduction may also threaten other taxa through

disruption of interactions, disruption of ecosystem processes, introduction of pests or diseases, or physical disturbance during the translocation operation.

In addition, the timeframe involved in the research may be prohibitive for the proponent. Past experience indicates that 5 or 6 years of research may be required before sufficient information is available to consider potential impacts of the development on the species. If translocation was then considered to be an option, further research might be required. If approved, the translocation experiments would take place, followed by monitoring to determine the success of the translocation operation.

A successful translocation is one that ensures the long-term survival of the species. There are no current, widely accepted, standards for determining success of a translocation operation, and this determination would, in part, depend upon the results of the research to be conducted prior to the translocation operation. These actions would need to be **completed prior to the destruction of the source population**, due to the high rate of failure in most translocation operations (**Environment Australia)**.

Portman will take these issues into consideration in any proposal to translocate Tetratheca paynterae. Any translocation proposal developed by Portman would require approval by both CALM and EA.

3.4.2 The recovery plan highlights the paucity of information regarding biology and ecology. Unknowns include: species response to disturbance, fruiting and flowering times, pollination and distribution vectors, disease, fire response, soil habitat associations, success of propagation, success of translocation, survival of propagated species in the wild. With such a paucity of information, educated predictions cannot be made. It is not acceptable to have a recovery plan for *Tetratheca* running concurrently with mining operations that are destroying them.

It could be pointed out that there are few plant species (particularly in an Australian context) for which this level of information is available. Nonetheless these rare species may be significantly impacted by the current proposal and detailed investigations of species biology is an important component of ensuring their continued survival in the wild. If sufficient knowledge is available to ensure propagation and translocation of these rare flora species then it may be possible to have a Recovery Plan operable coincident with mining operations. Investigations are being initiated as discussed at Point 3.2.2.1.

3.4.3 The proponent suggested that mining operations could be staggered during the first 3-4 years (Garry Connell & Peter Bilby, pers com 11/03/02), but this will still not provide significant time for research results to adequately ensure rehabilitation and survival, and significant damage will have already occurred at both a species and ecosystem level. Furthermore, it is unlikely that Portman Mining will be forced by the EPA to abandon mining operations after 3-5 years should results show *Tetratheca* cannot be propagated / translocated, as the huge capital investment is prohibitive. Thus the notion of staggered mining operations should be dismissed.

A staged mining approach should allow enough individuals to survive on site, even in the event that 60% of the Tetratheca population is mined. The species would also survive "ex-situ" in germ plasm and as cuttings and seedlings. These issues are discussed at Point 3.2.2.2.

3.4.4 The plan is to fence around *Tetratheca* populations and install declared rare flora markers. Environment Australia is concerned that mining all of deposit W3 will destroy 89% of the only known population of *T. paynterae*. The species occurs over 4 ha in the project area: 3.5 ha of which is located directly over the ore deposits to be mined. In total 219 ha of clearing will take place at the Windarling site. Even if the remaining 0.5 ha are fenced, and not cleared, the remaining plants may be affected by dust, changed wind conditions, increased exposure etc **(Environment Australia)**.

This is a difficult issue but it is felt that if an alternative mining scenario is undertaken which only impacts 60% of the Windarling population then sufficient protection of the remaining population would be possible. This would also mean that mining operations would be further from portions of the population because they occur in a fairly linear pattern along the length of the range. Fencing and dust barriers should minimise the effect of dust and increased exposure is not likely on these exposed, bare and rocky slopes.

Since the publication of the PER further genetic studies by both the Science Laboratory at the Botanic Gardens and Parks Authority and CALM Herbarium has indicated that the recently discovered Tetratheca population at the Die Hardy Range, some 15 km north of Windarling, is the same species as that at Windarling, though it may be a separate sub-species. The Die Hardy population comprises approximately 11,000 individuals from 3 sub-populations over an area approximately 6km long and 4km wide.

This new work has now increased the status of Tetratheca paynterae to two (2) populations with a combined total species population in the order of 14,000 plants. Therefore the proposed preferred development option (mining 100% of W3 & W5 deposits) would result in an impact to approximately 17.5% of the total population, while the Alternate Option (mining 70% of W3 & W5 deposits) would result in an impact of approximately 12.2%.

Additionally, DNA studies have shown that the Windarling population is genetically homogenous over the range. This indicates that a remnant population of 40% of the plants would still contain the same genetic diversity of the population as a whole.

3.4.5 Environment Australia supports the following aspects of the TFMCP

- The principle that CALM and the proponent enter into an MOU regarding the management of *Tetratheca* populations.
- Information about the conservation and management of Tetratheca species would be included in the workforce environmental induction course.
- The proposed research on the fire ecology of the Tetratheca species and the development of fire prevention strategies.
- The preparation of local area management and conservation plans for the Tetratheca species, and Environment Australia wishes to participate in the drafting and approval of these plans.
- The proposal to conduct further field surveys aimed at recording the distribution and typical habitat of the Tetratheca species.
- The proposal to establish monitoring grids in the project area, in a representative range of habitat types across the species range.
- The proposal to standardise the Tetratheca field monitoring pro forma.
- Management actions related to propagation research, ex situ storage of germplasm, restoration ecology and in situ conservation and translocation provided that these actions are only initiated after appropriate research has been conducted and the necessary approvals obtained.
- The regular review of management and conservation plans by teams with appropriate expertise.

These will be components of the final version of the TFMCP and similar issues will be covered in the Recovery Plan that is proposed for Tetratheca paynterae.

3.4.6 Environment Australia seeks an opportunity to comment on the *Tetratheca paynterae* Recovery Plan when a first draft is available. **(Environment Australia)**

Portman would appreciate comments from Environment Australia and CALM on the Recovery Plan.

4. Landscape values

4.1 Landscape evaluation

4.1.1 The discussion of landscape values in the PER is not adequate for the EPA's purposes. Accordingly, the proponent is requested to describe the uniqueness of the landscape/landforms and present this information as an addendum to the response to the submissions.

The addendum should make use of CALM's Visual Resource Management (VRM) system of compiling an inventory and assessing landscape values. The document should describe the regional landscape context and proposed alterations within this context. Aerial photographs, distance photographs of landscape features and outlooks from Windarling and Mt Jackson (taken from various angles), close-up photographs of unique landforms in the region and associated vegetation should be included. It should be clearly shown which features will be removed by the project and which will remain.

Windarling and Mt Jackson are seen to have heritage value which is too precious to destroy. The reasons given are the unique combination of landscape/landform features, rare flora/vegetation complexes, associated fauna and possible Aboriginal heritage sites. The area is also seen as having largely untapped ecotourism and education values. These issues should be addressed in the addendum.

The full Visual Amenity Study was included on the CD with the PER as a supporting document. CALM reviewed the draft and expressed no major concerns with the study and were generally complimentary of the study undertaken. Additional landscape impact assessment has been undertaken and the resulted forwarded to the EPA.

4.1.2 The Windarling Peak area includes a unique specular hematite monolith (a monument or column fashioned from a single block of stone) and is located on the W1 Deposit. No evidence occurs of anything like this feature anywhere in the state of WA. This feature should be conserved.

As the haematite outcropping comprises part of the ore body proposed to be mined it is not possible to conserve the particular rock formation referred to. However it is questioned that it can be unambiguously stated that no other such outcroppings occur in the state of WA.

4.1.3 The Windarling Peak itself has magnificent ironstone ridges strutting from exposed rock formations from its elevation of 562m. It is a prominent and stunningly beautiful landscape feature which can be seen as visually outstanding, heading South through the Die Hardy Ranges on the Evanston Road to Bullfinch. It is also visually outstanding at every angle from 200m distance with magnificent views from Mt Jackson.

Whilst areas at Windarling and Mt Jackson will be lost, many of the landscape features of the area would be retained.

4.1.4 This area contains pristine, undiscovered, unrecognised beauty, interest and future knowledge which should be conserved. In Portman's own words:

> **PER EXTRACT PAGE not shown**
> **Part 2 The Environment**
> Banded ironstone ranges in the Coolgardie Bioregion are under-represented in the overall landscape, emphasizing the need to conserve representative areas of this landscape
>
> **PER EXTRACT PAGE not shown**
> **6.0 Biophysical Potential Impacts**
> …..existing profile of the landscape will be altered due to the presence of open-cut pits

Under the current proposal much of the area in the Mt Jackson and Windarling Ranges will not be disturbed by mining operations. Proposals have been made to conserve the Mt Manning range in a Nature Reserve and this would conserve an ironstone range area. Refer also to Point 3.3.1.

4.1.5 Windarling Peak and Mt. Jackson are currently not listed with the Heritage Council of WA because the criteria are only for man made structures and buildings – not landscape features. Inquiries to the Heritage Council indicated that listing of natural features may be possible in the near future. The unique features of the Windarling/Mt Jackson Ridges (landform, rare flora and Aboriginal Heritage sites) would certainly qualify them as the first landscape heritage listing.

The listing of sites and the criteria used for such listings will be decided by the Heritage Council of WA.

4.1.6 The unique features of Windarling Peak are more emotive and precious than the Pinnacles and more scenically outstanding than the 'Valley of the Giants' which is a very successful venture by CALM, earning substantial amounts of revenue for the government. But because few people know about Windarling Peak, it may be lost forever as a result of this proposal.

As stated elsewhere the potential for ecotourism in the area has not been assessed. This is not considered to be an issue relevant to the PER process.

4.1.7 There has been no assessment in relation to the impact from a landscape value point of view. If this was the case there would be photos of the characteristic rocky outcrops, which will go if the proposal is allowed. Each of the locations on Mount Jackson and Windarling Peak is unique. There is no recognition of this. It has been glossed over as the proposal aims to remove the rugged outcrops of iron ore. Landscape management is based on the premise that the visual quality of any landscape is a resource in its own right (EPA Bulletin 424).

The statement that there has been no assessment in relation to the impact from a landscape value point of view is refuted. The Visual Amenity Study for the project was

undertaken in a standard manner similar to other resource development projects in Western Australia, including iron ore mining operations in the Pilbara region. The Visual Amenity Study was included as an associated document with the PER on CD and provides representative views of Mt Jackson and Windarling.

4.1.8 User sensitivity should not be based on the number of people (vehicles) that pass a given point each day (*Visual Amenity Study*). In fact the opposite could be true. In the example of travelers on a freeway, the main objective may be to get from A to B, but on a remote road the small number of people who use it are there for a reason and therefore more likely to be affected by what they see.

This may be the case but it is still evident that relatively few people travel through the area. As mentioned in the Visual Amenity Study CALM designates sensitivity levels on the basis of traffic use for particular travel routes and vantage points. Under their criteria the area would be considered as having Low sensitivity.

4.1.9 The visual amenity assessment has in all cases only been from the Bullfinch-Evanston Road. This is a minimalist approach. At the very least a video or computer simulation could have been prepared showing the impact from each direction at each site as well as an aerial shot. It is not enough to say there is only one public road in the area and other tracks are infrequently used. The proposed mines will destroy the area for current and future generations and this is not acceptable. People with an interest in the environment do travel on roads other than the main road and there are some who have a longstanding association with this particular area and value it as a very special place.

There are a whole series of issues in this paragraph.

A video or computer simulation is not normal procedure in a visual assessment and would be very difficult to perform.

Access has been mention at Point 4.1.8 above.

4.1.10 The area that has been used as a basis to say the impact will be only 1.99% is not valid (Predicted Impacts - 6.7.3). There is no justification for including the Highclere Hills or Koolyanobbing Range (up to 100 km away and a different ore type). The fact is that the effect in the area will be significant and devastating for Windarling Peak.

The justification for using the Highclere Hills and Koolyanobbing range is that they are within the same region (Coolgardie bioregion) or subregion (Jackson area) and are similar geologically (ironstone ranges). It is not questioned that there are differences between these areas but in a regional comparison it is useful to compare areas of relative similarity. If the lowland areas were also included in these calculations then the proportional impact area would be much lower than 2% and this would be a poor basis for estimating the impact.

4.1.11 Mt Jackson is actually a series of elevated areas and the project is having a significant impact on two of them. It is misleading to say only 4% of the range will be impacted and the Visual Amenity Study just accepts that Windarling Peak will go implying this does not matter as it is a 'minor protuberance on the landscape' when seen from Mt Manning. It is a false argument to try to give a percentage of the region affected as each of the ranges is unique in its own way.

These points have been covered previously. Windarling Peak as noted is actually located approximately 7.5 km south of the Windarling deposits referred to by Portman in the PER document.

4.1.12 How is it possible to say 'minimising disturbance to landscape values will be a key component in planning the mine areas' (p. 157). In the case of Windarling Peak it is acknowledged that 70% of the area will be mined.

The local effect is not minimal but the aim is to minimise disturbance. In the planning process mine areas are set but the location of waste dumps, the accommodation village and the rail corridor are influenced by landscape considerations.

4.1.14 It is stated that the landscape will be returned to its former function (p. 157). Actually, it will be left with big holes in the ground and with waste dumps. These were not part of the former functioning system.

The objective of rehabilitation will be to restore areas that have been impacted to their former function. This includes contouring land surfaces and revegetation in accordance with Guidelines for Mining in Arid Environments. These issues are discussed more fully in the EMP.

4.2 Current ecotourism

4.2.1 The project area holds special value to those that have camped and explored in the area, some every year since 1978. A special appreciation for the associated aboriginal and European history, unusual flora and fauna and the wilderness and landscape values has been acquired.

Given the fragile nature cycle of the plants and animals how can the area be mined and so extensively disturbed without destroying its fabric and rhythm of life?

The qualities so highly valued, the vastness seen from the top of hills (such as Windarling) would be gone forever. The evening shadows they throw over the land would be seen no more.

How is it possible to justify the removal of whole hills and destroying 87% of a population of Declared Rare Flora?

These statements are not really about ecotourism but it is true that these natural values would be altered for some portions of the ranges.

4.3 Future ecotourism

4.3.1 The PER does not adequately address the impacts on tourism and recreation. **(CALM)**

Current access to the area by tourists seems to be limited although some areas are visited by individuals, 4WD groups, and members of the WA Naturalists Club and Wildlflower Society. Future tourism potential is difficult to assess but there is no investigation that the proponent is aware of concerning ecotourism potential in the region. It is not the responsibility of Portman to undertake such a study.

Access to areas near Windarling and Mt Jackson will be restricted in the interests of public safety but other areas (such as Bungalbin) will remain open and could be used by ecotourism operators.

4.3.2 No studies have been undertaken on the potential for ecotourism in this largely unspoilt area. The combination of remoteness, spectacular scenery, seasonal appearance of wildflowers and native fauna and living Aboriginal heritage may provide sensitive ecotourism operators with a viable Southern-Cross based industry. Any mining proposals which impact on the natural values of this region should be counted as an opportunity cost. It is more than likely that the environment of the region is of more value intact than permanently defaced by short-term mining operations.

The area may have potential for ecotourism. Refer to Point 4.3.1 above.

An assessment of the likelihood of ecotourism operations in the area may need to be undertaken but it is not the role of the PER to examine these possibilities. The PER document is prepared by the proponent to examine the environmental issues of the project not economic or commercial ones.

5. Decommissioning and Rehabilitation

5.1 The rail formation should be completely removed after Mine Closure **(MPR)**

The rail formation would be removed in areas of natural drainage courses and rehabilitated for the entire length.

5.2 The EPA should impose a condition, that mine voids are backfilled progressively and rehabilitated using local soil and seed stock**.** The mine voids should not be left open area after closure. With evaporation outstripping rainfall by approximately 10 to 1, any ingress of water into mine voids has the potential to quickly become hypersaline and subsequently salinise the surrounding area. Open voids also pose a threat to fauna and will be a lasting eyesore impacting on future tourism prospects for the region. Given that Portman propose a large number of small pits, there is no reason why spoil

from one pit could not be used to backfill a previous pit, which will at least avoid the problems of exposed waterbodies and associated salinity.

Imposition of conditions that mine voids are backfilled would render the project uneconomic. No project of this type could be economically viable if waste material has to be placed in environmentally acceptable waste dumps while a pit is operational and then returned to the void as part of decommissioning.

Additionally, the local groundwater is already largely hypersaline.

Backfilling mine voids would be prohibitively expensive particularly because the ratio of waste to ore is quite high. It is agreed though that mine voids would represent a scar on the landscape and may have associated environmental impacts. The project requires the concurrent mining of each of the pits in order to blend the ore types to a suitable saleable product.

Likewise underground mining would be inappropriate for iron ore mining where economies of scale are necessary to make the project viable.

5.3 Runoff from cleared areas should be impounded and, along with water accumulated in mine voids, should be used to grow perennial fodder plants.

This would not be appropriate to the rehabilitation objectives for the project nor would it be appropriate to EPA objectives.

In this particular instance, fodder plants would most likely be weed species and would potentially degrade the environmental values of the area.

5.4 Deep ripping should not be included in the rehabilitation plan so that the man made catchments can be preserved.

This would not be appropriate to the rehabilitation objectives for the project nor would it be appropriate to EPA objectives.

If man made catchments is in reference to the mine pits then generally speaking these would remain. It would be largely up to CALM as to what purpose these areas should be used for.

5.5 Waste material which contains phosphorous and sulphur could be spread on the flat country as fertiliser.

The level of these nutrients is too low to act as fertiliser and is unlikely to be in an appropriate (i.e. ionic) form for plant absorption.

5.6 Revegetation could include useful timber (eg sandalwood) or perennial fodder plants for cattle.

This would not enhance the conservation values of the area and is not appropriate to the objective of restoration of habitat. Refer also to Point 5.3.

6. Watercourses

6.1 Could the watercourse off Windarling south through boundary to Marda Battery be impacted?

As discussed in the PER it is not considered likely that mining will significantly affect local hydrology as there are no sizeable drainage features in the area of the ranges due in part to the low rainfall that the area receives. Localised flows from the ranges flow downwards onto the plains and would not be anticipated to significantly affect vegetation.

7. Surface Water Quality

7.1 One of the commitments contained in the PER is for the development of an Environmental Management Plan (EMP). The PER indicates that saline groundwater will be used for dust suppression along haul roads. The EMP should include monitoring of the health of vegetation along the haul roads to assess whether the use of saline water for dust suppression is having an adverse impact upon adjacent vegetation communities. If adverse impacts are identified, the EMP should identify the management practices that will be implemented to address this issue. **(WRC / CALM)**

It is a case of either dust or saline water and it is thought that dust would have a greater impact to vegetation along roads as indicated by CALM in their submission. The availability of water in the area is limited and groundwater supplies are naturally saline in the region. To limit movement of salt into areas adjacent to roads it was suggested in the PER (p. 166) for excess water collected in spoon drains to be removed periodically. As suggested by CALM bunding may also be necessary. Also spray nozzles will be designed and constructed to limit over spray.

It is agreed that the best quality water (lowest concentration of dissolved solutes) should be utilised for dust suppression based on the groundwater available from nearby wells. Saline rather than hypersaline groundwater should be used and ideally would be less than 2000 mg/L (PER p.146).

Monitoring of the health of vegetation along the haul roads will be included in the EMP.

8. Groundwater Quantity/Quality

8.1 The proposed mine sites are located within the Goldfields Groundwater Area and the provisions of the *Rights in Water and Irrigation Amendment Act 2000* will apply. Exploration for, and abstraction of, groundwater within a proclaimed area requires the approval of the WRC by way of a groundwater licence. Potential impacts associated with groundwater abstraction for the project have been adequately assessed and the proposed monitoring should ensure that these impacts will be managed satisfactorily **(WRC)**.

Portman agrees with the WRC comments.

8.2 Would Pigeon Rock aquifer be lowered?

Pigeon Rock is some distance from the proposed development and under the current proposal it is considered unlikely that aquifers would be affected. Monitoring of groundwater at bores will ensure that drawdown does not reach undesirable levels. At present groundwater sources in the area have not been identified and further investigations are required.

9. Aboriginal Culture and Heritage

9.1 The Aboriginal heritage and cultural issues have not been adequately addressed by the proponent. The proposed works should not proceed until such matters have been clarified. **(DIA)**

Assertions that Aboriginal heritage and cultural issues have not been adequately addressed are strongly disputed (refer to Point 9.2 below).

9.2 In the process of conducting a heritage survey for Portman, senior Law people with traditional responsibilities for this area alerted Portman to the fact that Mt Jackson and Windarling Range contain sites of great significance. Portman's initial heritage survey consultants (Australian Interaction Consultants) prepared a document which clearly outlines these concerns, indicating the Windarling site as one of significance. It is understood that Portman may have been in receipt of this information well before publication of the PER document, but instead of reporting on this information, terminated AIC's contract and forwarded the incomplete report to another consultant, Dr Phillip Clark in Adelaide who evidently chose to ignore some of the data gathered by AIC. Can the proponent please make a detailed response on this matter?

Senior law people with traditional responsibilities for this area <u>did not</u> alert Portman to the fact that Mt Jackson and Windarling Range contain sites of great significance.

People bought into the area by Ron Parker are not accepted by the custodians, Ballardong and Central West people, as having traditional responsibilities.

It is Ron Parker who alleges sites of great significance. Any Aboriginal support for this contention is from people who are not from this area and who have well known agendas in relation to alleged heritage issues and mining proposals.

Despite being continually asked over the past 12 months Ron Parker and AIC have not provided DIA with any information that enables the department to conclude there are sites which could or have been disturbed by Portman.

At a meeting in Kalgoorlie in December 2001 both Ballardong and Central West groups, in the presence of DIA, expressly advised they did not want Parker to return to the area in any official anthropological capacity.

Following this meeting Ballardong and Central West returned to the Mt Jackson, Windarling area and have not reported sites or problems with any of Portman's activities to the DIA.

The Ballardong group have written to DIA/EPA specifically in response to a letter from DIA to EPA regarding the adequacy of Portman's handling of heritage and cultural issues.

Portman, Ballardong and Central West have jointly agreed and signed a heritage protection protocol. Amongst other things, the protocol established a heritage committee to discuss any and all heritage issues associated with the project.

At the committees last meeting in Merredin on May 10th the area's custodians, Ballardong and Central West, again confirmed they had no heritage issues in relation to Portman's project plans.

Both Central West and Ballardong claimant groups have approved an agreement which will allow for granting of mining leases at Windarling and Mt Jackson and for subsequent mining operations to commence. This agreement is now being executed by the parties. At the time of submission of this response 23 of 24 claimants have signed the agreement.

9.3 On page 115 of the PER document Portman show that the Windarling site is clear of Aboriginal heritage sites, when in fact the AIC documentation provided to Portman describes KY31 as a "specific site within dreaming track/site complex, more research required". This may place Portman in breach of s15 of the *Aboriginal Heritage Act 1972.*

Portman is extremely disappointed that the Conservation Council and other individuals have been making serious assertions in regard to heritage issues without seeking comment from the company or the traditional custodians of the country.

Specifically sites alleged by AIC have been excluded from the PER because:

1. *AIC have not been able to provide the DIA with any information satisfying site identification criteria under the Heritage Act.*
2. *The assertions from AIC are not supported by the traditional owners.*

Therefore Portman rejects assertions that previous and future activities have or will impact on sites because there is no credible information that there are any sites.

9.4 It is instructive to compare the list of Aboriginal Heritage sites on page 114 of the PER document with the original research provided to Portman by AIC. Sites KY24 and KY27 - 31 have been omitted from the PER document. No explanation is given for this incomplete list. Why have sites KY24 and KY27-31 not been included in the PER?

Refer to Point 9.3 above.

9.5 With the exception of KY 28 and possibly KY30, all of these sites fall within the project area. The absence of this information may have violated the intent of the *Aboriginal Heritage Act 1972*, and gives rise to concern that the information provided to the EPA and the public may not of a standard on which a sound evaluation can be based.

Refer to Points 9.1, 9.2 and 9.3 above.

9.6 The ore deposits at Windarling (W3), Mt Jackson (J2) and Mt Jackson (J3) were all identified as being specific sites within the site complex of a number of Dreaming tracks.

This has been mentioned previously but has not been clarified to any degree during the archaeological and ethnographic survey of the project area. Unfortunately there are few living indigenous representatives with knowledge of the area and much of the information about cultural values have been lost. Further aboriginal site surveys will be required in areas likely to be disturbed as noted in Commitments 12 and 13.

Refer to Point 9.3 above.

9.7 All of the sites have been attributed mythological origin, character and substance. It has been alleged that, in the course of its further exploration, including drilling within areas identified as aboriginal sites in the AIC report, Portman has damaged some sites. A complaint has been lodged with the Department of Indigenous Affairs (DIA) and Portman. Can the proponent please indicate whether Aboriginal sites have been damaged in accordance with the above allegation?

Refer to Point 9.3 above.

9.8 The EPA should request the DIA to inquire into the process used by Portman to gather Aboriginal Heritage information, to assess whether or not accurate information has been provided to the EPA and the public. The EPA should withhold issuing a recommendation to the Minister until such time as the matter has been thoroughly investigated by the DIA.

Portman has consulted on all relevant cultural and heritage issues with the traditional owners over the past two years. The opinions of the traditional owners are not those expressed by Parker, AIC or other Aboriginal interests who do not speak for the area.

Portman are more than happy for DIA to inquire into its handling of heritage and cultural issues over the past two years. We suggest however the focus of any inquiry be the Ballardong and Central West groups. There has never been any dispute that these groups as well as being the native title claimants are custodians for the area.

Portman contends that the AIC approach is flawed professionally and ethically. AIC was engaged by Portman to conduct a heritage survey in the Windarling/Mt Jackson area. AIC then proceeded to produce a secret report for the Ngalia people without consultation or agreement from the company or more importantly the Ballardong or Central West. Neither Central West or Ballardong consider Ngalia to have any rights to speak for this country. Both claimant groups have specifically considered these external heritage claims prior to supporting and agreeing to the agreement referred to in 9.2.

The practice of AIC/Ngalia to bring outsiders to an area then make claims of significant sites over all major areas a proponent seeks to develop and then failing to provide evidence to DIA is a dangerous and unacceptable practice.

Both Portman and the traditional owners have provided information to DIA. Portman believes that when the views and opinions of Ballardong/Central West are given the correct weighting compared to the views of AIC and others the heritage issue can be put into perspective.

The approach of AIC and related parties, which is apparently accepted without question by the Conservation Council, is not an attempt to properly identify heritage or cultural issues, but a crude attempt to use unsubstantiated heritage assertions to put an end to a project.

The process over two years to arrive at a significant land use agreement between Portman and two overlapping claimants cannot be adequately described here. Portman is willing to provide the EPA and the Conservation Council with a briefing in support of the comments contained in this response.

10. Non Indigenous Heritage

10.1 There is a lost grave of Johnson (or Johnston) 1897 at Deception Hill – north end of diorite spur.

P*ortman is not aware of this location or if it is near the project area. Nothing is listed on any of the relevant heritage registers.*

11. Evaluation of Alternatives

11.1 Mining of any description must not disturb Windarling Peak. Windarling deposits W4 and W2 can be mined without objection. Mining of any description must not disturb Mt Jackson deposit J2. Mt Jackson deposit J3 can be mined without objection. Portman needs to look at and reassess their mining proposals on the basis of preserving the landscape values as a responsible mining company. Portman should also investigate and target some of the other areas of iron ore in the region that don't have as much landscape value.

Clearly this view is not one with which Portman is in agreement.

11.2 Open-Pit Mining costs approx. $4.00 per cubic metre. Underground Mining, without significant development is $12.00 per cubic metre, underground mining with significant development is $25.00 per cubic metre. The $12.00 option would equate to an approximate mining cost of $3.00 per Tonne. High grade ore from underground mining at Windarling could be blended with the lower grade material of Jackson J1, thus averaging the higher cost ore with lower value ore resulting in an economic gain from currently unusable material (a Portman representative indicated that J1 could be blended with W3 in future proposals, 22 April).

Windarra Nickel Discovery and Mine records the 25 year life of a project that occupies a significant place in Australia's history, and which for a long time was the focus of world attention. Windarra was an underground mine, although where the ore body reached the surface, some open cut mining was carried out. The deepest workings were more than 500 metres down.

Now the Windarra Project is finished. 14 Mt of rock was removed from underground plus 5mt of 1.5% Nickel Ore. To remove almost all trace of the project it took nearly two years. Seeded and rehabilitated, the 161ha site including the discovery hills (BIF) is still intact. Scarring was kept to a minimum. This is responsible mining.

These lenses of Nickel were steeply dipping at almost the same attitude as the Windarling peak beds. Has the proponent investigated underground alternatives so that the visual ridges of Windarling peak on W3, W5 are not disturbed. If not why not?

Underground mining for iron ore at these locations is not economically viable under any circumstances. Mining for nickel and precious metals is an entirely different process and the required economies of scale are dissimilar in the extreme.

11.3 Portman should leave the Windarling Peak till the very end of mining so that if the world economic climate changes and the project fails, the ridges on W3, W5 are left intact.

As stated previously the Windarling deposits are central to the economic viability of the project and at least some mining would be necessary at W3 to provide ore for blending with Mt Jackson and Koolyanobbing ores.

11.4 Since this is a non-renewable resource it may be wiser to leave it for the next generation of Australians to benefit from. Maybe it is needed for a future Hi-Met operation at Kwinana or even for strategic purposes?

Intergenerational equity is an important consideration in relation to environmental sustainability issues. If the project is considered to be environmentally unacceptable then surely this would remain the case in the future ?

12. Other

12.1 Environment Australia is satisfied with the Malleefowl Conservation Plan. **(Environment Australia)**

The Malleefowl issue is one that Portman have taken seriously from the inception of exploration activities in the area and current management includes erection of signage warning of Malleefowl presence and education of the workforce about this Rare fauna species.

12.2 The company, through the PER and approval process, needs to commit to resourcing an environmental team with high environmental and land management skills. **(CALM)**

As outlined in the Environmental Management Plan for the project the Mine Manager and an Environmental Officer (to be appointed) will be responsible for the environmental management of the project.

The need for Portman to appoint a well-respected environmental officer for the site is agreed.

12.3 The proponent needs to establish a bushfire detection and brigade infrastructure to deal with fire emergencies in the area and adjacent lands. **(CALM)**

Fire management practices are to be detailed in a Fire Management Plan for the project as mentioned in the EMP. This includes training employees in fire prevention and safety and the development of a coordinated approach to bush fire control with relevant surrounding stakeholders and in consultation with CALM.

12.4 The rail corridors, camp and Windarling area should be fenced.

The camp and waste disposal area will be fenced to restrict access by feral fauna (cat and fox) and feral predator control implemented.

Fencing of the rail corridor may restrict access and would limit animal dispersal. It is not considered to be a reasonable option.

At Windarling it would be most useful to fence areas with Rare Flora so as to limit access and potential disturbance.

13.5 On p22 of the PER Portman states that the "Volume of waste will not be significant so overall impact minor". Is 320 Mt of waste insignificant?

Solid refuse waste has apparently been confused with waste rock from the mining process. Solid refuse/putrescible waste will be produced from the accommodation village and will not be in the order of 320Mt. A few tonnes perhaps.

Appendix 5

Proponent's Second Option Proposal Definition and Environmental Impacts

Project Scope

Portman are proposing the expansion of the Koolyanobbing Iron Ore operation with the construction and development of new iron ore mines based on seven deposits in two areas to the north of Koolyanobbing (Table 1). The deposits at Mt Jackson and Windarling will provide the resources to increase the current rate of production from 3.5 Mtpa at Koolyanobbing to 8 Mtpa over a period of three to five years. The iron ore will be crushed and screened at Koolyanobbing and loaded on to trains for transport to Esperance for shipping. The expansion project has two main components:

(i) Mining. This will involve the development of at least seven new small-scale open cut iron ore mining operations and the construction of associated waste dumps and infrastructure. The iron ore deposits are relatively small (< 30 Mt per deposit) and occur as discrete bodies at different locations within the elevated ranges in the area. The Mt Jackson area has two economic deposits (J2 & J3) and Windarling has five deposits (W1 - W5).

(ii) Transportation Corridor. This will involve the construction of a 114 km link between the existing Koolyanobbing mining area and the proposed Windarling mine area with an additional 11km spur connecting Mt Jackson. Initially the link will comprise a gravel all-weather haul road for transport of run of mine ore by road train. Should mining rates and project economics warrant it, a rail line may be constructed.

Ore and waste will be mined by conventional open cut methods of blasting and excavation with material loaded onto trucks and transported to stockpile areas. Mining will involve a high degree of selectivity to distinguish between ore and waste, hence requiring waste dump storage areas for overburden material.

Facilities proposed at Mt Jackson and Windarling include:

- Ore stockpiles at each mine area;
- Load-out facilities for transport of ore to Koolyanobbing for further processing; and
- Heavy vehicle maintenance workshop and associated infrastructure at a central location.

The expansion will also require additional and/or enhanced facilities at the existing Koolyanobbing operation. These include expansion of existing:

- Crushing, screening and stockpiling facilities;
- Mine offices; and
- Train-loading facilities.

For the purposes of dust control, each of the main ore processing plants (i.e. primary and secondary crushing, screening, sampling and load-out facilities) will be equipped with water sprays or dust extraction systems to minimise dust generation.

Support infrastructure for mining will include:

- a private, unsealed haul access road to the mine areas at Mt Jackson and Windarling;
- fuel storage facilities at each of the mine areas;

Table 1: Summary of Key Characteristics associated with the Proposal.

Component	Key Aspect	Characteristic Description
Mining Operations	Proposed Mine Locations and deposits	Mt Jackson deposits J2 and J3 Windarling deposits W1 to W5
	Estimated area of mine pits	Mt Jackson pits J2 and J3 – 18ha Windarling pits W1, W2, W3, W4 – 207ha
	Ore Type	Hematite-geothite
	Ore Mining Rate	Staged expansion to 8 Mtpa over 3 to 5 years
	Total Estimated Production	80 Mt
	Proposed Operation Commencement	2003 – Construction, Mining, Processing and Transshipment
	Project Life Span	10 years
	Anticipated Year of Decommissioning	2012
	Proposed Waste Dump No. ( ) and Area	Mt Jackson (2) – 41ha; Windarling (2) – 219ha
	Ore stockpile areas	Mt Jackson – 15ha; Windarling – 34ha
	Proportion of Waste to be backfilled	Nil
	Stripping Ratio (waste:ore)	4:1 approx.
	Area of haul roads	Mt Jackson – 18.2ha; Windarling – 15.8ha
	Total estimated area of disturbance	Mt Jackson – 93 ha; Windarling – 480 ha
Processing Requirements	Processing at Mt Jackson, Windarling	Primary crushing at the two sites - possibly a single mobile unit covering the two sites.
Changes to existing facilities at Koolyanobbing	Expansion of General Facilities	Mine offices
	Expansion of Processing Facilities	Secondary crushing, screening, stockpiling and train loading
	Workforce	Increased number of employees
Transport Corridor	Length	114 km – Koolyanobbing to Windarling 11 km spur to Mt Jackson
	Estimated area of disturbance	500 ha approx.
	Initial Haul Road	30 300t Road trains per day
	Ultimate Rail line Train Movements	4 per day
General	Workforce	Construction – 200; Operation - 180
	Project Duration	Operation – 10 years Construction - 6 months
	Workforce Accommodation	Accommodation Village for 80+ people Area of disturbance - 25 ha
	Infrastructure	Power source – diesel generator Water source – potable water trucked or piped from Koolyanobbing
	Water Supply Requirements (estimated)	Transport Corridor Construction – 3500 kL/day Minesite Construction – 2000 kL/day Operation - Potable and domestic supplies - Bore water for dust suppression

- vehicle washdown facility at each mine area;
- accommodation village adjacent to the Windarling mine area;
- fire tender, ambulance and first aid areas to be located at the accommodation village; and
- explosives storage facilities, constructed according to mining regulations, to be located at each of the mine areas.

Potable water requirements for the accommodation village at Windarling will be sourced from Koolyanobbing or a desalination plant onsite.

Bore water will be required for construction of the mine and railway, and for dust suppression during project operation. Investigative drilling for suitable groundwater sources will be undertaken in the near future. Water will be transported by pipeline.

Fuel will be delivered to the mine areas by road tanker from Koolyanobbing. Fuel storage facilities will be in the form of bulk fuel tanks located within lined bunds constructed according to DEWCP requirements and existing Australian Standards.

Power will be supplied by means of a diesel generator at each mine area.

The existing airstrip at Marda, to the north of Mt Jackson, has been upgraded.

Alternate Development Option

Approval is sought specifically for the Alternate Development Option as presented in Section 2.2.1.1 of the PER document. The Alternate Development Option proposes to mine approximately 70 % of the economic mineable mineralised portion of the W3 deposit at Windarling. This option would allow the proposal to be economically viable although the economic return to both Portman and the State would be significantly reduced. It is considered by Portman that access to a minimum of 70% of the W3 deposit is required in order for the expansion project to be economically viable.

The primary environmental impacts arising from this option are presented in Table 2

Table 2: Environmental impacts arising from Alternate Development Option

	Alternate Option (mining 70%)
Impact to *Tetratheca paynterae* (DRF):	
Number of individuals	1,792
% of population	60%
population area	2.0ha
% of population area	50%
Impact to *Ricinocarpus brevis* (P1):	
Number of individuals	2,240
% of population	28%
population area	11.3ha
% of population area	27%
Impact to significant banded ironstone shrublands:	
S4	45%
S6	70%
S9	40%

Project Exclusions

The current proposal DOES NOT seek approval for:

- Mining iron ore below the water table (hence no dewatering is planned at this stage). At a stage when mining is planned for below the groundwater table then approval on environmental issues associated with dewatering, including management of saline water, will need to be addressed; and

- The impact of activities relating to the increased transport of ore from Koolyanobbing to the Port of Esperance or likewise the shipping of ore from Esperance.

COMMITMENTS

The following environmental commitments have been made by Portman in order to manage the Koolyanobbing Expansion Project:

1. Environmental Management Plan

Portman will prepare, implement and regularly revise an Environmental Management Plan (EMP) for the Project. The EMP will include, but not be limited to:

- monitoring of key environmental aspects;
- management of environmental impacts from construction and operation;
- rehabilitation and revegetation of disturbed areas;
- an overview of timing for implementation of commitments; and
- reporting requirements.

2. Environmental Management System

Portman will develop and subsequently implement a formal Environmental Management System (EMS) for the Project and the existing Koolyanobbing operations that embraces the ISO 14001 standards and incorporates the following:

- environmental policy and corporate commitment to the EMS;
- mechanisms and processes to ensure;
- planning to meet environmental requirements;
- implementation and operation of actions to meet environmental requirements;
- measurement and evaluation of environmental performance; and
- review and improvement of environmental outcomes.

3. Closure Plan

Portman will prepare a detailed Closure Plan for the Project. The plan will address closure actions to be taken for mine voids, waste dumps, and associated infrastructure including the rail corridor and will provide the basis for an eventual 'walk-away' closure strategy for the Project.

4. Flora and Vegetation Surveys

Additional flora and vegetation survey of any areas to be disturbed but not yet surveyed will be undertaken prior to disturbance.

5. Rare and Priority Flora Surveys

Additional surveys for Rare and Priority Flora in areas to be disturbed but not yet surveyed will be undertaken prior to disturbance.

6. Threatened Flora MP

Portman will prepare and implement a Threatened Flora Management and Conservation Plan for the Project. The Plan will address management of Threatened Flora impacted by the proposed development. The Plan will include but not be limited to: In-situ protection of remaining populations; fencing; blast dust management (no blasting in adverse wind conditions), weed management and population condition monitoring.

7. Tetratheca Research Programme

Portman will provide support and funding for a 3 year Tetratheca paynterae research programme undertaken collaboratively by Kings Park & the Center for Land Rehabilitation University of Western Australia. The research programme will include;

- Local translocation, expand local remnant population
- Regional translocation, additional populations
- Rehabilitation on pit walls, ore strike face, waste dumps
- Ex-situ preservation, tissue culture, seed stores, botanic gardens

8. Fauna Surveys

Additional targeted surveys for Rare and Priority Fauna in areas to be disturbed but not yet surveyed.

9. Malleefowl Conservation Plan

Portman will develop and implement a Malleefowl Conservation Plan for the project area, including detailed survey of proposed impact areas for Malleefowl and their mounds.

10. Groundwater

Portman will implement a monitoring plan to ensure that groundwater levels are not significantly reduced in and near extraction areas.

11. Dust

Portman will implement dust management measures for mining operations, including a dust-monitoring programme if considered necessary.

12. Weeds

Portman will develop and implement a Weed Management Plan, including implementation of weed hygiene procedures.

13. Aboriginal Site Surveys

Portman will involve the appropriate indigenous custodians in additional archaeological and ethnographic surveys to identify sites and their significance within the Project area likely to be disturbed, where required.

14. Future Aboriginal Site Surveys

Additional Aboriginal site surveys will be undertaken in accordance with a Heritage Protection Agreement that has been agreed with the Ballardong and Central West people.

15. Consultation on Section 18 Application

Portman will consult with the appropriate indigenous custodians on Aboriginal sites in the Project area prior to any Section 18 application being developed in keeping with the agreed protocol.

16. Submission of Section 18 Application

Portman will make a written application to the Aboriginal Cultural Materials Committee (for subsequent consent by the Minister for Aboriginal Affairs) if any identified Aboriginal site in the Project area is required to be disturbed.

17. Establishment of a Land Use Agreement

Portman has established a Land Use Agreement with the Ballardong and Central West native title claimants to identify and assess any social and cultural aspects of the physical and biological environment impacted.

18. Establishment of a MOU with CALM

Portman will establish a Memorandum of Understanding with CALM to progress conservation tenure arrangements and integrate environmental management practices to enhance the conservation values of the area whilst permitting a variety of land uses (including mining).

19. Biodiversity Management Plan

Portman will develop and implement a Management Area Biodiversity Management Plan in collabaration with CALM.

20. Conservation Tenure Implementation Plan

Portman will develop and implement a Conservation Tenure Implementation Plan in collabaration with CALM

21. Support for Conservation Progranmmes

Portman in consultation with the CALM and EPA will provide support and funding for nominated conservation programmes over a 5 year period. Options for potential programmes include:

- Conservation estate addition by land purchase such as the Die Hardy Ranges area or other Threatened Ecological Community area;
- Threatened Ecological Community protection;
- DRF recovery plan implementation, for example of five other critically endangered flora species currently lacking in support for implementation of the respective recovery plan.