




PORTMAN IRON ORE LIMITED

KOOLYANOBBING IRON ORE PROJECT

W2 PIT – MINING BELOW THE GROUNDWATER TABLE

Environmental Impact Assessment (Environmental Protection Statement)

July 2008

Public Release (Revision G)

globe ENVIRONMENTS

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EXECUTIVE SUMMARY

Background

Portman Iron Ore Limited (Portman) operates the Koolyanobbing Iron Ore Expansion Project. The Project includes mines at Windarling and Mount Jackson, processing of ore at Koolyanobbing, and road and rail facilities between these sites and the Esperance Port.

The Project was assessed by the Environmental Protection Authority (EPA) in 2002 as a Public Environmental Review (PER) under the *Environmental Protection Act 1986* (WA) (Portman 2002; EPA 2002) and was subsequently approved by the Western Australian and Commonwealth Ministers for the Environment and Heritage in 2003 (WA Minister for the Environment and Heritage 2003; C'th Minister for the Environment and Heritage 2003).

The assessment and approvals were limited to mining above the groundwater table, with a commitment by Portman to refer mining below the groundwater table to the EPA at a future date. Portman referred the proposal to mine below the groundwater table at the W2 pit to the EPA in January 2008 (Portman 2008a).

In March 2008, the EPA recommended that the proposal to mine below the groundwater table at the W2 pit should be assessed at an Environmental Protection Statement (EPS) level of assessment under the *Environmental Protection Act 1986* (WA). This document is the Environmental Impact Assessment (Environmental Protection Statement) for mining below the groundwater table at the W2 pit.

The Proposal: W2 Pit - Mining Below the Groundwater Table

Mining below the groundwater table at the W2 pit involves a vertical depth increase of approximately 114m from nominally 402m AHD to 288m. The depth increase will enable mining of an estimated 6 million tonnes of ore. The depth increase will be completely contained within the existing approved mine footprint area.

The ore will be mined using the same open-pit mining techniques currently used for the existing W2 pit. The exception will be that dewatering of the groundwater within the W2 pit will be required to temporarily lower the groundwater level and enable dry-floor mining. The dewatering water produced will be used for dust suppression and other mining activities.

The potential environmental impacts associated with mining below the groundwater table at the W2 pit were identified through consultation with staff from the Department of Environment and Conservation (DEC), EPA and Portman. The 2002 PER was also reviewed. The identified environmental factors were:

- Impacts on stygofauna (subterranean fauna) from groundwater dewatering;
- Impacts on groundwater dependent vegetation (including rare flora) from groundwater dewatering;
- Impacts of dewatering on groundwater aquifers;
- Disposal of dewatering water;
- Generation of dust from mining activities;
- Acid leachate generation in the W2 waste rock dump;
- Impacts on fauna and flora from a water-filled W2 pit at the completion of mining;
- Impacts on the landscape and visual amenity; and
- Fire.

The environmental factors previously addressed in the 2002 PER that are not relevant to the current proposal to mine below the groundwater table are not reassessed in this Environmental Impact Assessment.

The ore will be mined in accordance with the existing approvals for the Windarling mine, which include:

- Statement of environmental approval under the *Environmental Protection Act 1986* (WA), and management plans under that approval;
- Environmental approval under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th), and management plans under that approval;
- Licence to take water from the Department of Water (DoW) under the *Rights in Water and Irrigation Act 1914* (WA), and the wellfield Operating Strategy under that approval; and
- Mining Proposal approved by the Department of Industry and Resources (DoIR) under the *Mining Act 1978* (WA), and the Environmental Management Procedures under that approval.

A mining proposal for mining below the groundwater table at the W2 pit has been submitted to DoIR as an amendment to the approved mining proposal. The mining proposal amendment will be assessed by DoIR concurrently with the EPA's Environmental Impact Assessment process.

Table 0-1 contains a summary of the environmental impact assessment for mining below the groundwater table at the W2 pit. As identified in Table 0-1, the potential environmental impacts associated with mining below the groundwater table at the W2 pit are consistent with the existing impacts for the Windarling mine and can be adequately managed in accordance with the existing statutory approvals, plans, strategies and procedures.

Table 0-1: Summary of potential issues and impact assessment for mining below the groundwater table at the W2 pit. A detailed assessment of the potential issues is contained in this Environmental Impact Assessment (Environmental Protection Statement) document.

Potential Issue	Summary of Environmental Impact Assessment	Management Proposed
Impacts on stygofauna (subterranean fauna) from groundwater dewatering.	Three surveys for stygofauna were undertaken between October 2007 and February 2008 (Wetland Research and Management 2008). The surveys were conducted in consultation with DEC and in accordance with EPA *Guidance Statement 54: Guidance for sampling fauna in groundwater and caves for environmental impact assessment* (EPA 2003). The three surveys did not identify the presence of stygofauna, and concluded that stygofauna were unlikely to be present at the W2 pit due to the depth of the groundwater from the surface and low groundwater dissolved oxygen concentrations (Wetland Research and Management 2008). **Conclusion:** Based on the surveys undertaken, the proposal will not impact on stygofauna.	No stygofauna management is proposed due to the absence of stygofauna.
Impacts on groundwater dependent vegetation (including rare flora) from groundwater dewatering.	Prior to mining, the natural groundwater level was at approximately 402m AHD, being at between nominally 80m to 120m below the natural surface ground level. Groundwater is currently abstracted in accordance with a licence under the *Rights in Water and Irrigation Act 1914* (WA) issued by DoW for the purposes of dust suppression and other mining activities (DoW 2005). The proposal will not require an increase to the 2.25GL annual water entitlement of the licence. As a result of the licensed groundwater abstraction since the commencement of mining, the groundwater level has been lowered by approximately 30m and is currently approximately 370-385m AHD (Rockwater 2007). Dewatering associated with this proposal will reduce the groundwater level within and immediately surrounding the W2 pit. The vegetation surrounding the W2 pit, including rare flora, does not rely on groundwater for water supply. This is evidenced by the natural depth to groundwater and the maintenance of vegetation health surrounding the W2 pit following the reduction in the groundwater level. The salinity of the groundwater, at 20 000mg/L to 29 000mg/L (Rockwater 2008), is also predicted to be unsuitable for terrestrial vegetation water supply. It is considered that the vegetation species surrounding the W2 pit rely on water supply from a combination of rainfall, and retained soil/rock-pore and rock-crack moisture. **Conclusion:** Based on the groundwater depth, the salinity of the aquifer, the water sourcing method of the vegetation and the maintenance of vegetation health following groundwater level reductions at the W2 pit, a further reduction in the groundwater level at the W2 pit will not impact groundwater-dependent vegetation, including rare flora.	No management of dewatering impacts on vegetation is proposed due to the absence of groundwater dependent vegetation.

Potential Issue	Summary of Environmental Impact Assessment	Management Proposed
Impacts of dewatering on groundwater aquifers.	Prior to mining, the natural groundwater level was at approximately 402m AHD, being at between nominally 80m to 120m below the natural surface ground level. Groundwater is currently abstracted in accordance with a licence under the *Rights in Water and Irrigation Act 1914* (WA) issued by DoW for the purposes of dust suppression and other mining activities (DoW 2005). The proposal will not require an increase to the 2.25GL annual water entitlement of the licence. As a result of the licensed groundwater abstraction since the commencement of mining, the groundwater level has been lowered by approximately 30m and is currently approximately 370-385m AHD (Rockwater 2007). Dewatering associated with this proposal will reduce the groundwater level within and immediately surrounding the W2 pit. Monitoring of four groundwater wells surrounding the W2 pit is undertaken every 6 months in accordance with an Operating Strategy (Portman 2008b) approved by the DoW under the *Rights in Water and Irrigation Act 1914* (WA). If approved, monitoring of the aquifer and adjoining aquifers will continue under a licence issued by the DoW for dewatering associated with mining below the groundwater table. Investigations undertaken in 2007 into the aquifer under the W2 pit identified that the aquifer is isolated from other aquifers (pers. com. P DeBroekert of Rockwater April 2008 based on Rockwater 2007). The isolation is caused by the geology (banded ironstone formation and faults) limiting the lateral movement of groundwater between aquifers (pers. com. Portman Geology Department, April 2008). Accordingly, investigations have identified that the dewatering associated with mining below the groundwater table in the W2 pit is unlikely to affect adjoining aquifers due to the isolation of the aquifers. Modelling of groundwater abstraction and recharge for mining below the groundwater table indicates that, following mining below the groundwater table (to 288m AHD), the groundwater will recover to approximately 330m AHD in the long-term (Rockwater 2007). **Conclusion:** The groundwater level of the aquifer beneath the W2 pit will recover to approximately 330m AHD following mining. Due to the isolated nature of the aquifer proposed to be dewatered, no impact on the water level or water quality of adjacent aquifers is expected.	Monitoring of the aquifer to be dewatered, and adjacent aquifers, will continue to be undertaken in accordance with the Operating Strategy approved by the DoW under the current abstraction licence. If dewatering of the W2 pit is approved, Portman will increase the frequency of groundwater level monitoring of the four monitoring wells to monthly. Portman will seek to amend the approved Operating Strategy with the DoW to reflect this increase in monitoring frequency.

Potential Issue	Summary of Environmental Impact Assessment	Management Proposed
Disposal of dewatering water.	Groundwater is currently abstracted in accordance with a licence under the *Rights in Water and Irrigation Act 1914* (WA) issued by DoW for the purposes of dust suppression and other mining activities (DoW 2005). The use of the dewatering water for dust suppression and other mining activities occurs in accordance with an Operating Strategy (Portman 2008b) approved by DoW under the licence. The volume of dewatering required to enable dry-floor mining of the W2 pit is estimated at 0.44 GL/y (Rockwater 2007), which is within the 0.38 GL/y to 0.56 GL/y volume range used at the Windarling mine in 2006 and 2007 (Portman 2008d). Groundwater abstracted for dewatering within the W2 pit will also be used for dust suppression and other mining activities. It is anticipated that the volume of groundwater currently abstracted from other wells for the purposes of dust suppression and other mining activities will be reduced. Based on the 2006 and 2007 volumes of groundwater used for dust suppression, an excess of groundwater from dewatering of the W2 pit to be used in dust suppression is not expected. **Conclusion:** Dewatering water produced will be used for dust suppression and other mining activities.	Dewatering water will be used for dust suppression and other mining activities in accordance with the existing Operating Strategy approved by the DoW under the current abstraction Licence.
Generation of dust from mining activities.	Dust generated from the mining of the W2 pit, and throughout the Windarling mine, is currently managed in accordance with a Dust Management Plan (Portman 2003a) approved by the DEC under the existing environmental approval. Dust monitoring is undertaken in accordance with the Dust Management Plan. Monitoring indicates that dust is predominantly contained within 100m to 250m of the mining pit walls, with the greatest impacts limited to within 50m (Portman 2007a, Portman 2007b). The nearest population of Declared Rare Flora (DRF) *Tetratheca paynterae ssp. paynterae* is located approximately 1100m from the W2 pit, with the nearest population of DRF *Ricinocarpos brevis* located approximately 50m from the W2 pit; both being outside of the area of greatest dust impact. The material to be mined below the groundwater table will have a higher retained moisture content, which will result in fewer particles with the potential for dust generation during blasting and loading operations. Additionally, an increased depth of the pit will assist to contain dust within the pit area. As a result of the retained moisture and increased pit depth, mining below the groundwater table at the W2 pit is expected to generate equal or less dust than the current mining operations. **Conclusion:** The generation of dust will be equal to, or less than, the current mining operations. Dust can be managed in accordance with the existing Dust Management Plan (Portman 2003a).	Dust will continue to be managed in accordance with the approved Dust Management Plan (Portman 2003a) approved by DEC under the existing environmental approval.

Potential Issue	Summary of Environmental Impact Assessment	Management Proposed
Acid leachate generation within the Windarling W2 waste rock dump.	Unoxidised waste material from the W2 pit has a potential for acid leachate generation when disposed of to the W2 waste rock dump. Approximately 14 400 000m^3 of waste material has been disposed to the W2 waste rock dump to date, of which 44 250m^3 (0.3%) of waste had a sulphur content greater than 0.3%. This portion of the waste material has been contained and isolated above the groundwater table within the centre of the W2 waste rock dump in accordance with DoIR guidance on waste rock dumps (DoIR 2001) Mining below the groundwater table will generate approximately 9 800 000m^3 of waste material, of which 17 700m^3 (<0.2%) has a sulphur content greater than 0.3%. This material also has a low acid forming potential. The sulphur content and total sulphur volume is not considered significant (pers. com. N Payne, Portman Mine Geology Department 2008). The volume of waste material below the groundwater table with a sulphur content greater than 0.3% is less by both percentage volume and by total volume than has been disposed of to the W2 waste rock dump to date. This additional material will be contained and isolated within the centre of the W2 waste rock dump in accordance with the existing management practices and approvals. **Conclusion:** Mining below the groundwater table will result in a low acid leachate generation risk that is equal to, or less than, the current mining operations. Acid leachate generation can be managed by containing and isolating this proportion of waste above the groundwater table within the W2 waste rock dump in accordance with current management practices and approvals.	Unoxidised waste material with a sulphur percentage greater than 0.3% will be contained and isolated within the centre of the W2 waste rock dump in accordance with existing management practices and DoIR guidance on waste rock dumps (DoIR 2001).

Potential Issue	Summary of Environmental Impact Assessment	Management Proposed
Impacts on fauna and flora from a water-filled W2 pit at the completion of mining.	Dewatering will cease following the completion of mining below the groundwater table at the W2 pit. The cessation of dewatering will allow the groundwater to recover and permanently fill the W2 pit over time to approximately 330mAHD (Rockwater 2007). If mining below the groundwater table did not occur, the W2 pit would periodically contain water (pers. com. P DeBroekert of Rockwater April 2008). The presence of a permanent or periodic water supply may attract native and feral fauna. This attraction could result in increased predation on native fauna by feral predator species. Further, fauna such as kangaroos and goats may increase grazing pressure on adjacent native vegetation. A Preliminary Closure Plan (Portman 2003b) has been approved under the existing State and Commonwealth environmental approvals (WA Minister for Environment and Heritage 2003; C'th Minister for Environment and Heritage 2003). The Preliminary Closure Plan includes a requirement for safety measures around mine voids as determined in consultation with DEC and DoIR. Although this safety requirement is not specific to the protection of flora and fauna, protection measures (such as fencing, feral animal control, etc) could be considered within that context. The Preliminary Closure Plan should be amended to clarify this position. It is expected that the Windarling mine site will be transferred to the management of DEC for the purposes of conservation following the completion of mining and rehabilitation (EPA 2007). Prior to the transfer to DEC, Portman will consult with DEC on the most appropriate method(s) to prevent fauna from accessing the water filled pit, based on best practice standards for mine closure at that time. Prior to mine closure, Portman is required under the State and Commonwealth environmental approvals to prepare a Final Closure Plan. The most appropriate method(s) for excluding fauna from the water-filled pit will be considered during the development of the Final Closure Plan. Development of the Final Closure Plan will include consultation with the State and Commonwealth Ministers for the Environment, EPA, DEC, DoIR, DoW and the Forests Products Commission (FPC) as required by the conditions of the approvals. **Conclusion:** The impacts on fauna and flora from a water-filled W2 pit can be managed through a minor amendment to the Preliminary Closure Plan to include fauna and flora protection. The Final Closure Plan to be prepared prior to mine closure will include a management objective for fauna and flora protection, with the specific method(s) to achieve this protection to be determined prior to mine closure so as to be consistent with the best-practice mine closure standards at that time.	Portman will amend the existing Preliminary Closure Plan (Portman 2003b) to include a requirement to exclude fauna (by methods which may include fauna exclusion fencing) from the pit water. Portman will prepare a Final Closure Plan prior to mine closure in accordance with the existing State and Commonwealth environmental approvals. The specifications for achieving fauna and flora exclusion will be determined at the time of mine closure in consultation with the State and Commonwealth Ministers for the Environment, EPA, DEC, DoIR, DoW and FPC, and consistent with best practice standards for mine closure at that time.

Potential Issue	Summary of Environmental Impact Assessment	Management Proposed
Impacts on the landscape and visual amenity	Mining below the groundwater table at the W2 pit will involve is a vertical depth increase. There will be no horizontal expansion of the W2 pit or the W2 waste rock dump that would result in a change to the landscape from vegetation clearing. Waste material generated from mining below the groundwater table at the W2 pit will be disposed of to the W2 waste rock dump. The waste material can be accommodated within the existing height, contour and area approved by the EPA in 2005 (EPA 2005). Accordingly, the additional waste material generated will not result in any additional impact on the landscape or visual amenity. Mining below the groundwater table at the Windarling W2 mine will result in a visually altered mine pit. Mining below the groundwater table will result in the pit being nominally 114m deeper (from nominally 402m AHD to 288m AHD), with the pit containing permanent water at approximately 330m AHD (Rockwater 2007). Consequently, the visual change to the W2 pit can be summarised as an additional 72m depth (31% deeper) with permanent (rather than seasonal) water at the bottom. In terms of landscape impacts, modelling indicates that this landscape change would only be visible from within 25m of the W2 pit wall and from the top of the range located approximately 290m to the north-east. **Conclusion:** Mining below the groundwater table will not cause any significant additional impact on the landscape or visual amenity.	No management actions are proposed as there will be no significant additional impacts on the landscape or visual amenity.
Fire	Fire at the Windarling mine is managed in accordance with a Bushfire Management Plan (Portman 2003e) approved by DEC/EPA. The Bushfire Management Plan includes management actions for fire prevention and fire response. There have been no uncontrolled fires at the Windarling mine since the commencement of mining (pers. com. Windarling Mine Supervisor, June 2008). Mining below the groundwater table at the W2 pit will not introduce any new ignition source that could result in an increased risk of fire. Accordingly, the mining below the groundwater table does not increase the fire risk at the Windarling mine. Continued mining of the W2 pit will extend the duration of the existing fire risk. As the fire risk from continued mining of the W2 pit will extend (but not increase) the existing fire risk, this same level of fire risk can be managed in accordance with the existing approved Bushfire Management Plan under Statement 627 for the duration of the works. **Conclusion:** Mining below the groundwater table will not cause any significant additional fire risk.	Portman will continue to implement the approved Bushfire Management Plan (Portman 2003e) as required under Statement 627.

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Acronyms

AHD	Australian Height Datum
^{o}C	temperature in degrees Celsius
CRG	Community Reference Group
C'th	Commonwealth of Australia
DEC	Department of Environment and Conservation (WA)
DEH	Department of Environment and Heritage (now as DEWHA)
DEWHA	Department of the Environment, Water, Heritage and the Arts (C'th)
DoIR	Department of Industry and Resources (WA)
DoW	Department of Water (WA)
DRF	Declared Rare Flora under the *Wildlife Conservation Act 1950* (WA)
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority (WA)
EPS	Environmental Protection Statement
FESA	Fire and Emergency Services Authority (WA)
FPC	Forest Products Commission
GL	gigalitre
GL/y	gigalitres per year
km^2	square kilometre
km/h	kilometres per hour
m	metre
ML/day	megalitre per day
M	million
mm	millimetre
Mt	million tonnes
mybp	million years before present
pers. com.	personal conversation
ssp.	subspecies
WA	Western Australia

1 The Proposal

Portman Iron Ore Limited (Portman) operates the Koolyanobbing Iron Ore Expansion Project. The Project includes mines at Windarling and Mount Jackson, processing of ore at Koolyanobbing, and road and rail facilities between these sites and the Esperance Port.

The Project was assessed by the Environmental Protection Authority (EPA) in 2002 as a Public Environmental Review (PER) under the *Environmental Protection Act 1986* (WA) (Portman 2002; EPA 2002) and was subsequently approved by the Western Australian and Commonwealth Ministers for the Environment and Heritage in 2003 (WA Minister for the Environment and Heritage 2003; C'th Minister for the Environment and Heritage 2003).

The assessment and approvals were limited to mining above the groundwater table, with a commitment by Portman to refer mining below the groundwater table to the EPA at a future date. Portman referred the proposal to mine below the groundwater table at the W2 pit to the EPA in January 2008 (Portman 2008a) in accordance with that commitment.

In March 2008, the EPA recommended that the proposal to mine below the groundwater table at the W2 pit should be assessed at an Environmental Protection Statement (EPS) level of assessment under the *Environmental Protection Act 1986* (WA).

This document is the Environmental Impact Assessment (Environmental Protection Statement) for mining below the groundwater table at the W2 pit. All other operations at the mine are not part of this proposal and will continue in accordance with the existing approvals.

Mining below the groundwater table at the W2 pit involves a vertical depth increase of approximately 114m, from nominally 402m to 288m Australian Height Datum (AHD). The depth increase will enable the mining of an estimated 6 million tonnes of high quality ore (65% iron with low impurities).

A map identifying the location of the Koolyanobbing Iron Ore Project and the Windarling mine is contained in Figures 1-1 and 1-2. Photographs of the W2 pit are shown in Figures 1-3 and 1-4. A computer generated image of the W2 pit and ore body is shown in Figure 1-5.

A depth increase is considered favourable to a horizontal expansion, which would result in a greater environmental impact (such as vegetation clearing). The depth increase will be completely contained within the existing approved mine footprint area.

The ore will be mined using the same open-cut mining techniques currently used for the W2 pit. The exception will be that dewatering of the groundwater within the W2 pit will be required to temporarily lower the groundwater level and enable dry-floor mining. The dewatering water produced will be used for dust suppression and other mining activities.

1.1 Key Proposal Characteristics

The key characteristics of the proposal are identified in Table 1-1. All other elements of the operation will remain consistent with the proposal approved under Statement 627 (Minister for the Environment and Heritage 2003), and in accordance with the management plans, strategies and procedures approved under Statement 627 and the other State and Commonwealth statutory approvals.

Element	Description
Location	W2 pit, located approximately 90km NNW of Koolyanobbing.
Mine Life	Approximately 3 years.
Estimated Volume	6 Mt.
Mine Depth	To nominally 288m AHD.
Mining method	Open cut.
Dewatering	1.2ML/day annual average (estimated)
Disposal of dewatering water	Dust suppression and other mining activities.

Table 1-1 Key Proposal Characteristics – W2 pit mining below the groundwater table.

Figure 1-1 The Koolyanobbing Iron Ore Project. The Koolyanobbing Iron Ore Expansion Project involves mining or ore at Windarling, Mt Jackson and Koolyanobbing, with road transport of ore between the mines, and rail transport between the Koolyanobbing mine (via Kalgoorlie and Norseman) to Esperance where the ore is exported.

Figure 1-2 Aerial image of the Windarling mine. The W2 pit and the W2 waste rock dump are located on the western side of the mine.

Figure 1-3 Photograph of the W2 pit (February 2008).

Figure 1-4 Photograph of the W2 pit (Aerial Image, March 2008). The base of the pit was nominally 411m AHD at the time of the photograph.

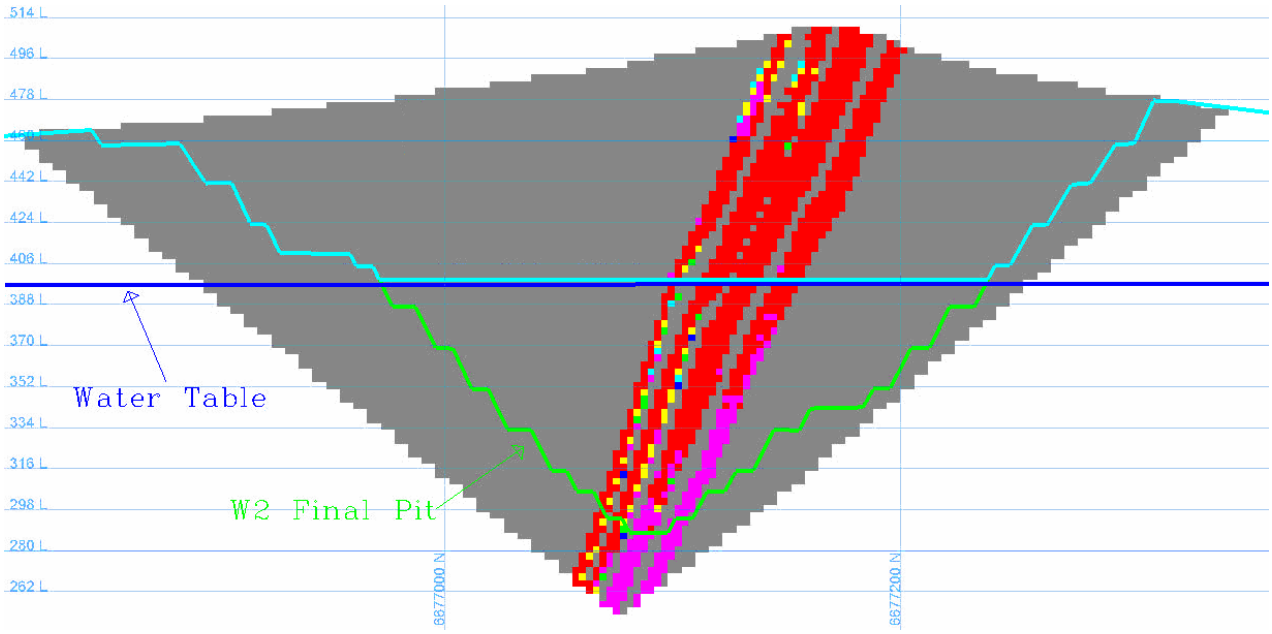

Figure 1-5 Computer generated cross-section of the W2 pit and the ore body. The ore body is identified in red. The current pit shape is identified in light blue, with the proposed final pit shape in green. The watertable is identified in dark blue, with waste rock material in grey. As identified, a greater ratio of ore:waste can be mined below the groundwater table.

1.2 Existing Approvals Relevant to this Proposal

The Windarling mine has a number of existing statutory approvals which are relevant to this proposal. Mining below the groundwater table at the W2 pit will occur in accordance with those approvals. The approvals and their relevance to this proposal are identified below:

Statement of environmental approval under the *Environmental Protection Act 1986* (WA)

The Windarling mine obtained State environmental approval under Statement 627 issued by the WA Minister for the Environment and Heritage in June 2003 (WA Minister for the Environment and Heritage 2003) as part of the Koolyanobbing Iron Ore Expansion Project. In accordance with conditions 11, 15 and 19 of that approval, a Dust Management Plan (Portman 2003a), a Preliminary Closure Plan (Portman 2003b) and a Bushfire Management Plan (Portman 2003e) were prepared and approved by DEC/EPA.

The Dust Management Plan, Preliminary Closure Plan and the Bushfire Management Plan are specifically relevant to the factors assessed in this Environmental Impact Assessment. Dust, mine closure and fire will be managed in accordance with these approved management plans for mining below the groundwater table at the W2 pit.

It should be specifically noted that all existing management plans that have been approved under Statement 627 will continue to apply to the W2 pit for mining below the groundwater table.

Environmental approval under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th)

The Windarling mine obtained Commonwealth environmental approval from the Commonwealth Minister for the Environment and Heritage in September 2003 (C'th Minister for the Environment and Heritage 2003) as part of the Koolyanobbing Iron Ore Expansion Project. In accordance with conditions 4 and 9 of that approval, a Dust Management Plan (Portman 2003a) and a Preliminary

Closure Plan (Portman 2003b) were prepared and approved by Department of Environment, Water Heritage and the Arts (DEWHA, then as the Department of Environment and Heritage (DEH)).

The Dust Management Plan and the Preliminary Closure Plan are specifically relevant to the factors assessed in this Environmental Impact Assessment. Dust and mine closure will be managed in accordance with these approved management plans for mining below the groundwater table at the W2 pit.

All existing management plans under the Commonwealth environmental approval will continue to apply to the W2 pit for mining below the groundwater table.

Licence to take water under the *Rights in Water and Irrigation Act 1914* (WA).

The Windarling mine has a licence issued by DoW (then Water and Rivers Commission) to take groundwater as part of the Koolyanobbing Iron Ore Expansion Project (DoW 2005). In accordance with Condition 3 of that approval, an Operating Strategy was prepared and approved by DoW (Portman 2008b).

The Operating Strategy is specifically relevant to the factors assessed in this Environmental Impact Assessment regarding impacts on aquifers and disposal of dewatering water. Abstraction and disposal of dewatering water will be managed in accordance with the Operating Strategy for mining below the groundwater table at the W2 pit.

Mining proposal under the *Mining Act 1978* (WA).

The Windarling mine has an approved mining proposal under the *Mining Act 1978* (WA) issued by DoIR as part of the Koolyanobbing Iron Ore Expansion Project (DoIR 2003). The approval contains conditions requiring implementation of the environmental procedures contained in the mining proposal (Portman 2003c), which includes procedures for use of groundwater, height and structure limitations on waste dumps, dust suppression, and decommissioning. The Mining Leases for the W2 pit and the W2 waste rock dump (M77/1000, M77/1001 and M77/1038 in DoIR 2003) also include conditions on the management of dust, management of groundwater for dust suppression, and management of mine closure.

The management procedures and conditions related to groundwater, waste dump height and structure, dust suppression, and decommissioning are specifically relevant to the factors assessed in this Environmental Impact Assessment. Mining below the groundwater table at the W2 pit will be undertaken in accordance with those conditions and environmental procedures.

A mining proposal for mining below the groundwater table at the W2 pit has been submitted to DoIR as an amendment to the approved mining proposal. The mining proposal amendment will be assessed concurrently with the EPA's Environmental Impact Assessment process.

1.3 The Proponent

The Proponent for the *W2 pit - Mining below the Groundwater Table* proposal is:

Portman Iron Ore Limited (ACN 007 871 892)
Level 11, The Quadrant
1 William Street
PERTH WA 6000

Telephone: (08) 9426 3333
Fax: (08) 9426 3390
Website: www.portman.com.au

Portman's Environmental Policy for its operations is contained in Appendix 1. The Environmental Policy outlines Portman's overarching objective for environmental protection and continual improvement of environmental performance. The Environmental Policy is implemented through a range of environmental management plans, systems and procedures used at its mine sites.

Portman also has an Environmental Management System for the Windarling mine that has been certified to Australian and New Zealand Standard 14001 of 2004.

1.4 Alternatives to this Proposal

Alternatives to this proposal to mine below the groundwater table at the W2 pit could include

1. limit mining at the W2 pit to above the groundwater table.
2. undertake a horizontal expansion of the W2 pit.
3. undertake mining at a new location.

Each of these alternatives is addressed below:

Limit mining at the W2 pit to above the groundwater table

The W2 pit contains approximately 6 Mt of iron ore below the groundwater table. The iron ore is relatively high grade, averaging 65% iron and containing low levels of impurities. These characteristics enable the ore to be blended with the lesser quality ores from other pits of the Koolyanobbing Iron Ore Project to meet market specifications. Accordingly, the Windarling W2 deposit is a cornerstone of the Koolyanobbing Iron Ore Project.

If mining below the groundwater table at the W2 pit was limited to mining only above the groundwater table, operations at other existing mines that are part of the Koolyanobbing Iron Ore Project may cease. Cessation of mining would have flow-on results that could affect the social (e.g. loss of employment) and economic prosperity of the region (e.g. loss of local business viability) and the State of Western Australia (e.g. loss of mining royalties to the State).

Horizontal expansion of the W2 pit

The W2 pit is unable to be expanded horizontally due to absence of a connecting iron ore resource (pers. com. Portman Geology Department 2008).

Undertake mining at a new location

Mining at the (as yet undeveloped) Windarling W1, W3, W4 and W5 deposits was approved by the Minister for the Environment and Heritage in June 2003 (Minister for the Environment and Heritage 2003). These resources remain scheduled for development in the future and are therefore not considered as an alternative for mining below the groundwater table at the W2 pit.

Theoretically, the 6Mt of high grade iron ore to be mined at the W2 pit could be sourced from a number of other deposits across the State of Western Australia that are currently not scheduled for development. Although no detailed public assessment of alternate locations has been undertaken, it is well understood that new mines have significant environmental, social and economic impacts. Mining below the groundwater table at the W2 pit is considered favourable to mining at a new location as the significant environmental, social and economic impacts (such as vegetation clearing, waste dumps, roads, workforce, etc) have already occurred at the W2 pit, with only limited and manageable environmental impacts to occur from mining below the groundwater table.

As identified above, the proposal to mine below the groundwater table at the W2 pit is considered favourable when compared to the environmental, social and economic impacts of the possible alternatives.

As mining below the groundwater table at the Windarling W2 Pit will not impact on the flora or landscape values of the region (due to no requirement to clear native vegetation), such mining also appears consistent with the EPA's overarching objective for the region to *achieve outcomes that promote both reasonable environmental protection and orderly resource development* (EPA 2007, p.vii).

2 Existing Environment

A complete description of the existing environment is contained in the 2002 PER (Portman 2002) and the 2002 Mining Proposal (Portman 2003c). An amended and updated extract from the Mining Proposal (Portman 2003c) is contained below, with a new section on the Northern Yilgarn Conservation Reserve System.

2.1 Demography

The Windarling mine is located within the Shire of Yilgarn. The Shire encompasses an area of approximately 31 000 square kilometres and caters for a population of approximately 3 000 people. The Shire is centred on the town of Southern Cross, situated 370 km east of Perth and 52 km south-south-west of Koolyanobbing. Towns within the Shire of Yilgarn are Southern Cross (the administrative centre), Bodallin, Bullfinch, Koolyanobbing, Marvel Loch and Moorine Rock. The township of Koolyanobbing was established following interest in iron ore at the Koolyanobbing Range in the 1950s (Shire of Yilgarn 2008).

2.2 Climate

The climate of the Goldfields region is defined as semi-arid Mediterranean. It is characterised by hot, dry summers and mild, wet winters. Seasonal variation is high with an average number of 69 rain days per year. Most rainfall is in winter, and is generally associated with frontal activity from May through to August. Summer falls are erratic and result from thunderstorms. Heaviest rainfalls are associated with rain bearing depressions forming from tropical cyclones (Newbey 1985). At Mt Jackson, where rainfall has been recorded intermittently for 28 years, an annual average rainfall of 232mm has been calculated (Beard, 1979). Evaporation is approximately 2780mm per year.

Throughout spring, summer and autumn most winds are from north-easterly to south-easterly and average approximately 6-20km/h. During winter the winds are predominantly westerly to north-westerly at 0-10km/h.

Mean monthly maximum temperatures at Southern Cross, approximately 100km south of Windarling, are highest in January, with December through March recording average temperatures above 30°C. The highest daily temperature on record during this period was 45.6°C. The lowest mean minimum temperatures of below 5°C are recorded in the winter months of July and August, with the lowest daily minimum temperature on record of 3.8°C (Bureau of Meteorology 2001 (based on data 1889-2000)).

2.3 Topography and Landforms

The majority of the region is gently undulating at approximately 335m to 400m above sea level. Topography is closely related to the underlying geology with the ironstone ridges rising abruptly from the surrounding wooded plains. These ridges include the Koolyanobbing, Mt Jackson, Helena-Aurora, Die Hardy and Mt Manning Ranges. The hills rise up to 100 metres above the surrounding plain with stony slopes and bedrock exposures common on the steep slopes and crests, and include abrupt cliffs, exfoliated rock and many deep crevices and small caves. Scree slopes mainly support a variety of shrub species and mallee eucalypts growing in the shallow skeletal soils.

Much of the region is characterised by undulating areas of sandplain and low granite exposures. Dissection of the land has arisen from ancient drainage during a period when rainfall was higher. The flat extensive sandplains are remnants of the large undissected lateritic duricrust or ‘old plateau’. Low lying broad alluvial valleys contain palaeochannels and playa lake systems.

2.4 Geology

The area lies on the ancient Yilgarn craton, an area that has been tectonically stable since the Proterozoic (600-2500 million years before present (mybp)). The major landscape features are controlled by the Archaean (2500-3700 mybp) granites which underlie most of the region and have weathered gently undulating plains and broad valleys covered by tertiary and quaternary soils. Trending roughly north-south are linear bands of Archaean banded ironstone formations (which were formed from ancient lacustrine deposits of iron oxides and quartz sand) and Archaean greenstone formations (mafic and ultramafic lithologies). Widespread laterisation is believed to have occurred during the Cainozoic era (the last 65 mybp).

The result is a subdued landscape due to extensive weathering over the millennia, with the exception of the highly resistant ironstone sediments, which form a series of abrupt rocky ranges such as the Mt Manning, Mt Jackson, and Helena-Aurora Ranges (Milewski and Hall 1995).

Archaean granites or gneisses underlie most of the project area and although the surrounding areas contain Proterozoic granite intrusions, the mine areas are devoid of these elements. Archaean geology is mainly expressed in the project area as north-north-west to south-south-east tending banded ironstone formations (Biological Surveys Committee 1985). These ranges rise over 100 metres above the surrounding duricrust surface (Chin and Smith 1983). The banded ironstone of the Koolyanobbing belt is up to 300 metres thick where folded. The units consist of alternating dark-grey to black, iron-rich bands and brown to red-brown quartz-rich bands generally in the order of 10mm thick. Several types of schists are inter-layered within this unit.

2.5 Windarling Deposits (W1 to W5)

Detailed descriptions of the local lithology are provided below, based primarily on exploration drilling undertaken by Portman.

W1 Deposit: Consists of parallel bands of hematite and geothitic hematite which dip at approximately 65° to the south. The deposit is characterised by high iron, relatively high phosphorous and low sulphur concentrations.

W2 Deposit: Consists of parallel bands of high grade hematite which dip at approximately 65° to the south. The deposit is characterised by high iron, moderate phosphorous with low sulphur concentrations.

W3 Deposit: Consists of parallel bands of high-grade hematite and geothitic hematite which dip at approximately 65° to the south. The deposit is characterized by high iron and moderate phosphorous with low sulphur concentrations.

W4 Deposit: Consists of parallel bands of geothite with minor hematite which dip at approximately 65° to the south. The deposit is characterised by relatively low iron, high phosphorous with low sulphur. The mineralisation in the deposit is quite different from the other Windarling deposits.

W5 Deposit: Consists of parallel bands of high-grade hematite and un-enriched jasper banded iron-formations which dip at approximately 65° to the south. This deposit is characterised by high iron, moderate phosphorous and low sulphur concentrations.

2.6 Soils

Soils are generally gravelly to coarsely granular at the bases of low hills and ridges with typically colluvium deposits arising from the banded ironstone ranges. Scree slopes have skeletal and stony soils while

breakaways have gritty loams in various deposits, as pockets, sheets, or pediments. On rocky cliff faces and at the top of ridgelines, exposed rocks have no or minimal soil development, with minor soil deposition occurring where moss and lichen trap debris.

2.7 Regional Hydrogeology

The Koolyanobbing area lies in the Southern Cross Province of the Yilgarn Craton, which comprises Archaean-age granite-greenstone bedrock. Within the greenstones there are several banded iron-formation units, generally accompanying mafic and ultramafic rocks such as basalt and peridotite.

Koolyanobbing lies between Lakes Deborah East and Seabrook, which are part of the north-eastern arm of a palaeodrainage system that leads generally westwards to the Avon River. The lakes are now internally-draining playas containing brines and/or salt deposits. Most of the palaeodrainages crossing the Yilgarn block have an associated palaeochannel containing a basal sand formation at depths generally in the range 60 to 100 m below ground surface.

In general, groundwater has the lowest salinity in elevated ground, particularly in the vicinity of the banded iron-formation ridges. Salinities increase towards the palaeodrainages where the groundwater is hypersaline. High salinities prevail over most of the project area because of generally low rates of recharge (arising from clayey soil and light rainfall) and low hydraulic gradients.

2.8 Surface Water

Koolyanobbing lies in the Internal Drainage Division of WA (Beard 1972). Surface drainage in this division does not reach the coast but instead flows to the many large and small salt lakes that dot the inland parts of the state. The major hydrological features of the Koolyanobbing area are Lake Deborah East, Lake Deborah West and Lake Seabrook, which form part of a chain of large, ephemeral salt lakes north-west, west and south-west of the region. These lakes follow the course of an ancient river channel (paleodrainage). A number of much smaller saline and brackish ephemeral lakes exist to the west of the Koolyanobbing township.

To the southwest of the Mt Jackson area lies the Lake Hamersley salt lake system. This low-lying area receives drainage from the hills of the Jackson range, and the remnants of the paleodrainage in the areas surrounding the Helena and Aurora Range. This intermittent drainage has been referred to as 'West Bungalbin Creek'. Due to the relative uniformity of the landscape and the relatively low rainfall, these stream channels rarely flow except in extremely wet years, and much of the drainage is undifferentiated.

Permanent surface water in the area is scarce and comprise mainly of dams excavated to support pastoral activity (Biological Surveys Committee 1985). Examples of freshwater dams near the Windarling mine include Pigeon Rocks (10km north), Bullseye Dam (16km north-west), Pigeon Rock Dam and Mt Jackson Homestead (20km south-west), and Marda Dam (20km south).

Streams within the region are ephemeral. After seasonal rain, water can be held for periods of time in the steep drainage gullies of some of the ranges, but few rockpools in the area are considered permanent. Several gnamma holes (watering holes of significance to Aboriginal persons) have been recorded in the region.

The Windarling mine also contains a number of 'turkeys nest' dams that contain saline groundwater used for mining activities.

2.9 Vegetation

The Windarling Mine is located in the Coolgardie Botanical District which is located within the South-western Interzone between the South-West and Eremaean Botanical Provinces (Beard 1990). The Coolgardie Botanical District contains numerous species which are either specifically arid tolerant or have restricted geographic distributions. The Coolgardie Botanical District also contains flora with biogeographic affinities with the more southern South-western Botanical Province. As a result of this overlap, the species diversity of the flora is enhanced.

The general vegetation of the region reflects the underlying geology and soils. Plant communities are dominated by Salmon Gum (*Eucalyptus salmonophloia*) and Gimlet (*E.salubris*) woodlands on low lying clay loam areas, mallee and shrublands on sandplains, halophytic communities on saline flats and playa lakes, and *E.torquata* and *E. lesouefii* and various shrubland and mallee communities on the rocky slopes of the ranges. The District marks a vegetation transition from the species rich southwest to the arid communities of the desert regions (Beard 1990).

The Coolgardie Botanical District (Beard 1990) is equivalent to the Coolgardie Biogeographic Region within the framework of the Interim Biogeographic Regionalisation for Australia (IBRA) (Thackway and Cresswell 1995). This is a system of biogeographic regions covering the whole of Australia and is recognised as a suitable unit for decision-making in terms of representation of conservation reserves by State and Commonwealth agencies. It is also the largest unit utilised in the assessment of threatening processes and level of sensitivity to impact (EPA 2000).

Dominant plant families within the Coolgardie Botanical District include Myrtaceae (myrtles), Asteraceae (daisies), Chenopodiaceae (samphires) and Poaceae (grasses). The region is characterised by eucalypt woodlands, and covers approximately five percent (125 000 km^2) of the state of Western Australia.

2.10 Rare and Priority Flora

Two flora species have been recorded at the Windarling site that have been classified as Declared Rare Flora under the *Wildlife Conservation Act 1950* (WA) (WA Minister for the Environment 2008). These species are *Tetratheca paynterae ssp. paynterae* and *Ricinocarpos brevis*. *T. paynterae* is also listed as Endangered under the *Environmental Protection and Biodiversity Conservation Act 1999* (C'th) (DEWHA 2008a). Populations of *T. paynterae* and *R. brevis* are protected within mining exclusion areas under the State and Commonwealth environmental approvals.

Three flora species classified by DEC as Priority 4 Flora also occur within the Windarling site, being *Daviesia purpurascens*, *E. formanii* and *Grivillea erectiloba*. Priority flora has no specific protection under the *Wildlife Conservation Act 1950* (WA).

2.11 Fauna

The Windarling mine is located within the Coolgardie Phytogeographic region in the South-western Interzone between the South-West and Eremaean Botanical Provinces (Beard 1981). From a fauna perspective, the area is located within the Eyrean Zoogeographic Region, although near to the boundary with the southern Bassian zone. The Eremaean Botanical Province and the Eyrean Zoogeographic Region represent the Australian arid zone (Beard 1979; Serventy and Whittell 1976).

Surveys of the region have indicated the presence of 2 frog species, 55 reptile species, 92 bird species and 30 mammal species (23 native, 7 introduced) (Dell *et. al.* 1985; M. Craig, pers. com.; ecologia Environment 2001).

Several species of particular conservation significance were noted by ecologia Environment (2001) in relation to Mt Jackson and Windarling, being:

Rare or likely to become extinct - Wildlife Conservation Act 1950 (WA). *Vulnerable* – Environment Protection and Biodiversity Conservation Act 1999 (C'th) (DEWHA 2008b).	Malleefowl - *Leipoa ocellata* The Malleefowl, a sedentary and territorial species, lives in mallee and eucalypt woodland growing on poor sandy soil (Blakers *et.al.* 1984). This species was observed on one occasion in the Mt Jackson area. There is one recorded inactive mound at the Windarling site.
Fauna in need of special protection - Wildlife Conservation Act 1950 (WA)	Peregrine Falcon - *Falco peregrinus* The Peregrine Falcon is widely distributed throughout Australia. Its status is considered to be generally uncommon, probably declining in settled regions; still well established in remote areas. Individuals have been sighted in the vicinity of the Windarling Ranges.
Fauna in need of special protection - Wildlife Conservation Act 1950 (WA)	Carpet Python - *Morelia spilota imbricata* The Carpet Python is widespread, however is uncommon in south-west Western Australia. It is semi-arboreal and is frequently recorded in vegetation surrounding rock outcrops but can also occur in Eucalypt associations such as mallee. It feeds on small to medium sized mammals and lizards. Although no specimens were recorded during the 2000 survey, many potentially suitable habitats were observed within the project areas. It is probably near to the northern limit of its range in south-western Australia within the project area.
Japan-Australia Migratory Bird Agreement and China-Australia Migratory Bird Agreement	Rainbow Bee–eater - *Merops ornatus* This migratory species has been recorded in the region, however was not recorded during the pre-mining surveys.

2.12 Northern Yilgarn Conservation Reserve System

Surrounding the Windarling and Mt Jackson mines is the Mount Manning Nature Reserve, Mt Manning Range Conservation Park and the Helena and Aurora Range Conservation Park. In addition, three further conservation parks in the region have been proposed, incorporating the Die Hardy Range, Jackson Range, Windarling Range, Mt Elvire Station and the Jaurdi Station (EPA 2007).

EPA (2007) recognizes that the areas with a current approval for mining, including the Windarling and Mt Jackson mines, should be temporarily excluded from the proposed reserve, and recommends that temporarily excluded mining areas are incorporated into the proposed reserve after the completion of mining.

3 Environmental Impact Assessment

3.1 Impacts on Stygofauna (Subterranean Fauna) from Groundwater Dewatering

Potential Issue

Stygofauna are aquatic subterranean fauna that live in groundwater systems, and are usually characterised by loss of body pigment, reduced or absent eyes, and elongated locomotory and sensory appendages (EPA 2003; Boulton *et. al*. 2003 in Wetland Research and Management 2008). Mining below the groundwater table at the W2 pit will require dewatering that will lower the groundwater level to enable dry-floor mining. Accordingly, dewatering has the potential to impact stygofauna and stygofauna habitat.

EPA Objective

The EPA's objective for fauna is:

- To maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement of knowledge (EPA 2004).

Legislation, Guidelines, Standards and Approvals

- EPA Guidance Statement 54: Guidance for sampling fauna in groundwater and caves for environmental impact assessment (EPA 2003).
- *Wildlife Conservation Act 1950* (WA).

Environmental Impact Assessment

The Yilgarn region is known to contain stygofaunal communities in the calcrete and alluvial aquifers (Humphreys 1999, 2001 in EPA 2003). Due to size and limited mobility, stygofauna species are also known to have limited geographical ranges, resulting in local endemism (Strayer 1994 in EPA 2003). Lack of connectivity between aquifers (as is the case for Windarling – see Chapter 3.3) can also contribute towards localised endemism.

Because of a limited geographical range, even localised impacts on stygofauna habitat can result in significant impacts on population diversity. Potential impacts on stygofauna habitat for mining include lowering the groundwater table through dewatering (loss of habitat) and from changes to groundwater quality (habitat change).

Dewatering required to enable dry-floor mining at the W2 pit will result in a reduction in the groundwater level. Accordingly, the habitat of stygofauna, if present, could be impacted by the dewatering.

Three surveys for stygofauna were undertaken between October 2007 and February 2008 (Wetland Research and Management 2008) to determine the presence or absence of stygofauna at the Windarling mine (including the W2 pit) and reference sites. The surveys were conducted in consultation with DEC and in accordance with EPA *Guidance Statement 54* (EPA 2003). The methodology and sampling regime are contained in Wetland Research and Management (2008).

A total of 73 samples were taken from up to 32 groundwater wells during the 3 surveys. The surveys did not identify the presence of stygofauna, and concluded that although stygofauna are present in the Yilgarn region, stygofauna were unlikely to be present at the W2 pit due to the depth of the groundwater from the surface (naturally at 80m to 120m) and low groundwater dissolved oxygen concentrations (Wetland Research and

Management 2008). Accordingly, based on Westland Research and Management (2008), mining below the groundwater table at the W2 pit will not impact stygofauna.

Consistent with the recommendations of the surveys and consistent with the sampling agreement reached with DEC, further surveys for stygofauna are not proposed.

Management Actions

No stygofauna management is proposed due to the absence of stygofauna.

Conclusion

The EPA's objective for this factor can be met.

3.2 Impacts on Groundwater Dependent Vegetation (including Rare Flora) from Groundwater Dewatering

Potential Issue

Vegetation requires water supply for survival, and can source water from one or a combination of rainfall, retained soil/rock-pore moisture, or groundwater. Vegetation that relies on groundwater for water supply, either entirely or in part, is classified as groundwater dependent (phreatophytic) vegetation. Mining below the groundwater table at the W2 pit will require dewatering that will lower the groundwater level to enable dry-floor mining. Accordingly, dewatering has the potential to lower groundwater level, which could, in turn, affect the health of groundwater dependent vegetation, if present.

EPA Objective

The EPA's objective for flora is:

- To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement of knowledge (EPA 2004).

Legislation, Guidelines, Standards and Approvals

- *Wildlife Conservation Act 1950* (WA).
- *Environment Protection and Biodiversity Conservation Act 1999* (C'th).
- Statewide Policy No.5 – Environmental Water Provisions Policy for Western Australia (DoW 2000).
- Licence to Take Water under the *Rights in Water and Irrigation Act 1914* (WA) GWL154459(4) (DoW 2005).
- Operating Strategy for Water Supply Borefield - Koolyanobbing Project Northern Haul Road Network and Minesite Facilities (Portman 2008b).

Environmental Impact Assessment

Groundwater and Vegetation at the W2 pit

Prior to mining, the natural groundwater level at the W2 pit was at approximately 402m AHD, being nominally between 80m to 120m below natural ground level. The current groundwater level at the W2 pit is approximately 30m lower at nominally between 370-385m AHD (Rockwater 2007).

The primary cause of the lowered groundwater level is from groundwater abstraction for dust suppression and other mining activities. Groundwater is abstracted in accordance with a licence issued by the DoW under the *Rights in Water and Irrigation Act 1914* (WA) (DoW 2005).

The pre-mining depth to groundwater from the land surface (originally at between nominally 80m to 120m) is beyond the reach of vegetation root systems to source water supply from groundwater (pers. com. G Cockerton of Western Botanical April 2008). The salinity of the groundwater, at 20 000mg/L to 29 000mg/L (Rockwater 2008), is also predicted to be unsuitable for water supply for terrestrial vegetation. It is likely that the terrestrial vegetation relies on a combination of rainfall and retained soil/rock-pore water for water supply.

Dewatering for mining below the groundwater table at the W2 pit will not impact on rainfall or retained soil-pore moisture. Accordingly, dewatering will not impact on the health of, or the water supply to, terrestrial vegetation surrounding the W2 pit.

Rare Flora

The Windarling Range supports *Tetratheca paynterae ssp. paynterae* (Figure 3-1) and *Ricinocarpos brevis* (Figure 3-2), both of which have been classified and protected as *Declared Rare Flora* (DRF) under the *Wildlife Conservation Act 1950* (WA) as it is *considered likely to become extinct or rare and therefore in need of special protection* (WA Minister for the Environment 2008). *T. paynterae* is also classified as *Endangered* under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th) (DEWHA 2008a).

Surveys have identified populations of populations of *R. brevis* within approximately 50m of the northern and north-eastern edges of the W2 pit, and populations of *T.paynterae* at approximately 1100m from the edge of the W2 pit (Figure 3-3).

T. paynterae and *R. brevis* are not groundwater dependent species. Both *T. paynterae* and *R. brevis* occupy rock outcrop habitats. The root systems of *T. paynterae* and *R. brevis* are shallow (less than 0.3m for *T. paynterae* and less than 4.0m for *R. brevis* (pers. com G Cockerton of Western Botanical April 2008)) and therefore do not intersect the groundwater located naturally at between nominally 80m to 120m below the land surface. Water supply for *T. paynterae* is from rainfall and retained moisture in the silica matrix and cracks of the banded iron-formation, with water supply for *R. brevis* from rainfall and retained soil-pore water (pers. com G Cockerton of Western Botanical April 2008). For *T. paynterae*, the non-reliance on groundwater is evidenced by the maintenance of vegetation health surrounding the W2 pit during the period of groundwater level decline (Portman 2007a).

Dewatering for mining below the groundwater table at the W2 pit will not impact on rainfall or retained soil-pore moisture. Accordingly, dewatering will not impact on the health of, or the water supply to, *T. paynterae* or *R. brevis*.

Perched groundwater and vegetation

It is possible that a perched groundwater table(s) may exist surrounding the W2 pit. A perched groundwater table is an unconfined and saturated soil layer that is separated from the main groundwater body by an impermeable layer, and can be permanent or temporary (American Society of Civil Engineers 1996). A perched groundwater table located within approximately 20m of the land surface could potentially function as a water supply to terrestrial vegetation (i.e. groundwater dependence).

At a conceptual level, if a perched groundwater table did exist in the areas surrounding the W2 pit, the perched groundwater table would, by being perched, be predominantly or completely isolated from the main groundwater body. Accordingly, any reduction of the groundwater level from dewatering for the W2 pit will not impact on groundwater dependent vegetation relying on an isolated perched groundwater table, if present.

Management Actions

No management of dewatering impacts on vegetation is proposed due to the absence of groundwater dependent vegetation.

Conclusion

The EPA's objective for this factor can be met.

Figure 3-1 Photograph of *Tetratheca paynterae* flowering at the Windarling Mine. (Photo: P West March 2008)

Figure 3-2 Photograph of *Ricinocarpos brevis* at the Windarling Mine. (Photo: P West March 2008)

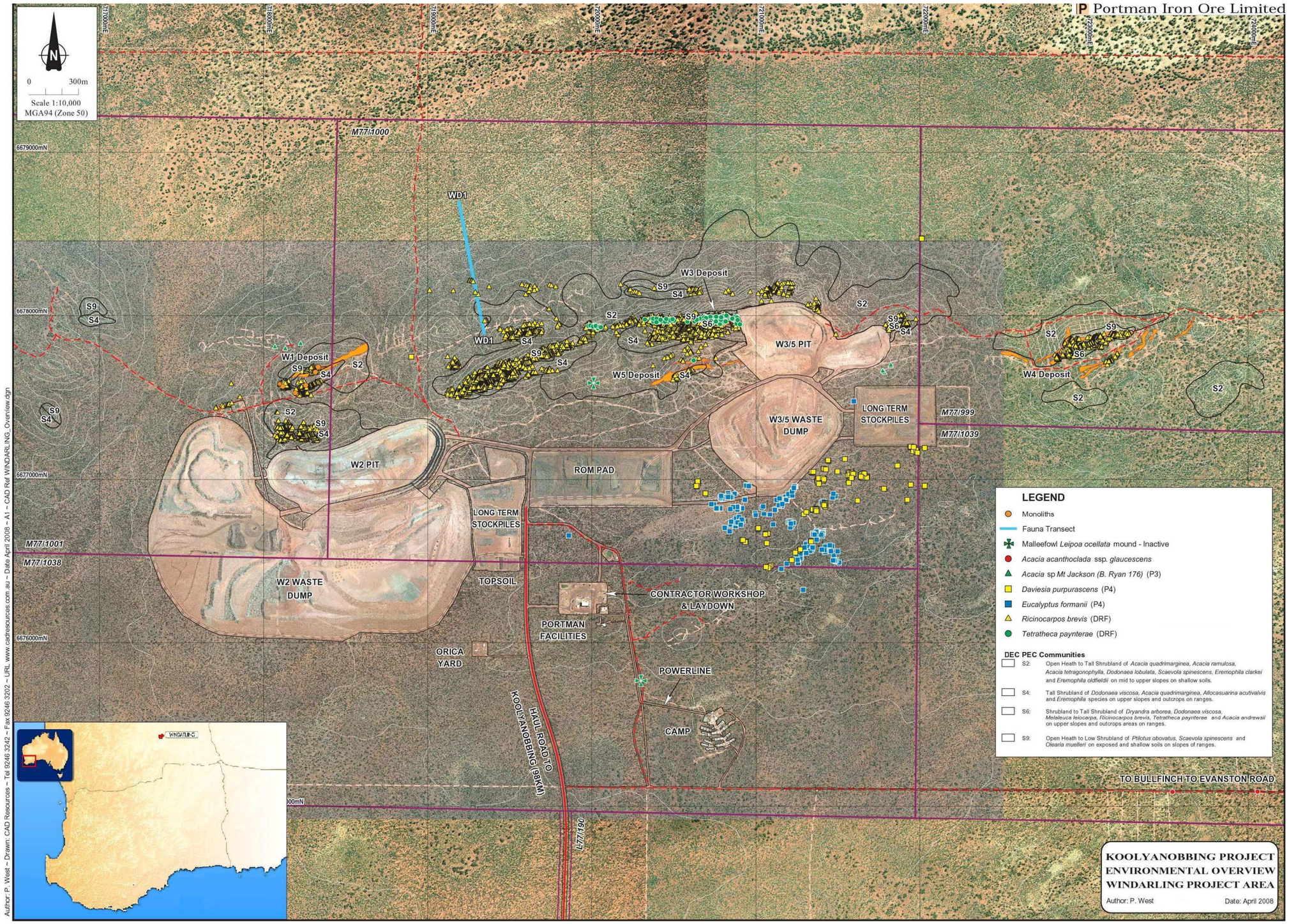

Figure 3-3 Windarling mine and regionally significant flora. Populations of *R. brevis* (yellow triangle icon) are located within 50m of the W2 pit to the north and north-east. Populations of *T. paynterae* (green circle icon) are located at 1100m from the W2 pit to the north-east.

3.3 Impacts of Dewatering on Groundwater Aquifers

Potential Issue

Mining below the groundwater table at the W2 pit will require dewatering to lower the groundwater level to enable dry-floor mining. The dewatering will remove water from the groundwater aquifer.

If the groundwater aquifer to be dewatered is connected to other groundwater aquifer(s), the groundwater level in the connected aquifer(s) may also be impacted. Impacts on connected groundwater aquifers could include reductions in groundwater level (from draining), as well as potential flow-on impacts on flora or fauna reliant on that groundwater. Accordingly, dewatering has the potential to impact on connected groundwater aquifer(s), if present.

EPA Objective

The EPA's objective for water (surface or ground) is:

- To maintain the quantity of water so that existing and potential environmental values, including ecosystem maintenance, are protected (EPA 2004).

Legislation, Guidelines, Standards and Approvals

- *Rights in Water and Irrigation Act 1914* (WA).
- Statewide Policy No.5 – Environmental Water Provisions Policy for Western Australia (DoW 2000).
- Licence to Take Water under the *Rights in Water and Irrigation Act 1914* (WA) GWL154459(4) (DoW 2005).
- Operating Strategy for Water Supply Borefield - Koolyanobbing Project Northern Haul Road Network and Minesite Facilities (Portman 2008b).

Environmental Impact Assessment

Aquifer of the W2 pit

Prior to mining, the natural groundwater level at the W2 pit was at approximately 400m AHD, being at between nominally 80m to 120m below the natural ground level. The quality of the groundwater beneath the Windarling W2 Pit ranges between approximately 20000 mg/L to 29000 mg/L (Rockwater 2008).

The current groundwater level at the W2 pit is approximately 30m lower at approximately 370-385m AHD (Rockwater 2008). The primary cause of the lowered groundwater level is groundwater abstraction for dust suppression and other mining activities. Groundwater is abstracted in accordance with a licence issued by the DoW under the *Rights in Water and Irrigation Act 1914* (WA) (DoW 2005).

The licensed annual water entitlement for the Koolyanobbing Iron Ore Project, including the Windarling mine, is 2.25 GL/y. In 2006 and 2007 the groundwater abstraction under the licence was 1.37 GL/y and 0.75 GL/y, respectively (Portman 2008d). The dewatering volume required for dry-floor mining of the W2 pit has been estimated at approximately 0.44 GL/y (Rockwater 2007). Accordingly, dewatering of the W2 pit will not necessitate a change to the 2.25 GL/y annual water entitlement of the Licence.

Monitoring of four groundwater wells surrounding the W2 pit is conducted every 6 months in accordance with an Operating Strategy (Portman 2008b) approved by DoW under the licence. If mining below the groundwater table is approved, Portman proposes to amend the Operating Strategy to increase the frequency of monitoring to monthly (Environmental Commitment 1 – see Chapter 5).

Modelling of groundwater abstraction and recharge for mining below the groundwater table indicates that, following mining to nominally 288m AHD below the groundwater table, the groundwater aquifer will recover

to approximately 330m AHD in the long-term (Rockwater 2007). This final groundwater level will be approximately 70m lower than the pre-mining groundwater level, with a water depth of approximately 42m. The quality of the water in the Windarling W2 Pit void at the completion of mining is expected to be saline, with the salinity dependent on the relative proportions of saline groundwater inflow, freshwater rainfall and evaporation (Rockwater 2007).

Although the reduction in the long-term groundwater level could be regarded as significant, the change is not environmentally significant as there is no flora or fauna that is reliant on maintaining the pre-mining groundwater level. As the aquifer is isolated (see below section), the change to the aquifer below the W2 pit is also not significant in terms of regional hydrology.

Other aquifers

Investigations undertaken in 2007 into the aquifer under the Windarling W2 deposit identified that the aquifer is isolated from other aquifers (Rockwater 2008; pers. com. P DeBroekert of Rockwater April 2008). This isolation is caused by the geology (banded iron-formation and faults) limiting the lateral movement of groundwater between aquifers (pers. com. Portman Geology Department 2008). As a result of the isolation, dewatering associated with mining below the groundwater table in the W2 pit is not likely to impact the level or the water quality of other aquifers.

Management Actions

If mining below the groundwater table at the W2 pit is approved, Portman will amend the Operating Strategy under the Licence (in consultation with DoW) to increase the frequency of groundwater level monitoring of the four monitoring wells during dewatering from 6-monthly to monthly.

The increased frequency of the groundwater level monitoring will assist in providing improved knowledge of short-term impacts of the dewatering on the groundwater aquifer, such that any unforseen impacts on the groundwater aquifer, and any subsequent changes required to the on-site dewatering management, can be managed in a timely manner.

Conclusion

The EPA's objective for this factor can be met.

3.4 Disposal of Dewatering Water

Potential Issue

Mining below the groundwater table at the W2 pit will require dewatering to lower the groundwater level to enable dry-floor mining. Dewatering required for dry-floor mining of the W2 pit has been estimated at approximately 1.2ML/day (Rockwater 2007), equating to 0.44GL/y. The dewatering water will need to be disposed of in a manner that provides for efficient resource use and with minimal environmental impact.

EPA Objective

The EPA's objective for water (surface or ground) is:

- To maintain the quantity of water so that existing and potential environmental values, including ecosystem maintenance, are protected (EPA 2004).

Legislation, Guidelines, Standards and Approvals

- Licence to Take Water under the *Rights in Water and Irrigation Act 1914* (WA) GWL154459(4) (DoW 2005)
- Operating Strategy for Water Supply Borefield - Koolyanobbing Project Northern Haul Road Network and Minesite Facilities (Portman 2008b).
- Koolyanobbing Expansion Project: Dust Management Plan (Portman 2003a).
- Koolyanobbing Expansion Project Northern Tenements Mining Environmental Management Plan (Portman 2003d).

Environmental Impact Assessment

Dust Suppression and other Mining Activities

Groundwater is currently abstracted from a wellfield in accordance with a Licence issued by the DoW under the *Rights in Water and Irrigation Act 1914* (WA) (DoW 2005). The purpose of the groundwater abstraction is to provide water for dust suppression and associated mining activities. Portman's groundwater allocation under the Licence is 2.25 GL/y.

Dewatering water from the W2 pit will be used for dust suppression and other mining activities in accordance with the approved Operating Strategy. The use of non-potable groundwater for dust suppression is common practice in mines throughout Western Australia and is an effective management strategy for minimising dust impacts on adjacent native vegetation. Groundwater used for dust suppression predominantly evaporates, with a proportion infiltrating and recharging the groundwater aquifer.

The management of the wellfield and the abstracted groundwater is outlined in an Operating Strategy (Portman 2008b) approved by DoW. The Operating Strategy also includes management actions for monitoring, water use efficiency, and reporting. The Operating Strategy includes provisions for preventing the use of saline dewatering water on areas of terrestrial native vegetation (to avoid plant health impacts), and monthly visual monitoring of vegetation health.

The water quality of the groundwater to be abstracted from the W2 pit (wells WW9P, WW11P and WW12P) is identified in Rockwater (2008). Of particular note is the salinity of the groundwater, which ranges between 20000 mg/L and 29000 mg/L.

In 2006 and 2007, groundwater use for dust suppression and other mining activities was 0.56 GL/y and 0.38 GL/y, respectively (Portman 2008d). The dewatering volume required for dry-floor mining of the W2 pit has been estimated at approximately 0.44 GL/y (Rockwater 2007), of which 0.17 GL/y will be in addition to the volume abstracted from the W2 pit (based on 2007 data in Portman 2008d). The 0.44 GL/y that will be

dewatered from the W2 pit is within the 0.38 GL/y to 0.56 GL/y volume of saline groundwater used in dust suppression at the Windarling mine in the previous two years. Further, it is anticipated that the volume currently abstracted from other wells in the wellfield (wells WCW4P, WW5P and WW7P) and the haul road (well MW2P) will be reduced to partially counter the additional 0.17 GL/y to be abstracted from the W2 Pit. Accordingly, dewatering of the W2 pit is not expected to create an excess of saline groundwater for use in dust suppression.

Access roads and the haul road have been designed to capture and contain groundwater used in dust suppression to ensure that the saline groundwater used does not enter areas of native vegetation. The road design includes road grading and sumps. No vegetation impacts from the use of saline groundwater for dust suppression have been recorded at the Windarling mine. Due to the road design and the current management practices for dust suppression, no environmental impact from the continued use of saline groundwater for dust suppression is expected.

Although the continued use of saline groundwater for dust suppression is not expected to impact adjacent native vegetation (based on current management and monitoring results), Portman recognises that impacts to terrestrial native vegetation, if they occur, will need to be rectified. Accordingly, Portman commits to rehabilitating any areas of terrestrial native vegetation that may be impacted from the use of saline groundwater used in dust suppression (Environmental Commitment 2 – see Chapter 5). This commitment is considered to be the most appropriate management strategy for addressing the potential risks and impacts on vegetation from the continued use of saline groundwater for dust suppression. Portman will liaise with the DoW to include this commitment in the Operating Strategy under the existing groundwater licence.

Future Water Disposal Options

In accordance with the Environmental Policy (Appendix 1), Portman is committed to continual improvement in its environmental performance. Although not part of this proposal, Portman will continue to look at alternate water disposal methods into the future for all of its operations. Consideration of alternate disposal methods is also necessary as weather conditions (such as rainfall and flooding) can impact the volume of water that can be used in dust suppression.

One of the potential future options is evaporation. Evaporation at the Windarling site greatly exceeds rainfall (refer Section 2) and is considered an appropriate and effective disposal water method with minimal environmental impact. The Windarling mine has a number of 'turkeys nest' ponds/dams in which groundwater is currently stored and evaporated. A proportion of the dewatering water could be directed to these existing ponds/dams where the water will be evaporated. Additional ponds/dams could be constructed within existing cleared areas for additional evaporation.

A further potential future option is groundwater reinjection. Reinjection of abstracted groundwater has previously been trialled as a potential dewatering water disposal method (Rockwater 2008). This trial confirmed that reinjection could potentially be a future water disposal method for this site, and other sites that are part of the Koolyanobbing Iron Ore Project.

If other water disposal methods (such as those listed above) are proposed for implementation in the future, Portman will ensure that the necessary State government approvals are obtained.

Management Actions

Dewatering water will be used for dust suppression and other mining activities in accordance with the existing Operating Strategy approved by the DoW under the Licence. Any areas of terrestrial native vegetation impacted by saline groundwater used for dust suppression will be rehabilitated (Environmental Commitment 2 – see Chapter 5).

Conclusion

The EPA's objective for this factor can be met.

3.5 Generation of Dust from Mining Activities

Potential Issue

Iron ore mining is inherently a dust generating activity. Dust is generated from actions including blasting, excavation, loading, stockpiling and ore transport. The generation of dust has the potential to affect the health and amenity of people and the environment. Accordingly, the generation of dust must be minimised and managed to ensure the continued health and amenity of people and the environment.

EPA Objective

The EPA's objective for air quality is:

- To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards (EPA 2004).

The EPA's objective for flora is:

- To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement of knowledge (EPA 2004).

Legislation, Guidelines, Standards and Approvals

- *Environmental Protection Act 1986* (WA).
- Dust Control: Best Practice Environmental Management in Mining (DEWHA 1998).
- Licence to Take Water under the *Rights in Water and Irrigation Act 1914* (WA) GWL154459(4) (DoW 2005)
- Operating Strategy for Water Supply Borefield - Koolyanobbing Project Northern Haul Road Network and Minesite Facilities (Portman 2008b).
- Koolyanobbing Expansion Project: Dust Management Plan (Portman 2003a).
- Koolyanobbing Expansion Project Northern Tenements Mining Environmental Management Plan (Portman 2003d).

Environmental Impact Assessment

Dust Management at the Windarling mine

Dust management at the Windarling mine is conducted in accordance with a Dust Management Plan (Portman 2003a). The Dust Management Plan is required under Condition 15 of Statement 627 (WA Minister for the Environment and Heritage 2003) and was approved by DEC in December 2003.

The Dust Management Plan contains management actions including:

- Staff training on dust management procedures and practices;
- Monitoring of dust generated from pits and stockpiles;
- Dust control measures including:
    - minimising vegetation clearing that could create dust-prone areas;
    - dampening of dust-prone areas (such as roads and stockpiles) with groundwater;
    - water sprays fitted to machinery;
    - restriction of vehicle speeds;
    - blasting techniques that produce minimal dust; and
    - progressive rehabilitation of disturbed areas; and
- Internal reporting of dust incidents, with external annual reporting to DEC and DoIR (with subsequent review and audit by DEC and DoIR).

The Dust Management Plan has a specific focus on the management and monitoring of dust at the Windarling W3/5 pit due to the DRF *Tetratheca paynterae* occurring within 10m of the W3/5 pit wall. Dust monitoring for the Windarling W3/5 pit includes daily monitoring by an Osiris dust monitor (refer Figure 3-4) and quarterly sampling and analysis of dust deposition gauges. Dust monitoring for the W2 pit includes visual dust monitoring for dust generation and annual health condition monitoring of the adjacent vegetation.

As mining is an inherently dust generating activity, is difficult to assess the overall effectiveness of the dust management actions in protecting flora and vegetation at the Windarling mine. The long-term impact (or non-impact) of dust on the adjacent vegetation has yet to be determined as the dust impacts cannot be separated from other environmental factors (such as rainfall) that have a greater influence on vegetation health (pers. com. G Cockerton of Western Botanical April 2008). It can, however, be concluded that the implementation of the dust management actions contribute to a reduction of dust from mining activities and that these actions are generally consistent with the actions implemented at mines throughout Western Australia. Portman remains committed to implementing the management actions contained in the Dust Management Plan.

Assessment of Dust Impacts on DRF near the W2 pit.

Vegetation is a dust sensitive receptor. Dust has the potential to settle on vegetation, which can prevent the light capture required for plant photosynthesis and the gas exchange required for plant respiration. For the W2 pit, the nearest populations of the DRF *T. paynterae* and *R. brevis* are located approximately 1100m and 50m, respectively, from the edge of the W2 pit (refer Figure 3-3). Mining at the W2 pit does not present any dust risk to *T.paynterae* as a result of the 1100m separation distance. The lesser 50m separation of *R.brevis* from the W2 pit northern wall requires consideration.

Populations of *R.brevis* containing a total of 15225 individuals occurred on Portman's Windarling tenements prior to the commencement of mining. As at August 2007, a total of 5754 *R.*brevis individuals had been directly impacted by the proposal as approved under the State environmental approval. A further number of *R.brevis* individuals are expected to be impacted by the approved future developments for the approved W1, W3/5 and W4 pits.

The population of *R.brevis* immediately north of the W2 consists of 1020 individuals. One mortality in this population has been recorded, which followed a health notable decline in this population after low rainfall in 2004/2005 (pers. com. S McNee of Western Botanical July 2008). Other contributing factors to the single mortality and the overall health decline previously recorded in this population are believed to be the position in the landscape (sun exposure) and dust from mining operations (pers. com. G Cockerton of Western Botanical April 208; pers. com. S McNee of Western Botanical July 2008).

The monitoring of dust and the impacts of dust on *R.brevis* that have been conducted at the W3/5 pit provide a sound basis on which to assess the likely impacts of dust on *R.brevis* near the W2 pit. Monitoring of dust at the W3/5 pit indicates that dust is predominantly contained within 100m to 250m of a pit wall, with the greatest impacts limited to within 50m of a pit wall (Portman 2007a; Portman 2007b). *R.brevis* within 15m of the W3/5 pit wall (i.e. high dust area) continues to flower (pers. com. S McNee of Western Botanical June 2008). The continued flowering is an indication of the continued health of *R.brevis* even when under high dust deposition conditions.

For the W2 pit, *R.brevis* is located from approximately 50m of the W2 pit northern wall. This distance places *R.brevis* beyond the area of greatest dust impacts from mining activities identified in Portman 2007a and Portman 2007b, however is still within the area where dust deposition has been confirmed. The 2008 growth of this *R.brevis* population appears to be relatively free of dust (pers. com. S McNee of Western Botanical July 2008).

Annual health condition monitoring of *R.brevis* near the W2 pit northern wall of the W2 pit has confirmed that dust from mining the W2 pit reaches this population. The health condition of *R.brevis* in this population varies, with some plants having produced a large number of female flowers during the first half of 2008, while other plants had suffered leaf loss over a period of years and have produced no flowers in 2008. The factors leading to leaf loss and no flowering are believed to be connected to the drought of 2004/2005, as well as some

individuals having better access to water and shorter periods of sun exposure to assist in recovery post-drought (pers. com. S McNee of Western Botanical June 2008; July 2008).

Accordingly, as a consequence of the dust monitoring undertaken (Portman 2007a, Portman 2007b), the *R.brevis* vegetation condition monitoring near the W2 pit and the W3/5 pit, and the 50m separation distance of the *R.brevis* population from the W2 pit northern wall, it can be concluded that the dust generated from the continued mining of the W2 pit is unlikely to cause any mortality or loss of vegetation health of *R.brevis*.

Further to the above, vegetation condition monitoring of both *R.brevis* and *T.paynterae* indicates that rainfall is the most significant factor affecting vegetation health. This is evidenced by recorded mortalities and a general reduction in vegetation health for both *R.brevis* and *T.paynterae* at locations both near and distant from mining operations during two consecutive years of drought (2004/2005). Rainfall is expected to continue to be the most significant factor affecting vegetation condition at the Windarling mine (pers. com S McNee of Western Botanical June 2008).

Dust Risk at the W2 pit for Mining below the Groundwater Table

Dust is generated from actions including blasting, excavation, loading, stockpiling and ore transport. For the Windarling mine, the handling, transport and stockpiling of waste material within the pit and to the waste dumps is the single largest contributor (by total volume) to dust. As the ore:waste volume ratio is higher for mining below the groundwater table (refer Figure 1-5), the overall dust generation risk is considered to be less than the dust generation risk for the current mining operations.

The material below the groundwater table at the W2 pit will have higher retained moisture content as a result of previous saturation by groundwater. This higher retained moisture will assist to bind soil particles, resulting in fewer particles with the potential for dust generation during mining operations. Accordingly, the ore material below the groundwater table to be mined will have an equal or less potential to generate dust than the currently mined ore material.

The increased depth of the pit will also assist to contain dust within the pit area. Mining operations near the land surface have a greater potential for dust escape due to the absence of pit walls that could contain the horizontal movement of dust. For the W2 pit, the current pit walls are currently at approximately 80m height. Mining below the groundwater table at the W2 pit will result in a pit wall height of approximately 190m, with the potential for dust escaping the pit decreasing with an increasing depth. Accordingly, the increased pit depth for mining below the groundwater table at the W2 pit is anticipated to have an equal or less potential for dust escape than the current mining operation.

Human Receptors

There are no human receptors (other than mine staff) within the immediate vicinity of the Windarling mine. In addition to dust management practices on the site (see above), the mine campsite is located approximately 1300m from W2 pit and mine staff undertake dust generating activities within closed vehicles. Accordingly, the impact of dust on human receptors does not require further assessment.

Management Actions

Dust will continue to be managed in accordance with the approved Dust Management Plan (Portman 2003a) approved by DEC under the existing state environmental approval. Annual vegetation condition monitoring will also continue to be undertaken.

The combination of dust management practices and annual vegetation condition monitoring is considered to be the most appropriate method for determining the potential impacts of dust on *R.brevis* near the W2 pit. No additional monitoring or management actions (including contingency actions) are considered necessary.

Conclusion

The EPA's objective for this factor can be met.

Figure 3-4 An Osiris dust monitor being checked near the Windarling W3/5 pit by an Environmental Officer in accordance with the approved Dust Management Plan.

3.6 Acid Leachate Generation within the W2 waste rock dump

Potential Issue

Waste rock material from mining activities has a potential for acid leachate generation as a result of sulphur oxidisation, which can lead to the generation of sulphuric acid. Acid leachate has the potential to contaminate soil and/or groundwater if not managed appropriately.

EPA Objective

The EPA's objective for soil quality is:

- To ensure that rehabilitation achieves an acceptable standard compatible with the intended land use, and consistent with appropriate criteria (EPA 2004).

The EPA's objective for water (surface or ground) is:

- To maintain the quantity of water so that existing and potential environmental values, including ecosystem maintenance, are protected (EPA 2004).

Legislation, Guidelines, Standards and Approvals

- *Mining Act 1978* (WA).
- *Environmental Protection Act 1986* (WA).
- *Contaminated Sites Act 2003* (WA).
- Environmental Notes on Mining: Waste Rock Dumps (DoIR 2001).

Environmental Impact Assessment

Management of Acid Leachate Generation at the Windarling Mine

Waste rock material from mining activities has a potential for acid leachate generation as a result of the oxidisation of sulphur contained in the waste rock material. The oxidised sulphur can result in the formation of sulphuric acid, which in turn can cause the release of metals. If the acid leachate is allowed to escape, it has the potential to contaminate the soil and/or the groundwater, and in turn, affect flora and fauna.

A Mining Proposal (Notice of Intent) under the *Mining Act 1978* (WA) was issued for the mine and the waste rock dumps (Portman 2003c) and subsequently approved by DoIR (DoIR 2003). Waste dumps at mines are regulated under the *Mining Act 1978* (WA). The waste material from the W2 pit is disposed of to the W2 waste rock dump in accordance with the approval obtained under the *Mining Act 1978* (WA) and in accordance with the DoIR guidance on waste dumps (DoIR 2001).

The potential for acid leachate generation is based upon the sulphur concentration and volume of the waste material. Material with sulphur content below 0.3% is regarded as non-acid forming as the oxidation rate is too low to cause acidification. This position is consistent with the advice provided by geochemists to Portman for mining below the groundwater table at Portman's Koolyanobbing K pit (G Campbell and Associates 2002).

Approximately 14 400 000m^3 of waste material has been disposed of to the W2 waste rock dump to date, of which 44 250m^3 (0.3%) had a sulphur content greater than 0.3% (pers. com. Portman Geology Department 2008). This portion of the waste material has been contained and isolated above the groundwater table within the centre of the W2 waste rock dump, with the surrounding uncontaminated waste material providing a buffer from potential environmental receptors such as the groundwater and vegetation. This containment and isolation is in accordance with the objectives of the DoIR guidance on waste rock dumps (DoIR 2001).

The W2 waste rock dump has not shown any physical indication of acid formation, and accordingly no physical monitoring of acid formation has been undertaken or is proposed for the W2 waste rock dump. These

observations are also consistent with the waste rock dumps at Portman's Koolyanobbing mine, where waste rock dumps constructed by BHP (as the former mine operators) in the 1970's show no physical indication of acid leaching (pers. com. Portman Mine Geology Department July 2008)

Based on arithmetic calculations from reverse circulation drilling and analysis conducted by Portman, approximately 9 800 000m^3 of waste material exists in the W2 pit below the groundwater table, of which 17 700m^3 (<0.2%) has a sulphur content greater than 0.3% (pers. com. Portman Mine Geology Department April 2008).

The volume of waste material with a sulphur content greater than 0.3% below the groundwater table at the W2 pit is less by both percentage volume, and total volume, than has been disposed of to the W2 waste rock dump to date. This additional material can be contained and isolated within the centre of the approved W2 waste rock dump in accordance with the existing management practices. Accordingly, no environmental impact from the disposal of waste rock material to the W2 waste rock dump from below the groundwater at the W2 pit can be expected.

Application of the Contaminated Sites Act 2003 (WA)

Although the W2 waste rock dump has concentrations of materials above background concentrations, the W2 waste rock dump is not a contaminated site for the purposes of the *Contaminated Sites Act 2003* (WA) as the isolation and containment prevents a risk of harm to human health, the environment or any environmental value (i.e. no pathway for the contaminant to reach a receptor).

Management Actions

Waste material with a sulphur percentage greater than 0.3% will be contained and isolated within the centre of the W2 waste rock dump in accordance with existing management practices, DoIR approval and DoIR guidance on waste rock dumps (DoIR 2001). No additional management actions or monitoring are considered necessary.

Conclusion

The EPA's objective for this factor can be met.

3.7 Impacts on Fauna and Flora from a Water-filled W2 pit at the Completion of Mining

Potential Issue

The W2 pit will be permanently filled with water at the completion of mining below the groundwater table. The presence of water, whether permanent or periodic, may attract and sustain populations of native and feral fauna. The attraction of fauna may result in increased predation by predator species as a result of fauna congregating to the pit water. Further, increased fauna numbers could increase the grazing pressure on adjacent native flora. The subsequent potential impacts on native flora and fauna can be minimised by preventing access to the water source.

EPA Objective

The EPA's objective for fauna is:

- To maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement of knowledge (EPA 2004).

The EPA's objective for flora is:

- To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement of knowledge (EPA 2004).

The EPA's objective for water (surface or ground) is:

- To maintain the quantity of water so that existing and potential environmental values, including ecosystem maintenance, are protected (EPA 2004).

The EPA's objective for decommissioning is:

- To ensure, as far as practicable, that rehabilitation achieves a stable and functioning landform which is consistent with the surrounding landscape and other environmental values (EPA 2004).

Legislation, Guidelines, Standards and Approvals

- Hydrogeological Record Series Report No. 9: Mine Void Water Resource Issues in Western Australia (DoW 2003).
- Mine Closure and Completion: Leading Practice Sustainable Development Program for the Mining Industry (Department of Industry, Tourism and Resources 2006).
- Koolyanobbing Expansion Project EMP 010: Preliminary Closure Plan (Portman 2003b).

Environmental Impact Assessment

Risk assessment of sustaining a feral animal population

Dewatering will cease following the completion of mining below the groundwater table at the W2 pit. The cessation of dewatering will allow the groundwater to recover and permanently fill the W2 pit over time to approximately 330m AHD (Rockwater 2007). If mining below the groundwater table did not occur, the W2 pit would periodically contain water (pers. com. P.DeBroekert of Rockwater April 2008). The presence of water within the W2 pit, whether permanent or periodic, may attract and sustain populations of native and feral fauna.

Attraction of native fauna to the W2 pit may result in increased predation on native fauna by predator species as a result of native fauna congregating to the pit water. As identified in Chapter 2.8, there are currently various permanent fresh and saline water sources in the Windarling region that could sustain a feral animal

population. Portman currently undertakes a feral animal control and monitoring program in consultation with DEC with a focus on eradicating wild dogs and cats. This program will continue for mining below the groundwater table at the W2 pit to ensure that the feral animal population is under control following the completion of mining. The long-term exclusion of feral fauna (such as dogs and cats) from the water-filled W2 pit will be addressed through the existing closure planning framework for the Windarling mine (see below).

Attraction of feral fauna could increase grazing pressure on native flora. Goats have been identified by conservation groups as a concern for the Windarling area. Despite the presence of various permanent fresh and saline water sources in the Windarling region (refer Chapter 2.8), a sustained population of goats has not occurred in the Windarling region and an increase in available water at the Windarling site is unlikely to change this status (pers. com. Mr Mike Onus (Senior Technical Officer Woodvale Research) of DEC to Mr Paul West of Portman, June 2008). Accordingly, the risk of a water-filled W2 pit sustaining a permanent population of goats that may subsequently graze on native flora is considered unlikely.

Closure Planning Framework for the Windarling Mine

The existing State and Commonwealth environmental approvals required the preparation of a Preliminary Closure Plan prior to mining (Condition 19 of WA Minister for the Environment and Heritage 2003; Condition 9 of C'th Minister for the Environment and Heritage 2003). A Preliminary Closure Plan (Portman 2003b) has been approved by DEC/EPA and DEWHA.

The approved Preliminary Closure Plan includes a requirement for safety measures around mine voids as determined in consultation with DEC and DoIR. Although this safety requirement is not specific to the safety of fauna and flora, measures for the protection of fauna and flora could be considered within this context. Accordingly, Portman proposes to amend the existing Preliminary Closure Plan to include a requirement to exclude fauna from the pit water for fauna and flora protection (refer Environmental Commitment 3 – Chapter 5).

It is expected that the Windarling mine site will be transferred to DEC for the purposes of conservation following the completion of mining and rehabilitation. Prior to mine closure, Portman will consult with DEC on the most appropriate method(s) to prevent fauna from accessing the water filled pit, based on best practice standards for mine closure at that time. Such methods could include fauna exclusion fencing, feral animal control, and funding for long-term management and implementation.

The final arrangement for mine closure will be contained and regulated in the form of a Final Closure Plan. As a condition of both the State and Commonwealth environmental approvals (Condition 19 of WA Minister for the Environment and Heritage 2003; Condition 10 of C'th Minister for the Environment and Heritage 2003), the Final Closure Plan must be prepared and approved by both the State and Commonwealth Environment Ministers on advice of the EPA, DEC, DoIR, DoW and the Forest Products Commission (FPC) prior to mine closure (1 year prior for C'th approval and 2 years prior for State approval). This current legislative framework will ensure that the W2 pit is left in a suitable condition for transfer to the DEC that is consistent with best practice standards of that time, while ensuring that other stakeholders are involved in the planning process.

Backfilling of the W2 pit at the Completion of Mining

In 2003, DoW estimated that there were approximately 1800 mine pits in Western Australia, of which more than 150 were operating below the groundwater table (DoW 2003). In context with other mine pits throughout Western Australia, the current mining industry practice appears to be installation of external safety barriers around a water-filled pit. As noted above, this practice may change in the future with these future changes to be reflected in the Final Closure Plan to be prepared prior to mine decommissioning.

Backfilling of the W2 pit has been investigated as an alternative to fencing to prevent the attraction of native and feral fauna to the (permanent or periodic) water-filled W2 pit following mining. Modelling indicates that following mining, the W2 pit would need to be filled from 288mAHD to near 400mAHD to prevent a permanent water body (Rockwater 2007).

Backfilling of the W2 pit would be cost-prohibitive, in that greater than 7 500 000m^3 of material would need to be transferred from the W2 waste rock dump into the W2 pit. The cost of backfilling has been estimated at

approximately $60M, which is approximately double the economic benefit of mining the ore below the groundwater table (pers. com. Portman Geology Department April 2008). Further, re-excavation of the W2 waste rock dump for backfill material would contribute to additional and unnecessary dust generation and the vehicles required for materials re-excavation and transport would also contribute to greenhouse gas emissions.

Backfilling would prevent any possible re-mining of the W2 pit and W2 waste rock dump should such mining become economical in the future. Similar re-mining has occurred at Koolyanobbing, and numerous other mines throughout Western Australia. Re-mining at the Windarling mine in the future is recognised as speculative for the purposes of this assessment.

Accordingly, based on the potential economic and environmental impacts of backfilling, and consistent with current industry practice, the W2 pit will not be backfilled with its waste rock following mining below the groundwater table.

Potential Future Backfilling Options for the W2 pit

With regards to overall mine planning at the Windarling site, it may be possible, in the future, to backfill the W2 pit with the waste material from the proposed W1 pit(s). The proposed W1 pit(s) is located immediately north of the W2 pit and is scheduled for mining after 2012. This potential option is considered favourable compared to both the construction of a new waste dump for the proposed W1 pit(s) or increasing the size of the existing W2 waste rock dump.

The potential for this backfilling option will be subject to the number, size and depth of pits for the W1 deposit. The number, size and depth of pits for the W1 deposit will be subject to the limitations of the Landscape and Geological Features Protection Plan required under Condition 7 of Statement 627. If the W1 deposit can be mined to its full potential then it is likely that the W2 pit could be backfilled to above the groundwater table.

Unfortunately, due to the limitations of the Landscape and Geological Features Protection Plan being presently unknown, Portman is unable to make a commitment to the backfilling of the W2 pit with the waste material from the proposed W1 pit(s) as part of this proposal to mine below the groundwater table at the W2 pit. This option will continue to be assessed during planning for the proposed W1 pit(s).

Backfilling the W2 pit with the waste material from the W3/5 pit (operational) or the proposed W4 pit(s) (scheduled for mining from 2015) is not considered feasible due to the longer haul distance to the W2 pit (refer Figure 3-3).

Management Actions

Portman proposes to amend the existing Preliminary Closure Plan (Portman 2003b) to include a requirement to exclude fauna from the pit water for fauna and flora protection.

The final specifications for excluding fauna from the water-filled W2 pit will be included in the Final Closure Plan following consultation with the State and Commonwealth Ministers for the Environment, EPA, DEC, DoIR, DoW and the FPC, and consistent with best practice standards for mine closure at that time. No additional management actions are considered necessary.

Conclusion

The EPA's objective for this factor can be met.

3.8 Impacts on the Landscape and Visual Amenity

Potential Issue

Changes to the landscape, such as the excavation of mine pits and the creation of waste dumps, can affect local and regional landscape values and visual amenity. Although the assessment of landscape values is subjective (EPA 2002), it seeks to provide a basis for determining the visual impact of projects on local and regional areas.

EPA Objective

The EPA's objective for visual amenity is:

- To ensure that aesthetic values are considered and measures are adopted to reduce visual impacts on the landscape as low as reasonably practicable (EPA 2004).

Legislation, Guidelines, Standards and Approvals

- Environmental Notes on Mining: Waste Rock Dumps (DoIR 2001).
- Mine Closure and Completion: Leading Practice Sustainable Development Program for the Mining Industry (Department of Industry, Tourism and Resources 2006).
- Proposed modification to proposal – Koolyanobbing Iron Ore Project – Extension to pit, waste dump, and additional stockpiles at Windarling (EPA 2005).

Environmental Impact Assessment

Windarling W2 waste rock dump

Approval by the State and Commonwealth Ministers for the Environment and Heritage in 2003 for the Koolyanobbing Iron Ore Expansion Project, including the Windarling mine, was granted on the basis that the mine would 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" (EPA 2002). The focus of the EPA's 2002 landscape assessment was in relation to the impacts of the waste dumps, as waste dumps have the greatest potential to change a landscape due to protrusion into the skyline and are visible in the landscape from far distances.

A change to the contour and area of the W2 waste rock dump was approved by the EPA in 2005 (EPA 2005). The change to the W2 waste rock dump remained consistent with Portman's original commitment for all waste dumps to be no higher than the surrounding ranges (Portman 2003c; Portman 2003d), and consistent with Statement 627 (WA Minister for the Environment and Heritage 2003) that approved the W2 waste rock dump to a maximum height of 510m AHD. The current design for the W2 waste rock dump is for a height of 490mAHD (20m below the approved maximum height).

Computer generated images of the W2 waste rock dump in January 2008 and at the completion of mining (as approved by the EPA in 2005) is shown in Figures 3-5 and 3-6. Modelling of the waste volumes has confirmed that the 9 800 000m^3 of waste material from mining below the groundwater table at the W2 pit can be accommodated within the existing approved height, contour and area of the W2 waste rock dump.

Accordingly, based on the existing approvals and computer modelling of the waste material, the disposal of waste material to the W2 waste rock dump from mining below the groundwater table within the W2 pit will not have any additional impact on the landscape.

W2 pit

Mining below the groundwater table at the W2 pit is a vertical depth increase that will result in a visually altered mine pit. Mining below the groundwater table will result in the pit being nominally 114m deeper (from

nominally 402m AHD to 288m AHD) and containing permanent water at approximately 330m AHD (Rockwater 2007). Consequently, the visual change to the W2 pit can be summarised as an additional 72m depth (31% deeper) with permanent water (rather than seasonal) following mine closure.

In terms of landscape impacts, this landscape change (i.e. an additional 90m depth below 402m AHD) would only be visible by persons within 25m of the W2 pit wall, or persons situated on top of the range (at 515m AHD) located approximately 290m to the north-east of the W2 pit. Accordingly, the visual impacts of deepening the W2 pit are localised, with no regional impact on the landscape.

Management Actions

No management actions are proposed as there will be no significant additional landscape impact.

Conclusion

The EPA's objective for this factor can be met.

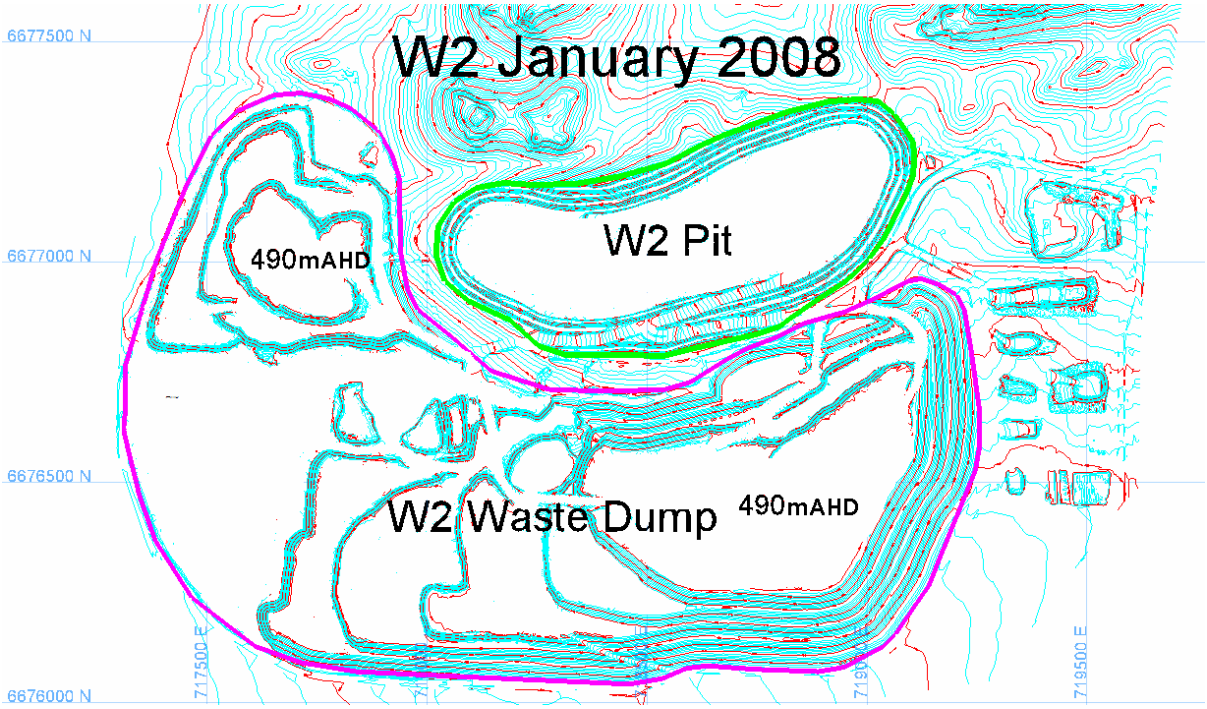

Figure 3-5 Computer generated image of the W2 pit and W2 waste rock dump configuration as at January 2008. The maximum current height of the waste dump is nominally 490m AHD, which is lower than the 515m AHD height of the ridge located 290m to the north-east of the W2 pit (Source: Portman Geology Department April 2008).

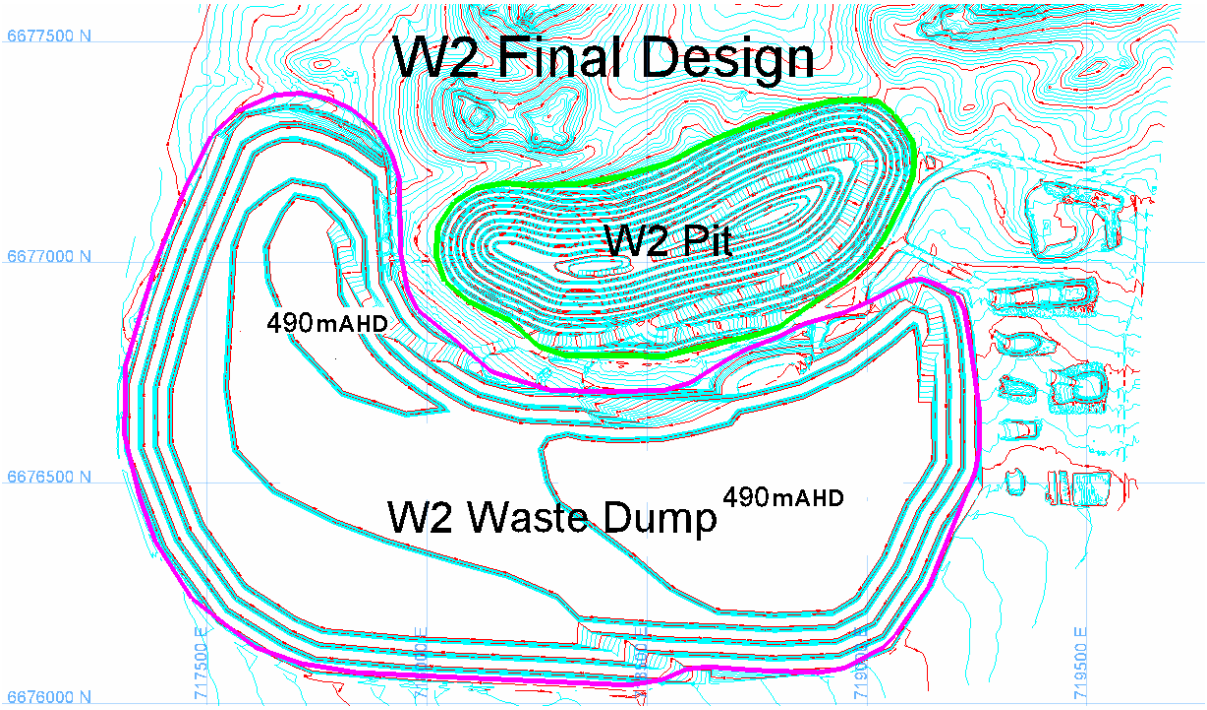

Figure 3-6 Computer generated image of the W2 pit and W2 waste rock dump final configuration at the completion of mining below the groundwater table. The height of the W2 waste rock dump is currently designed to a maximum height of 490m AHD. The W2 waste rock dump height is approved to a maximum of 510m AHD. The configuration of heights for the waste dump for the final configuration is in accordance with existing approvals (Source: Portman Geology Department April 2008).

3.9 Fire

Potential Issue

The major source of ignition of wildfires in the Goldfields region is from lightning strikes associated with thunderstorm activity (CALM 2003 in Portman 2003e). The presence of humans in natural areas is often associated with a change to this fire regime through the introduction of human-caused ignition sources. The arid nature of the region results in a risk of bushfires occurring from both human and natural causes.

An uncontrolled fire at the Windarling mine would have the potential to impact on flora and fauna, including declared rare flora. Accordingly, procedures are required to prevent human-caused fires from occurring and to control fires if they occur.

EPA Objective

The EPA's objective for risk is:

- To ensure that risk from the proposal is as low as reasonably achievable and complies with acceptable standards and EPA criteria (EPA 2004).

The EPA's objective for fauna is:

- To maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement of knowledge (EPA 2004).

The EPA's objective for flora is:

- To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement of knowledge (EPA 2004).

Legislation, Guidelines, Standards and Approvals

- Bushfire Management Plan (Portman 2003e).
- *Bush Fires Act 1954* (WA).

Environmental Impact Assessment

The management of fire at the Windarling mine is currently undertaken in accordance with a Bushfire Management Plan (Portman 2003e). The Bushfire Management Plan is required under a condition of Statement 627 (WA Minister for the Environment and Heritage 2003) and has been approved by DEC.

The Bushfire Management Plan includes management actions to both prevent the occurrence of human-caused fires and to respond to fires if they occur. These actions generally include:

- Staff training on fire preventative actions and the use of fire fighting equipment;
- Fire response equipment (such as fire extinguishers on vehicles and use of water carts);
- Creation of fire breaks and implementation of prescribed burning in consultation with DEC and the pastoral leaseholder;
- Assisting DEC, Fire and Emergency Services Authority (FESA) and the Shire of Yilgarn in fire response;
- Special work permits where work causes has a potential to cause ignition of fires;
- Recording and auditing of fires; and
- Rehabilitation of areas impacted by fire.

There have been no uncontrolled fires at the Windarling mine since the commencement of mining in 2004 (pers. com. Windarling Mine Supervisor, June 2008). This record indicates that the management actions contained in the Bushfire Management Plan have been implemented successfully at the Windarling mine to date. Continued implementation of the management actions can be expected to continue this record.

The EPA has identified fire as a potential risk for mining below the groundwater table at the W2 pit. It is understood that the EPA's concern relates to the impact on DRF *Ricinocarpos brevis* that occur to the north and north-east of the W2 pit, and the DRF *Tetratheca paynterae* that occurs to the north-east of the W2 pit (refer Figure 3-3). An uncontrolled fire through this area has the potential to impact on these species in terms of decreased flora health, loss of individuals (mortality) and/or loss of the populations (depending on both the extent and intensity of fire)

With specific regard to mining below the groundwater table at the W2 pit, mining below the groundwater table will not create any new potential ignition sources that would result in an increased fire risk. The depth of the mining activities within the W2 pit also provides a separation distance of (initially, then increasing with depth) more than 80m between the mining activities and the vegetation at the top of the pit walls. Accordingly, mining below the groundwater table at the W2 pit is not expected to increase the risk of fire that could resultantly impact on flora and fauna.

Mining below the groundwater table at the W2 pit will result in an extended life of the Windarling mine. The extended mine life will consequently increase the time of human presence at the mine, thereby extending the time of potential human-caused fire risk. The continued mining of the W2 pit will not result in any increase in fire risk that would need to be managed in a new or separate manner, but simply will result in a temporal extension of the existing fire risk. Accordingly, the temporal extension of the existing fire risk that results from the continued mining at the W2 pit can be managed through the continued implementation of the management actions of the Bushfire Management Plan for the duration of the additional works.

Further to the above, continued mining at the W2 pit will continue Portman's regional fire response availability. Since mining at the Windarling site, Portman has responded to a DEC request to assist with its fire response outside of Portman's mining tenements. Portman remains committed to providing assistance to DEC, FESA and the Shire of Yilgarn where possible in the event of a fire within the region.

Management Actions

The risk of fire at the Windarling mine will continue to be managed in accordance with the Bushfire Management Plan (Portman 2003e) approved by DEC.

Conclusion

The EPA's objective for this factor can be met.

4 Consultation

As part of this Environmental Impact Assessment, Portman has consulted relevant stakeholders and the community. Details of the consultation undertaken are identified below.

4.1 Consultation with the Community Reference Group

A Community Reference Group (CRG) was formed by Portman as a condition of the state environmental approval (Condition 14 of WA Minister for the Environment and Heritage 2003). The CRG provides a forum for interested community groups and individuals to consider and provide feedback concerning the environmental aspects of the Koolyanobbing Iron Ore Project.

The CRG currently has a membership of 14 and comprises representatives of:

- Yilgarn Shire Council (CRG Chairperson)
- Kalamaia Kabud(n) People
- Pastoral Leaseholders
- Wildflower Society of Western Australia
- Toodyay Naturalist Club
- Malleefowl Preservation Group
- Yilgarn Land Conservation District Committee
- Southern Cross resident
- Windarling Preservation Group

The proposal to mine below the groundwater table at the W2 pit was communicated to the CRG in broad terms in several of the project updates distributed to members in 2006. The proposal was also considered at the September 2006 CRG meeting. Further comment on this proposal was sought from the CRG in January 2007.

A summary of the comments received from the CRG representatives and the current position of Portman to those comments is contained in Appendix 2. A copy of excerpts from CRG meetings and project updates on this proposal is contained in Appendix 3.

It should be noted that the proposal presented to the CRG on the previous occasions included a proposal to re-inject dewatering water into an aquifer as a method of dewatering water disposal. This component of the original proposal is now no longer proposed, with the dewatering water to be disposed of by use in dust suppression and other mining activities. Re-injection trials were undertaken, and may continue into the future. Discussions and approvals (if required) with the DEC and the DoW will occur if re-injection of dewatering water was proposed in the future.

4.2 Consultation with Government Departments and Community Groups

Various government departments and community groups provided advice to the EPA in 2002 regarding the approval of the Koolyanobbing Iron Ore Expansion Project. These government department and community groups were (EPA 2002):

- DEWHA (formerly as Environment Australia);
- DEC (formerly as Department of Conservation and Land Management);
- DoIR (formerly as Department of Mineral and Petroleum Resources);
- Department of Indigenous Affairs;
- Shire of Yilgarn;
- DoW (formerly as Water and Rivers Commission);
- Conservation Council of Western Australia;

- Goldfields Land and Sea Council; and
- Wildflower Society of Western Australia.

In April 2008, Portman advised each of these groups in writing that it intended to mine below the groundwater table at the W2 pit. Portman invited comment on the proposal and enclosed a draft Executive Summary (Portman 2008c) for the proposal. A two-week period was provided for comments from these groups to be received and included in this Environmental Impact Assessment document.

A meeting with the Conservation Council of WA and the Wildflower Society of WA was held in April 2008 on the proposal. A record of this meeting is provided in Appendix 4. The matters discussed primarily related to closure planning and the risk to terrestrial native vegetation from disposal of additional saline dewatering water. These matters are considered in Chapter 2, and Portman have made commitments on these matters (Environmental Commitments 2 and 3 – Chapter 5).

Phone discussions on the proposal were held with DoW. The discussions regarded a possible requirement to make an administrative change to the existing groundwater abstraction licence GWL154459(4) to include "dewatering" in the current list of "authorised activities". Portman will continue to liaise with the DoW to make this administrative change to the licence in accordance with the *Rights in Water and Irrigation Act 1914* (WA) in parallel to this assessment by EPA under the *Environmental Protection Act 1986* (WA).

Phone discussions on the proposal were held with DEWHA. The discussions focussed on protection of *T. paynterae* and *L. ocellata*, both of which are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th) and were considered in the original environmental assessment. The proposal to mine below the groundwater table at the W2 pit will not affect these species, with *T. paynterae* located approximately 1100m from the W2 pit, and active populations of *L. ocellata* not being present at the Windarling mine (only one inactive mound present).

No submissions or inquiries from the other government departments or community groups were received.

4.3 Consultation with Regional Community

In April 2008, Portman placed a public notice in the Kalgoorlie Miner Newspaper advising of the intention to mine below the groundwater table at the W2 pit, and making an open invitation to the public to comment on the proposal. Public submissions were invited over a 2-week period. The public notice referred people to Portman's website (www.portman.com.au), where a copy of the draft Executive Summary (Portman 2008c) could be obtained.

No public submissions were received.

4.4 Consultation with Pastoral Leaseholder

In April 2008, Portman advised the Pastoral Leaseholder of the mine that it intended to mine below the groundwater table at the W2 pit. Portman invited comment on the proposal and enclosed a draft Executive Summary (Portman 2008c) for the proposal. A two-week period was provided for comments to be received and included in this Environmental Impact Assessment document.

The Pastoral Leaseholder provided a response to the proposal (Appendix 5), which in relation to the proposal, included comment on:

- Potential impacts on stygofauna.
- Groundwater quality and groundwater aquifers.
- Use of groundwater.
- Disposal of dewatering water by evaporation ponds/dams.
- Dust generation and dust management.
- Acid leachate generation within the W2 waste rock dump.
- Visual amenity

The above matters have been addressed in this Environmental Impact Assessment and do not require further information.

4.5 Consultation with Environmental Protection Authority

The draft EPS document (Revision D) was submitted to EPA on 29 April 2008. On 26 May 2008, EPA sent a letter to Portman requesting that Portman consider a number of matters and revise the EPS document accordingly (Appendix 6). On 13 June 2008, Portman provided a written response to EPA on the matters raised (Appendix 7) and amended the EPS document (Revision E) in-line with that response.

On 26 June 2008, EPA sent a letter to Portman requesting further revision of the EPS to include additional information on dust management specific to the W2 pit and *R.brevis*, and the inclusion of fire management (Appendix 8). On 1 July 2008, Portman provided a written response to EPA (Appendix 9) and an amended EPS document (Revision F).

On 11 July 2008 and 22 July 2008 EPA requested clarification on dust management and *R.brevis*, and further information on acid mine drainage, respectively. On 16 July 2008 and 24 July 2008, respectively, Portman provided a written response to EPA on the clarifications requested. This EPS document (Revision G) includes the clarification information requested and received by EPA.

4.6 Conclusion

Portman has provided an opportunity for government departments, community groups and individuals to comment on the proposal by Portman to mine below the groundwater table at the W2 pit. Comments and concerns from those groups and individuals have been received and addressed.

There does not appear to be any grounds raised by these groups or individuals that, on the basis of environmental protection, should be regarded as grounds for not allowing mining below the groundwater table at the W2 pit from proceeding.

5 Environmental Commitments

As part of this Environmental Impact Assessment, Portman has made a number of environmental commitments. These commitments are listed below under the relevant legislation/approval.

1. Rights in Water and Irrigation Act 1914 (WA) GWL 154459 – Operating Strategy.
Portman will amend the wellfield Operating Strategy, in consultation with DoW, to increase the frequency of groundwater level monitoring of the four groundwater wells at the Windarling mine from 6-monthly to monthly.

2. Rights in Water and Irrigation Act 1914 (WA) GWL 154459 – Operating Strategy.
Portman will amend the wellfield Operating Strategy, in consultation with DoW, to include a requirement to rehabilitate any areas of terrestrial native vegetation that are impacted by saline groundwater used for dust suppression.

3. Environmental Protection Act 1986 (WA) Statement 627 – Preliminary Closure Plan.
Portman will amend the Preliminary Closure Plan, in consultation with DEC and DoIR, to include implementation of a measure(s) around the W2 pit to minimise the attraction of native and feral fauna to the water in the pit (which may include a measure(s) such as fauna exclusion fencing, feral animal control, and long-term funding for implementation of such measures) for the protection of native fauna and flora.

Implementation of the commitments listed above will be commenced within 6-months months following approval proposal to mine below the groundwater table at the W2 pit.

Portman considers that no further conditions or commitments are necessary as the project can be managed in accordance with the currently approved management plans and strategies under the current environmental, water and mining approvals.

6 Conclusion

Mining below the groundwater table at the W2 pit will involve a vertical depth increase to approximately 288m AHD, being a deepening of approximately 114m. The depth increase will enable mining of an estimated 6 million tonnes of high-grade ore.

The ore will be mined using the same approved mining techniques currently used for the W2 pit, the exception being that dewatering of the groundwater within the W2 pit will be required to temporarily lower the groundwater level and enable dry-floor mining. The dewatering water produced will be used for dust suppression and other mining activities.

The potential impacts associated with mining below the groundwater table at the W2 pit have been identified and assessed in this Environmental Impact Assessment. The following factors associated with mining below the groundwater table at the W2 pit were assessed:

- Impacts on stygofauna (subterranean fauna) from groundwater dewatering;
- Impacts on groundwater dependent vegetation (including rare flora) from groundwater dewatering;
- Impacts of dewatering on groundwater aquifers;
- Disposal of dewatering water;
- Generation of dust from mining activities;
- Acid leachate generation in the W2 waste rock dump.
- Impacts on fauna and flora from a water-filled W2 pit at the completion of mining;
- Impacts on the landscape and visual amenity; and
- Fire

As identified in this Environmental Impact Assessment, and based on the scientific investigations supporting this EIA, mining below the groundwater table at the W2 pit can be undertaken with either nil impact, or only minor (and manageable) impact on the above factors.

Portman has proposed a number of environmental commitments to manage those factors which will require additional management actions to protect the environment, in addition to the current environmental and mining management plans, operating strategies, procedures and conditions of the current operation.

Accordingly, mining below the groundwater table at the W2 pit can meet the EPA's objectives.

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Western Australian legislation cited can be obtained from the State Law Publisher at http://www.slp.wa.gov.au. Commonwealth legislation and International Treaties cited can be obtained from the Australian Legal Information Institute at http://www.austlii.edu.au.

8 Appendices

1. Portman Iron Ore Limited Environmental Policy.
2. Comments received from the Community Reference Group and Portman's response to those comments.
3. Community Reference Group meeting minutes and project updates regarding the W2 pit Mining below the Groundwater Table proposal.
4. Meeting Record: Conservation Council of WA and the Wildflower Society of WA, 18 April 2008.
5. Submission from the Pastoral Leaseholder.
6. Letter from EPA to Portman of 26 May 2008 on draft EPS document.
7. Portman letter response to EPA dated 13 June 2008.
8. EPA letter to Portman dated 26 June 2008 on revised draft EPS document.
9. Portman letter response to EPA dated 1 July 2008.

Appendix 1 – Portman's Environmental Policy

ENVIRONMENTAL POLICY

Portman is a mining company that delivers iron ore feedstock for the manufacture of a wide range of goods in demand by modern society.

We will optimise the long term prospects of our operations through the balanced integration of environmental, social and financial aspects in our business planning and actions.

We will strive to achieve excellence in environmental management through minimising negative impacts and maximising the positive impacts on the natural and social environments that may arise from our operations.

The absolute minimum standard of performance we will accept is compliance with all applicable statutory requirements and regulations and fulfillment of any signatory obligations and commitments.

We are committed to the minimisation and proper disposal of waste so as to prevent pollution.

We will continually improve our environmental performance through a systematic approach to setting environmental objectives and targets, implementation of management and monitoring procedures and objective evaluation of performance against our targets. Our environmental initiatives will be appropriately resourced and supported by training and awareness programmes.

We acknowledge the expectations of all stakeholders in our operations for diligent environmental management and will fully and regularly communicate our environmental performance.

Duncan Price	**Christopher Hunt**	**Peter Ravenscroft**	**Stewart Brown**
Chief Executive Officer	Chief Financial Officer	GM Resource Development	GM Operations

Tuesday 26th February 2008

Appendix 2 – Comments received from the Community Reference Group and Portman's response to those comments.

Note: The full names of individuals of the Community Reference Group have been omitted to protect their privacy in this public Environmental Impact Assessment document.

Name	Summary of Comment	Current Portman Response
Representative for the Wildflower Society of Western Australia (Email, 12 January 2007)	Opposed to mining below the groundwater table and concerned about the disposal of the groundwater in the long term.	Opposition is noted. Portman believes that the disposal of saline groundwater can be managed in accordance with the existing approved Dust Management Plan, the wellfield Operating Strategy, and without environmental impact. Dewatering water will be used for dust suppression and other associated mining activities.
	This project has a history of poor long term planning. There was no stated intention to mine below the groundwater table in the project presented to the EPA. The Bungalbin area was also withdrawn from the project.	Mining below the groundwater table was originally part of the mining scope (refer section 3.2.1 of the 2002 Public Environmental Review (Portman 2002)), with mining below the groundwater table to be referred for environmental approval at a later date. There have been a number of amendments to the project since approval in 2003, brought about by rapid, and largely unpredicted, changes in the iron ore market. These changes have effectively led to more efficient natural resource utilisation.
	There is no mention in the proposal as to where the waste material is to be placed – it is understood provision for waste placement was made in the expanded waste dumps previously approved by the DEC. It should be made clear what is happening to the waste.	The waste produced from mining below the groundwater table from the W2 pit can be accommodated in the Windarling W2 waste rock dump.
	Should Portman wish to open new pits, further approvals would be needed as the approved area has been largely consumed for the current activities.	It is acknowledged mine development beyond current approvals will require additional approval.
	The EPA considered more environmental factors in the 2002 assessment than just conservation of biodiversity and landscape and geo-heritage values. These matters were considered in detail as, in the EPA's opinion, issues associated with these matters were sufficient to recommend against mining at Windarling. Therefore the EPA did not fully detail other factors. The EPA's advice was rejected in favour of a political decision. The reason for the factors presented by the EPA in Bulletin 1082 should at least be given in information that covers the company's latest application.	It is agreed that the EPA recommended against implementation of the proposal, however both the State and Commonwealth Environment Minister's disagreed with the EPA's recommendations and approved the proposal. Matters not assessed by the EPA are dealt with in the range of environmental management plans for the project which were submitted to, and approved by, the EPA/DEC. These plans are being implemented by Portman to ensure that these matters are adequately addressed.

	The company said if they did not get access to Windarling the project would not be economic. Mining below the groundwater table will create access to $500 million revenue (based on the royalties mentioned on page 7). Portman should forgo access to "Area B", as referenced in Ministerial Statement 627, as an offset to the current proposal. This is reasonable in light of the windfall gains now being made by the company and the State due to the price increases and the acceptance of lower grades by the iron ore customers.	The proposal to mine below the groundwater table at the W2 pit will not result in a significant environmental impact that would warrant additional offsets. By allowing mining below the groundwater table, the existing offset measures are effectively extended for a further 2 – 3 years.
Chairperson CRG for the Shire of Yilgarn (Telephone discussion 2 February 2007)	Does not see a problem with the proposal to mine below the groundwater table as described. Stated strong preference for disposal of excess water by groundwater injection, subject to confirmation of feasibility as opposed to evaporation.	Noted. Re-injection trials have been undertaken, however are no longer included in this proposal. All dewatering water will now be used for dust suppression and other associated mining activities. Alternative methods of water disposal will continue to be investigated as part of continual improvement of Portman's environmental performance.
Representative for the Windarling Preservation Group (Email 19 February 2007)	Not in favour of the proposal.	Objection is noted.
	Disrupting the groundwater table is not good mining practice unless Portman can guarantee terrestrial vegetation is not threatened from lowering the groundwater table and salt generation.	The groundwater table is naturally between 80m to 120m below the ground surface. The terrestrial vegetation present does not have root systems that source groundwater for water supply. The terrestrial vegetation relies on rainfall and retained soil/rock moisture for water supply. Accordingly, a lowering of the groundwater table by dewatering will not affect terrestrial vegetation. Reinjection is no longer proposed as part of the proposal. Accordingly, terrestrial vegetation will not be impacted from a rise in groundwater level. Reinjection may continue to be investigated as a future disposal option. The use of abstracted saline groundwater for dust suppression is currently undertaken in accordance with a Dust Management Plan and an Operating Strategy. This plan/strategy outlines actions to minimise overspray and drainage of saline groundwater onto terrestrial vegetation.
Representative for the Toodyay Naturalist Club (Telephone discussion 23 January 2007)	Not comfortable with further expansion, however accepts proposal.	Objection and acceptance is noted.

Representative for the Malleefowl Preservation Group (MPG) (Meeting 1 February 2007)	Would like to understand the long term solution to excess groundwater disposal before commenting.	Portman believes that the disposal of saline groundwater can be managed in accordance with the existing approved Dust Management Plan, the wellfield Operating Strategy, and without environmental impact. Dewatering water will be disposed of in dust suppression and other associated mining activities.
Representative for the Toodyay Naturalist Club (Telephone discussion 15 January 2007)	Remains concerned with the ongoing incremental expansion.	Concerns with incremental expansion are noted Expansions have been driven by responses to market demand. The expansions have provided for greater resource utilization with minimal, though acknowledged incremental, environmental impact. Mining below the groundwater table was originally part of the mining scope (refer section 3.2.1 of the 2002 Public Environmental Review (Portman 2002)), with mining below the groundwater table to be referred for environmental approval at a later date. Consequently, mining below the groundwater table at the W2 pit is not an incremental expansion, but simply implementation of the project as original proposed.
	Concerned with the long term fate of salt that accumulates on the roads as a result of spraying saline water for dust suppression.	The deposition of salt on roads through the use of saline water for dust suppression is a feature of the existing project. Procedures for the containment of salt within the road corridors have proved effective to date. Current closure planning includes provisions for the scraping/recovery of salt crusts and saline material from roads and disposal within a waste dump.

Appendix 3 – Community Reference Group meeting minutes and project updates regarding the W2 pit Mining below the Groundwater Table proposal.

Note: The full names of individuals of the Community Reference Group have been omitted to protect their privacy in this public Environmental Impact Assessment document.

COMMUNITY REFERENCE GROUP MEETING
WEDNESDAY, 19th March 2008

Minutes of the meeting of the Koolyanobbing Project Community Reference Group held at the Shire of Yilgarn office on Wednesday 19th March 2008, commencing at 8.30am.

PRESENT
Cr , Yilgarn Shire President Chairperson
Mr. Bamnford Consulting
Mr. SKM
Mr. Aboriginal Elder
Mr CEO of Yilgarn Shire
Ms Department of Environment on Conservation
Ms Department of Environment on Conservation
Mr Chief bushfire officer for the Yulgara
Mr , Wildflower Society of Western Australia (Inc)
Mr. , Pastoralist, Diemals Station
Mrs , Malleefowl Preservation Group
Mrs , Business Person, Community Member
Mr , Toodyay Naturalist Club
Cr , Yilgarn Shire Council
Mr. Duncan Price CEO Portman Iron Ore Ltd
Mr Paul West, Senior Environmental Officer Portman Iron Ore Ltd
Mr. Kurt Gitzlaff Senior Planning Engineer
Ms Ms Jo Carles Environment Office Windarling Portman Iron Ore
Mr Dan Martin Environmental Officer Windarling Portman Iron Ore Ltd
Mr Stewart Brown GM Operations Portman Iron Ore Ltd
Dr Robert Howard, Manager Environmental Services Portman Iron Ore Ltd

Project approvals
Dr Rob Howard advised that the W2 mining below the water table proposal was referred to the EPA in Jan 08 and the W3/5 waste dump extension proposal was submitted in Jan 08, with both still going through the relevant approvals processes.

Mr asked whether copies can be made available and Dr Rob Howard agreed.

WINDARLING AND MT JACKSON OPERATIONS
PROJECT UPDATE – DECEMBER 2007

Mining Below the Water Table, W2 Pit
Submission of a referral document to the EPA is planned for January 2008. The ground water injection trial at W2 was recently completed and demonstrated that an injection rate of around 7 L/sec is feasible. However, the major use of extracted water will be for dust suppression purposes, with injection offering a possible supplementary method during periods of low evaporation. A sampling program has to date not detected any stygofauna in local groundwater.

COMMUNITY REFERENCE GROUP MEETING
WEDNESDAY, 12th SEPTEMBER 2007

Minutes of the meeting of the Koolyanobbing Project Community Reference Group held at the Portman Office, Windarling mine site on Wednesday 12th September 2007, commencing at 2.00pm.

PRESENT
Cr , Yilgarn Shire President Chairperson
Mr , Wildflower Society of Western Australia (Inc)
Mr , Pastoralist, Diemals Station
Mrs , Malleefowl Preservation Group
Mr , Yilgarn Landcare Group
Mrs , Business Person, Community Member
Mr , Toodyay Naturalist Club
Cr , Yilgarn Shire Council
Dr Robert Howard, Manager Environmental Services – Portman Iron Ore Ltd
Mr Phil Nolan, General Manager Operations– Koolyanobbing – Portman Iron Ore Ltd
Mrs Michelle Spencer, Administration – Koolyanobbing – Portman Iron Ore Ltd

W2 pit depth extension
Romolo asked Rob about the submission for approval for depth extension at W2.

Rob clarified this by saying that that the approval submission has not yet been made. Portman have had discussions with the DEC regarding what is required for that submission. The submission to this group at the last meeting was a background paper, discussion of the issues. This was also submitted to the DEC and feedback was received from the DEC. DEC would like to see the submission referred to the EPA and also had some issues with stygofauna. Rob went on to explain stygofauna is a subterranean animal, mostly crustaceans, usually blind and sometimes found living in watery caves underground. Stygofauna has been encountered in other areas of the State although not at Windarling to date. Portman have initiated survey work to discover if stygofauna is in the Windarling and Jackson ranges.

Once the results from this and the re-injection trials are received, then the submission will be put to the EPA for approval.

W2 Mining Below the Water Table
- Dewatering re-injection trial about to commence

Re-injection trials are to commence soon.

- Stygofauna sampling programs established

Bores have been put in place and sampling for Stygofauna will take place over the next few months. Rob believes that each hole will be sampled two (2) to three (3) times.

- Possibility of backfilling to avoid standing water at closure

There is the possibility that W2 will be backfilled at the end of mining. This is only a possibility at this stage, but something that is being seriously looked at so as not to leave any standing water at closure. This will require an understanding of where the final water table will be at the end of the pit life and also how much material will be required to back fill. There is concern that an artificial water source will attract animals and encourage ferals. This proposal is still to be referred to the EPA in about March 2008.

Wayne asked Phil what the salt content of the water in the pit is. Phil replied that it is at 70,000 – 100,000ppm. Wayne responded that at those rates animals would not go near it. Phil responded that over time the quality could change depending on rainfall, evaporation plus other factors. With large inflows the water could become fresher.

WINDARLING AND MT JACKSON OPERATIONS
PROJECT UPDATE – JULY 2007

Mining Below the Water Table, W2 Pit
A draft proposal to mine below the water table at Windarling was submitted to the DEC in March 2007. Following feedback and clarification of issues, Portman is proceeding with a sampling program for stygofauna and trial ground water injection. Submission of a referral document will follow once the outcomes of this work are available.

WINDARLING AND MT JACKSON OPERATIONS
PROJECT UPDATE – MAY 2007

Mining Below the Water Table, W2 Pit
A proposal to mine below the water table at Windarling was submitted to the DEC in early March indicating that Portman intends to permit mining below the water table and associated dewatering via reinjection, should it be required, in a two staged approach i.e. each will be referred separately. The staged approach was adopted because an accepted methodology for the disposal of groundwater produced in excess of demand for dust suppression has yet to be determined. A reply from the DEC was received late March indicating that both stages of the project, mining below the water table and disposing of the excess water not used in dust suppression are to be referred as one proposal for assessment by the EPA. The DEC shall be consulted to clarify Portman's intent and a referral seeking approval to mine below the water table shall be submitted for formal assessment.

COMMUNITY REFERENCE GROUP MEETING
THURSDAY, 15th March 2007

Minutes of the meeting of the Koolyanobbing Project Community Reference Group held at the Yilgarn Shire Chambers, Antares Street Southern Cross on Thursday 15th March 2007, commencing at 11.00 am.

PRESENT
Cr , Yilgarn Shire President Chairperson
Mrs , Malleefowl Preservation Group
Mr , Toodyay Naturalist Club
Mr , Pastoralist, Diemals Station
Mrs , Business Person, Community Member
Mr (for Mr)
Cr , Yilgarn Shire Council
Mr , Wildflower Society of Western Australia (Inc)
Ms , Windarling Preservation Group
Mr Piers Goodman, Manager Environmental Services – Portman Iron Ore Ltd
Mr Phil Nolan, General Manager Operations– Koolyanobbing – Portman Iron Ore Ltd
Mrs Michelle Spencer, Administration – Koolyanobbing – Portman Iron Ore Ltd

- **Installation of 2 additional bores in the W2 Pit**

Piers informed the group that Portman will soon be installing two new bores in the W2 pit. Members will recall that Portman put to them a proposal to mine below the water table. Thank you to those group members who forwarded comments, the proposal has been modified as a consequence of members input and the proposal was forwarded to the department.

WINDARLING AND MT JACKSON OPERATIONS
PROJECT UPDATE – JANUARY 2007

W2 Pit Dewatering
Thanks to the members who have provided feedback so far on the proposal to mine below the water table, which was distributed to members for comment on 5 January 2007. Portman would appreciate comment from other members, even if your comment is 'no comment'.

Portman will record, and endeavour to address, all comments in the final proposal to be submitted to government agencies.

Portman is continuing with preparations to conduct a longer term groundwater injection trial at Bore W7, as part of the studies to determine the best option for disposal of groundwater produced from the W2 pit that might be in excess of the water demand for dust suppression. Bore W7 was constructed to abstract water, and is located north west of the W2 pit, and west of the W1 deposit. Water is currently pumped from Bore W9, within the W2 pit, for dust suppression and it is planned to divert some of this water for the conduct of the injection trial.

WINDARLING AND MT JACKSON OPERATIONS
PROJECT UPDATE – NOVEMBER 2006

W2 Pit Dewatering
Investigations are continuing into the optimum means of managing groundwater abstracted from the W2 pit, to enable mining below the water table. The current focus is on examining the feasibility of managing the groundwater through a combination of consumption (i.e. rely to the greatest extent practicable on water from the W2 pit for dust suppression, and minimise demand on other bores) and re-injection to groundwater. Depending on the location of suitable re-injection bores, this approach could result in negligible additional ground disturbance or other environmental impact. A short term injection trial at Bore W7, north west of the W2 pit produced encouraging results. Further hydrogeological investigations are planned to attempt to locate suitable receiving aquifers in the Windarling region.

Portman is proposing to undertake mining below the water table in 2 stages, and consequently to seek approval for mining below the water table in 2 stages. The first stage involves lowering the water table at a rate whereby the groundwater produced can be entirely consumed by dust suppression activities. In this stage therefore, there will be no excess groundwater to be discharged to the environment. The second stage would be the abstraction of water at a greater rate than can be utilised for dust suppression. In this stage excess water would be discharged to the environment and a methodology for this requires environmental approval.

A proposal seeking approval for the first stage (ie to mine below the water table with no excess groundwater discharge) has been progressed in the last few months. Portman does not anticipate any environmental impact as a consequence of mining below the water table in this stage. A small water body is predicted to occupy around 6 ha, and be around 40 metres deep at the deepest point in the pit, at the completion of mining. Modelling suggests there will be limited groundwater inflow to the water body and periodic cyclonic rainfall events will cause the water to be fresher than the surrounding groundwater (which is around 20,000 mg/l total dissolved solids) for a long period of time (50 – 100 years) and possibly in perpetuity.

Groundwater is currently abstracted from Bore W9 in the W2 pit to provide water for dust suppression.

Appendix 4 – Meeting Record: Conservation Council of WA and the Wildflower Society of WA, 18 April 2008.

Note: The full names of individuals of the Community Reference Group have been omitted to protect their privacy in this public Environmental Impact Assessment document.

PORTMAN IRON ORE LIMITED

Meeting Record

Topic:	**Koolyanobbing Iron Ore Project – Windarling W2 Pit – Mining below the Groundwater Table.**
Present:	**Mr - Minerals Liaison Officer, Conservation Council.** **Mr – Water Policy Officer, Conservation Council.** **Mr – Community Reference Group Member; Wildflower Society Member.** **Mr Paul West – Senior Environmental Advisor, Portman Iron Ore Ltd.** **Mr Stuart Hawkins – Globe Environments Australia, for Portman Iron Ore Ltd.**
Location:	**Conservation Council, City West Lotteries House.**
Date:	**Friday 18 April 2008.**
Time:	**9:00am – 10:30am.**

Water-filled W2 Pit and Closure Planning

- The Conservation Council and the Wildflower Society advised of its concerns with the W2 Pit being water-filled at the completion of mining. The basis of this concern was that the water can attract and sustain animal populations (such as goats), with the potential for sustained populations to graze and trample native flora, including DRF *Tetratheca paynterae* and *Ricinocarpos brevis*. This is of importance as the area is part of the proposed Mount Manning Nature Reserve.
- The Conservation Council and the Wildflower Society advised of its strong preference to have the W2 Pit back-filled as fencing is not considered an appropriate long-term solution due complete reliance on an ongoing maintenance requirement. The Conservation Council and the Wildflower Society maintains the view that if the pit closure strategy cannot preclude the possibility of standing water attracting and supporting feral animals without an ongoing maintenance requirement then no further mining should be allowed at Windarling.
- Portman advised that it recognised the concerns of the Conservation Council and the Wildflower Society regarding the potential for water in the pit to attract feral fauna and the associated direct and indirect impacts that may result from feral fauna numbers increasing at Windarling. Awareness of this issue was relatively new, with it not being included within the scope of the approved 2003 Preliminary Closure Plan.

  Portman advised of its intention to amend the approved Preliminary Closure Plan to include a requirement to consider fauna exclusion for preparation of the Final Closure Plan.

  The method of fauna exclusion in the Final Closure Plan would be discussed with the DEC (who are likely to be the final land manager) and other agencies and stakeholders at that time, and may include fauna exclusion fencing with funding for long-term maintenance. Backfilling of the pit has been investigated, however was simply unviable due to the cost.

Impacts of Saline Dewatering Water on Vegetation

- The Wildflower Society/CRG Member advised of concerns in using a greater volume of saline water (from the W2 Pit dewatering) for dust suppression, in that the cumulative impacts of saline water could affect adjacent native vegetation.
- Portman advised that the groundwater quality has a recorded salinity of 20000-29000mg/L, being of a salinity near to that of seawater. Use of the saline groundwater for dust suppression has been approved by the DoW licence and various approved environmental management plans.

The existing environmental management actions for this issue include (1) mine and roads are designed to prevent the saline water from entering areas of native vegetation, and (2) vegetation health at the site and haul roads is regularly assessed.

These current management practices have been successful in minimising impacts to adjacent vegetation, and will continue to be implemented with the greater volume of water used for dust suppression.

Portman will explore the option of developing an annual vegetation monitoring program for areas of the mine and haul road that receive a greater volume of saline water for dust suppression.

Other issues discussed briefly included:

- History of project approvals for the Koolyanobbing Iron Ore Project.
- Environmental Protection Statement (Environmental Impact Assessment) process information.
- DoW Groundwater licence allocation – no need to amend existing allocation.
- Groundwater monitoring well locations and results of the re-injection trial in relation to the groundwater aquifer.
- Dewatering water will be used for dust suppression and other mining activities, which will likely result in a reduction in groundwater currently abstracted for these purposes.
- Three rounds of stygofauna sampling (in accordance with EPA Guidance) had been conducted - no stygofauna were located.
- The latest published research report for *Tetratheca paynterae* was March 2007. Portman has received the draft 2008 report from its consultants – currently under internal review.

S A Hawkins
Globe Environments Australia
for Portman Iron Ore Limited

Page 2 of 2
2008 April 18 Meeting Record Conservation Council (Rev.C)

Appendix 5 – Submission from the Pastoral Leaseholder.

Note: The name of the Pastoral Leaseholder has been omitted to protect the individual's privacy in this public Environmental Impact Assessment document.

TO
MR STUART HAWKINS
ENVIRONMENTAL CONSULTANT
CONCERNING. HAWKINS PORTMAN COMAU 6426 18/4/0
DEAR MR HAWKINS,
MR HOWARD
SUGGESTED I MAY WISH TO TAKE
INTEREST AND MAKE SUBMISSION
REGARDING DEWATERING OF
W2 AND DEEPENING. OF PIT
WENDY THE AMERICAN LADY
EMPLOYED IN KALGOORLIE BY
D.E.C (EX CALM) TO SET FINAL
PARAMETERS FOR FINAL PARK
RULES SHE SAID. I THE
PASTORALIST CAN CO-EXIST WITH
OTHERS — MINING + ENVIRONMENT
ARE BUT 2..
I DID NOT GET IT IN WRITING
BUT THERE WAS A REPUTABLE
WITNESS. SHE WAS QUITE BLUNT,
MY CREDENTIALS BEGAN 1985,
AND 2000 WITH PORTMAN.
I HAD 25 YEARS U/G IN 4 STATES
FINISHED 1984 SHRINK STOPE MINING.
NORTH KALGOORLIE AND HAD KALGOORLIE
SHIFT BOSSES TICKET.
ENOUGH.

11/

IMPACT ON STYGO FAUNA. OUTSIDE MY EXPERTISE BUT IF THERE IS PLENTY OF IT, TOUCHÉ.
BUT KNOWING PORTMAN THERE MAY BE UN KNOWNS.
C.e. THE WATER CONTENT ~~AND~~ AND ITS SOURCE AT 1000FT.
IT SEEMS ONLY THIS PART OF ASSESSMENT CONTAINS my CONCERN.
I DO TALK AT MINESITE AS I DO VISIT. MANAGEMENT ARE VAGUE ON WHATS GOING ON AND TO MAKE A POINT LAST YEAR 1600/DAY WAS PUMPED AND SOME, ALL (NOT SURE) WAS REINJECTED THE TABLE SATURATED THE PUMPING WAS STOPPED AT 40METRES IN DEFINATE RANGE OF TREE ROOTS.
RETURNING TO NO 1 IMPACT ASSESSMENT. IF ANY ONE SUGGESTS I AM NOT INTERESTED IN WATER HERE THEY ARE FOOLS. AND PORTMAN MAKE OUT THEY KNOW, TOO OFTEN.
[illegible] OF MORGAN AND ASSOCIATES (HYDROLOGISTS)

2./

CONSIDER FROM SATELLITE IMAGERY WATER NOW SALINE IN YOUANMY — KOOLYANOBBING FAULT HAS ITS SOURCE LAKE GREGORY FEED BY STUART CK OFF KIMBERLITES.

PORTMAN + ROCK WATER'S OPINION IS THIS WATER IS STATIC. IS ONLY JUST THAT: OPINION.

THE DEPOSIT IS IN AREA OF FAULTING. MY MAP OF KOOLY FAULT IS MISLAID BUT I ALSO FIELD SOME OR ALL OF THOSE WATER BORES TO KOOLY DRAW FROM FAULT. [illegible] WHO WAS GOLD ~~SUGGI~~ SAID — PALEO CHANNELS, WOULD NT COUNTENANCE OTHERS WHO MAY NOT HAVE BEEN FRIENDS OF UNFETTERED EXPLOITATION.

ABOUT 8-10 MILES SWEST OF WINDARLING I WITNESSED RED MOND DRILLING FOR SAVAGE THEIR STEEL ALMOST BLOWN OUT OF GROUND — WATER PRESSURE IN BANDED IRON 100-200 METRES HAMMER BLOCKED FROM CHERT SHARDS FROM PRESSURE.

I DONT THINK DRILLING

HAS TESTED TO MAXIMUM DEPTH. AND TO SAY FAULTING DOESNT ALLOW WATER TO FLOW IS A LONG BOW.
BUT METHODS EXIST TO GROUT BACK FLOWS OF INCOMING WATER IT IS WHERE THIS SALINE WATER IS GOING. UNDERGROUD REINJECTION IS OUT OF SIGHT OUT OF MIND. I HAVE REAL WORRY WITH PORTMAN.
EVAPORATION PONDS ARE MY PREFERRED OPTION. THERE HAS BEEN CLAYS IN PART OF PIT WHICH COULD HAVE ALREADY HAD POND CONSTRUCTED.
THE EVORATION CAN ~~only~~ BENEFIT SURROUNDING SCRUB.
MONITORING BORE AWAY FROM MINING AREA ON SUSPECTED DRAINAGE LINES MAY TELL HOW WIDE EFFECT OF PUMPING WILL BE.
TO SAY WATER IS LOCAL TO W2 IS GOOD FOR PORTMAN AT DEPTH ANOTHER PICTURE CAN EMEGE. AND MAYBE SUB FAUNA.
TREE ROOTS CAN GO DOWN 500-600 FT AT HOME OF BULLION MINE N.T. SMALL EUCALYPT'S ROOTS BROKE THROUGH BACK

OF STOPE AT 140FT. DOWN.
VALUE ADDING, SEEKING
TO LEAVE AREA BETTER THAN
THEY FOUND IT HAS NEVER BEEN
BIG ON PORTMANS SCREEN.
IF THERE IS SUSPICION
OF CHANGING WATER TABLES
PORTMAN MAY CONSIDER DAMS.
AND FRESH WATER CONSERVATION.
THERE NEVER. BEEN MUCH OPPOSITION
TO THIS CONCEPT WITH REFERENCE
GROUP MEMBERS. THAT IS OF WATER
CONSERVATION AND PORTMAN ARE
USING AROUND 1 million LITRES/W.K
AT Kooly FROM PERTH KAL PIPELINE
TO WASH SALT FROM THEIR LOW GRADE
Kooly ORE. AT PEOPLE AT
Bull/INCH ARE ON WATER RESTRICTIONS
WITH HOSE.
IF THE AREAS OF INFLOW INTO
MINING PIT ARE DETERMINED
AND THE SKILL IS PRESENT MUCH OF
INFLOW CAN BE STOPPED, SO TOO
REDUCING pumping COST.

NOL DISPOSAL OF WATER. MEETINGS
BEEN HAD AT WINDARLING LATELY
ONE THOUGHT FOR EXCESS
WATER PIPED TO Kooly AND

BUILDING 2 DESALINATING PLANTS MY THOUGHT MAY BE EXPENSIVE
STUDY TERRAIN IN AREA TOWARDS Kooly AND DAMS CATCH WATER MAY EASE BURDEN ON MAIN PIPELINE FROM PERTH.
EVAPORATION I PREFER. THERE SHOULD BE ACCESS TO NATURAL DRAINAGE CHANNEL OF Kooly FAULT AND IF PORTMAN WANT TO ACKNOWLEDGE IT EXISTS THEN LOCATE IT AN REINTERT INTO IT. IS ANOTHER OPTION. WITH MONITORING.
GENERATION OF DUST.
I WAS A POWDER MONKEY AT KEITH QUARRIES KATHERINE NT. BREAKING GRAVEL FOR AIR STRIPS FOR RAAF. MUCH DUST CAN BE CREATED BY OVER CHARGING AND NOT STEMMING PROPERLY.
BUT DEEPER MINING PROCEEDS AND DAMP GROUND PROBLEM SHOULD LESSON — BUT IT IS A MINING AREA AND REHAB. SHOULD COVER ALL CONTINGENCIES TAKE MONEY OFF PORTMAN NOW FOR THAT WORK.
ACID LEACATE. GENERATION.
O.K. HOW DEPENDANT IS GENERATION ENLIVENED BY RAIN PERCOLATING DOWN FROM TOP OF DUMP.

IT MUST HAVE BEEN KNOWN FROM DAY ONE. I REMEMBER SULPHUR, PHOSPHOROUS + ALUMINIUM IN EARLY ASSEYS AS IMPURITIES AND I ASKED PORTMAN ABOUT USING NATURALLY OCCURING SULPHORIC ACID IN A REACTION WITH PHOSPHOROUS RICH IMPURITY TO MAKE A FERTILISER RICH IN SOLUBLE PHOSPHOROUS. THE COUNTRY IS 3% LOW IN PHOSPHOROUS — IF I WAS FOBBED OFF PORTMAN HAVE NO WISH TO VALUR ADD IN ANY SHAPE OR FORM.

THE TOP OF PIT MAY BE DOMED 3 + 4 METRES OF CLAY CLADDING IT AND ROLLED TO A ROADED CATCHMENT CONSISTENCY AND IF WATER QUALITY IS NOT ADULTERATED IT SHOULD BE CAUGHT AND DAMMED.

MANAGEMENT PROPOSAL CAN BE IMPROVED ON.

WASTE DUMP SHOULD BE RAISED TILL NO LONGER ECONIMIC FOR TRUCKS. HEIGHT IS A VIRTUE WHICH MAY OCCASIONALLY

HELP PRECIPITATE RAIN.
USEFULNESS - LONG TERM VALUE OUT WEIGHS VISUAL AMENITY
IMPACT ON FAUNA OF WATER IN PIT.
IF GROUTING OF IN FLOW HAS TAKEN PLACE FILLING WILL BE SLOW. BRINE SHRIMPS COME TO MIND. AS A WAY TO USE PIT. DEPENDS ON SALINITY. FISH MAY BE INTRODUCED..
MAY BE POSSIBLE FOR FRESH WATER CATCHMENTS MADE OFF WALLS AND ACCESS ROAD.
USEFULNESS IS KEY. PUTTING BACK INTO COUNTRY WHICH IS NOT TOO MUCH PART OF FLY IN FLY OUT MENTALITY

ENOUGH

SINCERELY,

18/4/08.

Appendix 6 – Letter from EPA to Portman of 26 May 2008 on draft EPS document.

Environmental Protection Authority

The Atrium,
Level 8, 168 St Georges Terrace,
Perth, Western Australia 6000.
Telephone: (08) 6364 6500.
Facsimile: (08) 6467 5557.

Postal Address: Locked Bag 33,
Cloisters Square, Perth, Western Australia 6850.
Website: www.epa.wa.gov.au

Dr Robert Howard
Manager Environmental Services
Portman Iron Ore Limited
Level 11, The Quadrant
1 William Street
PERTH WA 6000

Your Ref
Our Ref DEC6352
Enquiries Maree Heath 6467 5410
Email maree.heath@dec.wa.gov.au

Dear Dr Howard

KOOLYANOBBING IRON ORE PROJECT W2 PIT – MINING BELOW THE GROUNDWATER TABLE DRAFT ENVIRONMENTAL PROTECTION STATEMENT DOCUMENT

Thank you for the draft Environmental Protection Statement (EPS) received by Environmental Protection Authority Service Unit (EPASU) the on 29 April 2008.

The EPASU has met with you on 26 March 2008 to clarify the process and identify key issues for this project. The key issues (environmental factors) for this project include flora and vegetation and mine closure.

- The Environmental Protection Agency (EPA) would require that the draft EPS clearly identifies the environmental aspects of your project such as mine dewatering below the groundwater table and its impacts on flora and vegetation.

- The EPS would clearly need to identify management strategies for the protection of flora and vegetation from dust, fire and feral animals.

- Long-term management of the pit lake would also need to be clearly demonstrated by consideration of appropriate strategies including fencing around flora and vegetation and consideration of backfilling the pit void.

Appendix 1 provides additional comments to assist you in addressing the above issues.

Please revise the document accordingly and resubmit it.

If you have any queries, please contact the assessment officer Maree Heath on 6467 5410 or maree.heath@dec.wa.gov.au.

Yours sincerely

C J Murray
DIRECTOR
ENVIRONMENTAL IMPACT ASSESSMENT DIVISION

26 May 2008
Encl.1

Cc. Stuart Hawkins

Appendix 1 – Comments/Advice for EPS

Flora and Vegetation

- Portman should address vegetation impacts from salt accumulation resulting from water discharge through dust suppression and rehabilitation strategies for salt affected areas. Commitment by Portman is required to develop a research and monitoring program.

Mine Closure

- A precautionary approach to mining below the groundwater table where the final landform includes a permanent water-filled void post-mining should be considered. This proposal sets a precedent, which has significant implications for future mining proposals in the region as a number of other ore bodies within Windarling Range and Mt Jackson Range are likely to be attractive for mining below the water table if mining below the groundwater table is approved at W2.

- The availability of free water within the W2 void at mine closure may result in long-term impacts on the biodiversity of the area.

- Windarling area is recognised as highly environmentally sensitive. The ecology of this area will be further impacted on by feral animals if free water is available at mine closure. Therefore, the availability of free water within the W2 void at mine closure may result in long-term impacts on the Windarling biodiversity. In addition, as a result of the permanent water-filled void post mining is the potential for incidents resulting in the fatality of native fauna.

- Backfilling option has not been adequately considered, particularly in the context of overall mine planning.

- The current proposal discounts the option of backfilling the W2 deposit and has not viewed backfilling within the context of material being made available through appropriate development planning of other pits and waste dumps or returning excavated material.

- Portman should be required to adequately fund the maintenance of barrier fence in perpetuity.

- Portman should amend Groundwater and Surface Water Plan; Preliminary Closure Plan; Final Closure Plan; Rehabilitation Environmental Management Plan and Dust Management Plan.

- An application will need to be submitted for amendment of the licence, to include dewatering. "Other mining activities" should also be specified and included in the Groundwater Well Licence.

- Report does not cover potential impacts upon the surface water environment.

- The water quality in the final void and potential for impacting the water resources and environment should be considered.

- A review of the entire Operating Strategy with Department of Water will be required.

- The increased use of saline groundwater for dust suppression as a result of dewatering has the potential to adversely affect any such areas of vegetation. There is little mention in the report of how this will be monitored and managed.

Appendix 7 – Portman letter response to EPA dated 13 June 2008.

PORTMAN IRON ORE LIMITED
A.B.N. 46 001 892 995

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Telephone: (08) 9426 3333
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13 June 2008

Chairman
Environmental Protection Authority
Locked Bag 33
Cloisters Square
PERTH WA 6850

Attention: Mr Colin Murray

Dear Colin,

KOOLYANOBBING IRON ORE PROJECT – WINDARLING W2 PIT MINING BELOW THE GROUNDWATER TABLE

I refer to your letter of 26 May 2008 to Portman Iron Ore Limited (Portman) regarding the above proposal. The points raised in your letter are addressed in the attachment to this letter. Portman has amended the draft Environmental Protection Statement (EPS) document in-line with the attachment to this letter.

Please find enclosed five copies of the amended draft EPS document.

On receipt of this letter, it would be greatly appreciated if you could advise Portman of the Environmental Protection Authority's timelines for assessment so that this can be incorporated into project scheduling.

If you require any assistance or further information on the proposal, please contact Portman's environmental consultant, Mr Stuart Hawkins on 0400 455 554 or by email at shawkins@portman.com.au.

Yours sincerely

Dr Robert Howard
Manager Environmental Services
Portman Iron Ore Limited

P:\Environment\06Environmental\Koolyanobbing\Approvals - Projects\Windarling\W2\W2 mining below watertable\EPS\Consultation\EPA\2008 13 June Ltr Portman to EPA - W2 Mining Below Groundwater - Response to EPA Ltr 26May2008.doc

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Attachment to Portman letter of 11 June 2008 to EPA: Response to EPA letter of 26 May 2008 regarding the W2 pit mining below the groundwater table proposal.

EPA LETTER OF 26 MAY 2008

EPA Point 1
"The Environmental Protection Agency (EPA) would require that the draft EPS clearly identifies the environmental aspects of your project such as mine dewatering below the groundwater table and its impacts on flora and vegetation"

Portman's response to EPA Point 1
Eight environmental aspects/factors for the proposal were identified and are each separately addressed in Chapter 3 of the draft EPS document. The eight environmental aspects/factors were identified from the EPA's record of determinations dated 19 March 2008 and from discussions with officers for the EPA on 26 March 2008. Following this, Portman sought confirmation from the EPA on 1 April 2008 that the eight aspects/factors were to be assessed in the EPS document.

Specifically on the environmental aspect of mine dewatering and its impact on flora and fauna, this aspect is addressed in Chapter 3.2 of the draft EPS document. As identified in Chapter 3.2, the natural groundwater level ranges between approximately 80m to 120m below the natural ground level. Dewatering of the groundwater to enable dry-floor mining will not affect flora or vegetation at the site as the flora and vegetation is not groundwater dependent. This is supported by advice from Western Botanical that confirms that the natural groundwater level is beyond the reach of vegetation root systems, including both declared rare flora (DRF) species *Tetratheca paynterae* and *Ricinocarpos brevis* that have root systems less than 0.3m and 4m, respectively.

EPA Point 2
The EPS would clearly need to identify management strategies for the protection of flora and vegetation from dust, fire and feral animals.

Portman's response to EPA Point 2
Chapter 3 of the draft EPS document contains an environmental impact assessment of the eight environmental factors identified for the proposal. For each of the environmental factors, the management strategies proposed by Portman are contained in under the heading of "Management Actions". These sections identify where existing approved management strategies will continue to be implemented and where new management strategies are proposed.

Specifically on the protection of flora and vegetation from dust, fire and feral animals, these are addressed as identified below:

Dust
The potential impacts of dust on flora and vegetation is contained in Chapter 3.5 of the draft EPS document. As identified in Chapter 3.5, the risk to vegetation from dust will be lower than the current mining operation as a result of an increased moisture content in the excavated material and an increased pit-wall height. As also identified in Chapter 3.5, dust will continue to be managed in accordance with the existing management strategies approved by the DEC in the Dust Management Plan for Statement 627. The existing approved dust management strategies include both dust suppression and dust monitoring.

These existing approved dust management strategies remain appropriate as the risk of dust on vegetation will be reduced for mining below the groundwater table at the W2 pit.

Fire

The issue of fire has not been previously raised by the EPA or any other stakeholders in relation to this proposal. Mining and dewatering of the existing W2 pit will not create any additional potential ignition source that could lead to an increased fire risk. Accordingly, an assessment of fire was not contained in the draft EPS document.

In terms of fire management strategies, the Bushfire Management Plan contained in the Mining Environmental Management Plan approved by the DEC under Condition 11 of Statement 627 will continue to apply for mining below the groundwater table at the W2 pit. As the proposal to mine below the groundwater table at the W2 pit will not create any additional potential ignition source, the management strategies contained in the Bushfire Management Plan are considered appropriate.

Feral Animals

The potential impacts of feral animals on flora and vegetation is contained in Chapter 3.7 of the draft EPS document. As identified in Chapter 3.7, the existing State and Commonwealth environmental approvals for the Windarling mine have an existing Preliminary Closure Plan approved, with a Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning (decommissioning for Windarling is currently expected at between 2015 and 2020).

Chapter 5 of the draft EPS document identifies Portman's environmental commitments for the proposal. Commitment 3 identifies Portman's commitment to amend the Preliminary Closure Plan in consultation with the Department of Environment and Conservation (DEC) and the Department of Industry and Resources (DoIR) to include implementation of measures around the W2 pit to minimise the attraction of feral fauna to the water-filled W2 pit to minimise the impacts of feral fauna on flora and vegetation. In accordance with the current legislative framework of Statement 627 applying to the W2 pit, the final details for the exclusion of feral fauna will be dealt with under the Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning.

Portman understands that the EPA's main concern with feral fauna is in relation to goats, with a potential for a goat population to graze on flora and vegetation, including DRF. Despite the presence of various permanent fresh and saline water sources in the Windarling region (including station water, Marda Dam and numerous mining dams), a feral goat population has not established in the Windarling region. The absence of goats in the Windarling region is supported by data from both the feral fauna register maintained by Portman and the feral fauna control and monitoring program undertaken jointly by Portman and DEC. A sustained population of goats has not occurred in the Windarling region, and an increase in available water at the Windarling site is unlikely to change this status (pers. com. Mr Mike Onus of Department of Environment and Conservation to Mr Paul West of Portman, June 2008).

EPA Point 3

"Long-term management of the pit lake would also need to be clearly demonstrated by consideration of appropriate strategies including fencing around flora and vegetation and consideration of backfilling the pit void."

Portman's response to EPA Point 3

The closure planning framework for the Windarling mine is addressed in Chapter 3.7 of the draft EPS document. As identified in Chapter 3.7, the existing State and Commonwealth environmental approvals for the Windarling mine have an existing Preliminary Closure Plan approved, with a Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning (decommissioning for Windarling is currently expected at between 2015 and 2020).

Fencing

Chapter 5 of the draft EPS document identifies Portman's environmental commitments for the proposal. Commitment 3 identifies Portman's commitment to amend the Preliminary Closure Plan in consultation with the Department of Environment and Conservation (DEC) and the Department of Industry and Resources (DoIR) to include implementation of measures around the W2 pit to minimise the attraction of feral fauna to the water-filled W2 pit (measures which may include fencing) to minimise the impacts of feral fauna on flora and vegetation.

In accordance with the current legislative framework of Statement 627 applying to the W2 pit, the final details of the exclusion of feral fauna will be dealt with under the Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning. If at the time of preparation of the Final Closure Plan fencing is considered to be the most appropriate option, Portman will include fencing of the void, and any other significant areas, in the Final Closure Plan.

Backfilling

Backfilling of the W2 pit void with the waste from the W2 pit is addressed in Chapter 3.7 of the draft EPS document. As identified in Chapter 3.7, backfilling the W2 pit void with the W2 pit waste material would be cost prohibitive due to a need to double-handle the waste material from the W2 pit. The estimated cost for backfilling the W2 pit with the W2 pit waste material (i.e. double handling) has been estimated at approximately $60 million; being approximately double the economic benefit of the ore below the groundwater table. Accordingly, backfilling of the W2 pit is not considered to be a long-term option for management of the W2 pit void.

ATTACHMENT 1 TO EPA LETTER OF 26 MAY 2008

EPA Attachment 1, Point 1

"Portman should address vegetation impacts from salt accumulation resulting from water discharge through dust suppression and rehabilitation strategies for salt affected areas. Commitment by Portman to develop a research and monitoring program."

Portman's response to EPA Attachment 1, Point 1

The use of saline groundwater for dust suppression is addressed in Chapter 3.4 of the draft EPS document. As identified in Chapter 3.4, the use of saline groundwater for dust suppression is a practice approved the DEC under the management plans of Statement 627 and the Operating Licence agreed with the Department of Water (DoW). The use of saline groundwater for dust suppression is common practice at mines throughout Western Australia and is an effective management strategy for minimising dust impacts on adjacent native vegetation.

No vegetation impacts from the use of saline groundwater for dust suppression at the Windarling mine have been recorded and the continued use of saline groundwater for dust suppression is not expected to change this status.

Portman's access and haul roads have been designed to capture and contain dust suppression water run-off to ensure that native vegetation is not impacted. An example image of the structures used to capture and contain saline water from the haul road is identified in Figures 1 and 2 (below).

The volume of dewatering required to enable dry-floor mining of the W2 pit has been estimated at approximately 0.44 GL/y (Rockwater 2007). In 2006 and 2007 the volume of groundwater abstracted from the wells at the Windarling mine (wells WCW4P, WW5P, WW7P, WW9P, WW11P and WW12P) ranged between 0.38 GL/y and 0.56 GL/y (Portman 2008b, Portman 2008d). Of the 0.38 GL/y abstracted from the Windarling mine in 2007, 0.27 GL/y was abstracted from wells WW12P, WW11P and WW9P located within the W2 pit. Wells WW12P, WW11P and WW9P will be used for abstracting the 0.44 GL/y total volume of groundwater required for dry-floor mining of the W2 pit. Accordingly, based on 2007 data, an additional 0.17 GL/y will be required to be abstracted from the W2 pit. It is anticipated that the volume currently abstracted from other wells in the wellfield (wells WCW4P, WW5P and WW7P) and the haul road (well MW2P) will be reduced to counter the additional groundwater to be abstracted from the W2 Pit. An excess of groundwater requiring disposal is not expected, with the 0.44 GL/y total groundwater volume to be abstracted from the W2 pit within the 2006-07 abstraction range of 0.38 GL/y to 0.56 GL/y that has been used for dust suppression at the Windarling mine.

Although the continued use of saline groundwater for dust suppression is not expected to impact adjacent native vegetation, as identified in Chapter 5 of the draft EPS document, Portman has made a commitment (Commitment 2) to amend the Operating Strategy under the *Rights in Water and Irrigation Act 1914* (WA) Groundwater Licence GWL 154459, in consultation with DoW, to include a requirement to rehabilitate any areas of terrestrial native vegetation that may be impacted by saline groundwater used in dust suppression. This commitment is considered to be the most appropriate management strategy for addressing the potential risks and impacts on vegetation from the continued use of saline groundwater for dust suppression.

Portman considers that a *Research and Monitoring Program* as proposed by the EPA is unwarranted given that:

1. the use of saline groundwater for dust suppression is currently approved for the Windarling mine and haul road under Statement 627 and the Operating Strategy;
2. the use of saline groundwater for dust suppression is consistent with other mines throughout Western Australia;
3. the volume of saline groundwater to be used for dust suppression will be similar to the current volume used;
4. access roads and the haul road have been designed to capture and contain road runoff to prevent the road runoff from entering areas of adjacent native vegetation;
5. no vegetation impacts from using saline groundwater for dust suppression have been recorded to date; and
6. visual monitoring of the vegetation condition along the access roads and haul road is routinely undertaken as part of Portman's operations.

Figure 1. Photograph of road drainage and bunding on the Haul Road. The Haul Road is graded and bunded to ensure that saline groundwater used in dust suppression does not escape into the adjacent native vegetation. (Photograph: S Hawkins, May 2008).

Figure 2. Photograph of a road sump on the Haul Road. Sumps occur along the length of the Haul Road to contain road runoff. Road runoff is directed to the sumps by the road grading and bunding. (Photograph: S Hawkins, May 2008).

EPA Attachment 1, Point 2

"A precautionary approach to mining below the groundwater table where the final landform includes a permanent water-filled void post-mining should be considered. This proposal sets a precedent, which has significant implications for future mining proposals in the region as a number of other ore bodies within the Windarling Range and Mt Jackson Range are likely to be attractive for mining below the water table if mining below the groundwater table is approved at W2."

Portman's response to EPA Attachment 1, Point 2

As identified in Chapter 3.7 of the draft EPS, in 2003 DoW estimated that there were in excess of 150 mines operating below the groundwater table in Western Australia. The region already has a number of mines below the groundwater table, including Portman's K pit at Koolyanobbing. Consequently, approval of mining below the groundwater table at W2 would not be setting a regional precedent.

Matters of "precedent" and "likely to be attractive for mining" are not environmental matters and therefore have not been addressed in the draft EPS.

EPA Attachment 1, Point 3

"The availability of free water within the W2 void at mine closure may result in long-term impacts on the biodiversity of the area".

Portman's response to EPA Attachment 1, Point 3

The potential impacts on flora and fauna from water availability in the W2 pit is addressed in Chapter 3.7 of the draft EPS document. As identified in Chapter 3.7, the existing State and Commonwealth environmental approvals for the Windarling mine have an existing Preliminary Closure Plan approved, with a Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning (decommissioning for Windarling is currently expected at between 2015 and 2020).

Chapter 5 of the draft EPS document identifies Portman's environmental commitments for the proposal. Commitment 3 identifies Portman's commitment to amend the Preliminary Closure Plan in consultation with DEC and DoIR to include implementation of measures around the W2 pit to minimise the attraction of feral fauna to the water-filled W2 pit in order to minimise the potential impacts of feral fauna on flora and vegetation.

In accordance with the current legislative framework of Statement 627 applying to the W2 pit, the final details of the exclusion of feral fauna will be dealt with under the Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning. This current framework is considered appropriate for the long-term management of impacts on the biodiversity of the area. If at the time of preparation of the Final Closure Plan fencing is considered to be the most appropriate option, Portman will include fencing of the void any other significant areas in the Final Closure Plan.

Portman understands that the EPA's main concern with feral fauna is in relation to goats, with a potential for a goat population to graze on flora and vegetation, including DRF. Despite the presence of various permanent fresh and saline water sources in the Windarling region (including station water, Marda Dam and numerous mining dams), a feral goat population has not established in the Windarling region. The absence of goats in the Windarling region is supported by data from both the feral fauna register maintained by Portman and the feral fauna control and monitoring program undertaken jointly by Portman and DEC. A sustained population of goats has not occurred in the Windarling region, and an increase in available water at the Windarling site is unlikely to change this status (pers.

com. Mr Mike Onus of Department of Environment and Conservation to Mr Paul West of Portman, June 2008).

EPA Attachment 1, Point 4

"Windarling area is recognised as highly environmentally sensitive. The ecology of this area will be further impacted by feral animals if free water is available at mine closure. Therefore, the availability of free water within the W2 void at mine closure may result in long-term impacts on the Windarling biodiversity. In addition, as a result of the permanent water-filled void post mining is the potential for incidents resulting in the fatality of native fauna."

Portman's response to EPA Attachment 1, Point 4

The potential impacts on flora and fauna from a water-filled W2 pit are addressed in Chapter 3.7 of the draft EPS document. As identified in Chapter 3.7, the existing State and Commonwealth environmental approvals for the Windarling mine have an existing Preliminary Closure Plan approved, with a Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning (decommissioning for Windarling is currently expected at between 2015 and 2020).

Chapter 5 of the draft EPS document identifies Portman's environmental commitments for the proposal. Commitment 3 identifies Portman's commitment to amend the Preliminary Closure Plan in consultation with DEC and DoIR to include implementation of measures around the W2 pit to minimise the attraction of feral fauna to the water-filled W2 pit in order to minimise the potential impacts of feral fauna on flora and vegetation.

In accordance with the current legislative framework of Statement 627 applying to the W2 pit, the final details of the exclusion of feral fauna will be dealt with under the Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning. If at the time of preparation of the Final Closure Plan fencing is considered to be the most appropriate option, Portman will include fencing of the void, and any other significant areas, in the Final Closure Plan. The exclusion of fauna from the water-filled W2 pit will also reduce the risk of native fauna fatalities.

Portman understands that the EPA's main concern with feral fauna is in relation to goats, with a potential for a goat population to graze on flora and vegetation, including DRF. Despite the presence of various permanent fresh and saline water sources in the Windarling region (including station water, Marda Dam and numerous mining dams), a feral goat population has not established in the Windarling region. The absence of goats in the Windarling region is supported by data from both the feral fauna register maintained by Portman and the feral fauna control and monitoring program undertaken jointly by Portman and DEC. A sustained population of goats has not occurred in the Windarling region, and an increase in available water at the Windarling site is unlikely to change this status (pers. com. Mr Mike Onus of Department of Environment and Conservation to Mr Paul West of Portman, June 2008).

EPA Attachment 1, Point 5

"Backfilling option has not been adequately considered, particularly in the context of overall mine planning".

Portman's response to EPA Attachment 1, Point 5

Backfilling of the W2 pit is addressed in Chapter 3.7 of the draft EPS document. As identified in Chapter 3.7, backfilling with waste from the W2 pit is cost prohibitive due to a

need to double-handle the waste material. The estimated cost of backfilling the W2 pit with the waste from the W2 pit (following storage in the W2 Waste Dump) is estimated at $60 million, being approximately double the economic benefit of the ore below the groundwater table.

In terms of overall mine planning, backfilling of the W2 pit may only be possible with waste material from the adjacent W1 Deposit, which is scheduled for mining from approximately 2012 and is located adjacent to the W2 pit (refer to Figure 3-3 of the draft EPS document). The potential for the W1 Deposit waste material to be deposited into the exhausted W2 pit will be dependent on the number, size and depth of pits at the W1 Deposit. Condition 7-1 of Statement 627 requires the preparation and implementation of a *Landscape and Geological Features Protection Plan* for the W1 Deposit, the results of which will affect the number, size and depth of pits. It is likely that if the whole W1 Deposit is mined to its full potential then the W2 pit could be filled to above the groundwater table.

The option of backfilling the W2 pit with the waste from the proposed W1 pit has been, and will remain, a potentially viable option that Portman will consider during planning for the proposed W1 pit. This option is currently considered favourable as it would alleviate the need for an increase to the size of the W2 waste dump or the creation of a new W1 waste dump. Unfortunately, until the detail of the *Landscape and Geological Features Protection Plan* is known, Portman is unable to make a commitment to backfilling of the W2 pit with waste from the proposed W1 pit as part of this proposal for mining the W2 pit below the groundwater table. Given the uncertainty regarding the volume of waste material to be removed from the proposed W1 pit, backfilling of the W2 pit with the W1 pit waste material is not part of Portman's proposal for mining below the groundwater table at the W2 pit and, accordingly, was not contained in the draft EPS document as a currently viable option.

Backfilling with waste from the operational W3/5 pit is not feasible due to the 3km haul distance. Backfilling with waste from the W4 pit (scheduled for mining from 2015) is not feasible due to distance 5km haul distance.

EPA Attachment 1, Point 6

"The current proposal discounts the option of backfilling the W2 deposit and has not viewed backfilling within the context of material being made available through appropriate development planning of other pits and waste dumps or returning excavated material".

Portman's response to EPA Attachment 1, Point 6

Backfilling of the W2 pit is addressed in Chapter 3.7 of the draft EPS document. As identified in Chapter 3.7, backfilling with waste from the W2 pit is cost prohibitive due to a need to double-handle the waste material. The estimated cost of backfilling the W2 pit with the waste from the W2 pit (following storage in the W2 Waste Dump) is estimated at $60 million, being approximately double the economic benefit of the ore below the groundwater table.

In terms of overall mine planning, backfilling of the W2 pit may only be possible with waste material from the adjacent W1 Deposit, which is scheduled for mining from approximately 2012 and is located adjacent to the W2 pit (refer to Figure 3-3 of the draft EPS document). The potential for the W1 Deposit waste material to be deposited into the exhausted W2 pit will be dependent on the number, size and depth of pits at the W1 Deposit. Condition 7-1 of Statement 627 requires the preparation and implementation of a *Landscape and Geological Features Protection Plan* for the W1 Deposit, the results of which will affect the number, size

and depth of pits. It is likely that if the whole W1 Deposit is mined to its full potential then the W2 pit could be filled to above the groundwater table.

The option of backfilling the W2 pit with the waste from the proposed W1 pit has been, and will remain, a potentially viable option that Portman will consider during planning for the proposed W1 pit. This option is currently considered favourable as it would alleviate the need for an increase to the size of the W2 waste dump or the creation of a new W1 waste dump. Unfortunately, until the detail of the *Landscape and Geological Features Protection Plan* is known, Portman is unable to make a commitment to backfilling of the W2 pit with waste from the proposed W1 pit as part of this proposal for mining the W2 pit below the groundwater table. Given the uncertainty regarding the volume of waste material to be removed from the proposed W1 pit, backfilling of the W2 pit with the W1 pit waste material is not part of Portman's proposal for mining below the groundwater table at the W2 pit and, accordingly, was not contained in the draft EPS document as a currently viable option.

Backfilling with waste from the operational W3/5 pit is not feasible due to the 3km haul distance. Backfilling with waste from the W4 pit (scheduled for mining from 2015) is not feasible due to distance 5km haul distance.

EPA Attachment 1, Point 7
"Portman should be required to adequately fund the maintenance of barrier fence in perpetuity"

Portman's response to EPA Attachment 1, Point 7
As identified in Chapter 3.7, the existing State and Commonwealth environmental approvals for the Windarling mine have an existing Preliminary Closure Plan approved, with a Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning (decommissioning for Windarling is currently expected at between 2015 and 2020).

Chapter 5 of the draft EPS document identifies Portman's environmental commitments for the proposal. Commitment 3 identifies Portman's commitment to amend the Preliminary Closure Plan in consultation with DEC and DoIR to include implementation of measures around the W2 pit to minimise the attraction of feral fauna to the water-filled W2 pit (measures which may include fencing) in order to minimise the potential impacts of feral fauna on flora and vegetation.

As identified in Chapter 3.7 of the draft EPS document, it is expected that the Windarling mine site will be transferred to DEC for the purposes of conservation following the completion of mining and rehabilitation, and that Portman will ensure that the most appropriate method(s) to prevent fauna access (which may or may not include fencing) and long-term funding for implementation and management.

In accordance with the current legislative framework of Statement 627 applying to the W2 pit, the final details of the exclusion of feral fauna (which may or may include exclusion fencing) will be dealt with under the Final Closure Plan to be prepared for approval at between 1 and 2 years prior to mine decommissioning. If at the time of preparation of the Final Closure Plan fencing is considered to be the most appropriate option, Portman will include fencing of the void, and any other significant areas, in the Final Closure Plan.

EPA Attachment 1, Point 8

"Portman should amend Groundwater and Surface Water Plan; Preliminary Closure Plan, Final Closure Plan; Rehabilitation Environmental Management Plan and Dust Management Plan."

Portman's response to EPA Attachment 1, Point 8

Groundwater and Surface Water Plan

Portman has a separate Groundwater Management Plan and a Surface Water Management Plan contained in the Environmental Management Plan approved by the DEC under Statement 627. It is not clear to Portman which part(s) of these plans that the EPA considers to require an amendment as the current management strategies contained in these plans have proved successful in protecting the groundwater and surface water environments. Continued implementation of these current plans as required under Statement 627 will continue to achieve environmental protection of the groundwater and surface water assets.

Preliminary Closure Plan

As identified in Chapter 3.7 and Chapter 5 of the draft EPS document, Portman has committed to amending the Preliminary Closure Plan, in consultation with the DEC and DoIR, to include implementation of measure(s) around the W2 pit to minimise the attraction of native and feral fauna to the water-filled W2 pit.

Other than the commitment made above (which will be implemented by Portman once the proposal to mine below the groundwater table at the W2 pit is approved), it is not clear to Portman which other part(s) of the Preliminary Closure Plan that the EPA considers requires an amendment.

Final Closure Plan

A Final Closure Plan is required under the State and Commonwealth environmental approvals at between 1 and 2 years prior to mine decommissioning. As mine decommissioning is not scheduled until approximately between 2015 and 2020, a Final Closure Plan does not currently exist. As a Final Closure Plan does not exist, Portman is unable to amend this plan.

Rehabilitation Environmental Management Plan

Mining below the groundwater table at the W2 pit will be contained within the existing mine footprint (i.e. no vegetation clearing) with no new areas to be impacted that would require rehabilitation. Accordingly, it is not clear to Portman which part(s) of this plan the EPA considers requires an amendment.

Dust Management Plan

It is not clear to Portman which part(s) of this plan that the EPA considers requires an amendment. As identified in Chapter 3.5 of the draft EPS document, the potential risks of dust generation impacts from mining below the groundwater table at the W2 pit will be equal to or less than the current approved mining operation as a result of the increased soil/rock moisture and the increased depth of the pit (i.e. greater distance from flora). The current dust management strategies approved by DEC in the current Dust Management Plan has been demonstrated to successfully protect the environment surrounding the W2 pit.

EPA Attachment 1, Point 9

"An application will need to be submitted for amendment of the licence, to include dewatering. "Other mining activities" should also be specified and included in the Groundwater Well Licence."

Portman's response to EPA Attachment 1, Point 9

The need for amendment to Portman's groundwater licence GWL154459 under the *Rights in Water and Irrigation Act 1914* (WA) administered by DoW was identified in Chapter 4.2 of the draft EPS document. As identified in Chapter 4.2, Portman has commenced discussions with DoW with regards to making this application for the administrative changes to the Licence. These administrative changes will be progressed with DoW in accordance with the *Rights in Water and Irrigation Act 1914* (WA) in parallel to the EPA's assessment under the *Environmental Protection Act 1986* (WA).

EPA Attachment 1, Point 10

"Report does not cover potential impacts upon the surface water environment"

Portman's response to EPA Attachment 1, Point 10

The potential impacts from the proposal on the surface water environment are limited to the disposal of saline groundwater for dust suppression. The use of saline groundwater for dust suppression is addressed in Chapter 3.4 of the draft EPS document. As identified in Chapter 3.4, the use of saline groundwater for dust suppression is a practice approved the DEC under the management plans of Statement 627 and the Operating Licence agreed with the Department of Water (DoW). The use of saline groundwater for dust suppression is common practice at mines throughout Western Australia and is an effective management strategy for minimising dust impacts on adjacent native vegetation.

No vegetation impacts from the use of saline groundwater for dust suppression at the Windarling mine have been recorded and the continued use of saline groundwater for dust suppression is not expected to change this status.

Portman's access and haul roads have been designed to capture and contain dust suppression water run-off to ensure that native vegetation is not impacted. An example image of the structures used to capture and contain saline water from the haul road is identified in Figures 1 and 2 (above)

The volume of dewatering required to enable dry-floor mining of the W2 pit has been estimated at approximately 0.44 GL/y (Rockwater 2007). In 2006 and 2007 the volume of groundwater abstracted from the wells at the Windarling mine (wells WCW4P, WW5P, WW7P, WW9P, WW11P and WW12P) ranged between 0.38 GL/y and 0.56 GL/y (Portman 2008b, Portman 2008d). Of the 0.38 GL/y abstracted from the Windarling mine in 2007, 0.27 GL/y was abstracted from wells WW12P, WW11P and WW9P located within the W2 pit. Wells WW12P, WW11P and WW9P will be used for abstracting the 0.44 GL/y total volume of groundwater required for dry-floor mining of the W2 pit. Accordingly, based on 2007 data, an additional 0.17 GL/y will be required to be abstracted from the W2 pit. It is anticipated that the volume currently abstracted from other wells in the wellfield (wells WCW4P, WW5P and WW7P) and the haul road (well MW2P) will be reduced to counter the additional groundwater to be abstracted from the W2 Pit. It should be noted that an excess of groundwater requiring disposal is not expected, with the 0.44 GL/y total groundwater volume to be abstracted from the W2 pit within the 2006-07 abstraction range of 0.38 GL/y to 0.56 GL/y that has been used for dust suppression at the Windarling mine.

Although the continued use of saline groundwater for dust suppression is not expected to impact adjacent native vegetation, as identified in Chapter 5 of the draft EPS document, Portman has made a commitment (Commitment 2) to amend the Operating Strategy under the *Rights in Water and Irrigation Act 1914* (WA) Groundwater Licence GWL 154459, in consultation with DoW, to include a requirement to rehabilitate any areas of terrestrial

native vegetation that may be impacted by saline groundwater used in dust suppression. This commitment is considered to be the most appropriate management strategy for addressing the potential risks and impacts on vegetation from the continued use of saline groundwater for dust suppression.

EPA Attachment 1, Point 11
"The water quality in the final void and potential for impacting the water resources and environment should be considered."

Portman's response to EPA Attachment 1, Point 11
Chapter 3.3 of the draft EPS document addresses the impacts of dewatering on groundwater aquifers. As identified in Chapter 3.3 and the groundwater modelling undertaken by Rockwater in 2008 (included with the draft EPS document), the aquifer of the W2 pit is isolated and therefore the water quality of the final void of the W2 pit will not impact on other aquifers (other water resources).

Chapter 3.2 of the draft EPS document addresses the relationship between the groundwater and the terrestrial environment. As identified in Chapter 3.2, the terrestrial vegetation is not groundwater dependent with the groundwater naturally occurring at approximately 80m to 120m below surface level. Accordingly, the water quality of the water-filled W2 pit at the completion of mining will have no impact on the terrestrial environment.

Rockwater (2008) identified that the groundwater under the W2 pit is saline at between 20000 mg/L to 29000 mg/L. It is expected that the water within the W2 pit will also be saline following the completion of mining. As identified by Rockwater in 2007 (also included with the draft EPS document), the salinity of the water within the filled W2 pit will be dependent on the relative proportions of saline groundwater inflow, freshwater rainfall and evaporation.

EPA Attachment 1, Point 12
"A review of the entire Operating Strategy with the Department of Water will be required"

Portman's response to EPA Attachment 1, Point 12
The need for amendment to Portman's groundwater licence GWL154459 under the *Rights in Water and Irrigation Act 1914* (WA) administered by DoW was identified in Chapter 4.2 of the draft EPS document. As identified in Chapter 4.2, Portman has commenced discussions with DoW with regards to making this application for the administrative changes to the Licence. Chapter 5 of the draft EPS document also identifies Portman's commitments to amending the Operating Strategy in consultation with DoW (Commitments 1 and 2). Changes, amendments and reviews of the Operating Strategy and the License will be undertaken with DoW in accordance with the *Rights in Water and Irrigation Act 1914* (WA) in parallel to the EPA's assessment under the *Environmental Protection Act 1986* (WA).

EPA Attachment 1, Point 13
"The increased use of saline groundwater for dust suppression as a result of dewatering has the potential to adversely affect any such areas of vegetation. There is little mention in the report of how this will be monitored and managed."

Portman's response to EPA Attachment 1, Point 13

The use of saline groundwater for dust suppression is addressed in Chapter 3.4 of the draft EPS document. As identified in Chapter 3.4, the use of saline groundwater for dust suppression is a practice approved the DEC under the management plans of Statement 627 and the Operating Licence agreed with the Department of Water (DoW). The use of saline groundwater for dust suppression is common practice at mines throughout Western Australia and is an effective management strategy for minimising dust impacts on adjacent native vegetation.

No vegetation impacts from the use of saline groundwater for dust suppression at the Windarling mine have been recorded and the continued use of saline groundwater for dust suppression is not expected to change this status.

Portman's access and haul roads have been designed to capture and contain dust suppression water run-off to ensure that native vegetation is not impacted. An example image of the structures used to capture and contain saline water from the haul road is identified in Figures 1 and 2 (above)

The volume of dewatering required to enable dry-floor mining of the W2 pit has been estimated at approximately 0.44 GL/y (Rockwater 2007). In 2006 and 2007 the volume of groundwater abstracted from the wells at the Windarling mine (wells WCW4P, WW5P, WW7P, WW9P, WW11P and WW12P) ranged between 0.38 GL/y and 0.56 GL/y (Portman 2008b, Portman 2008d). Of the 0.38 GL/y abstracted from the Windarling mine in 2007, 0.27 GL/y was abstracted from wells WW12P, WW11P and WW9P located within the W2 pit. Wells WW12P, WW11P and WW9P will be used for abstracting the 0.44 GL/y total volume of groundwater required for dry-floor mining of the W2 pit. Accordingly, based on 2007 data, an additional 0.17 GL/y will be required to be abstracted from the W2 pit. It is anticipated that the volume currently abstracted from other wells in the wellfield (wells WCW4P, WW5P and WW7P) and the haul road (well MW2P) will be reduced to counter the additional groundwater to be abstracted from the W2 Pit. It should be noted that an excess of groundwater requiring disposal is not expected, with the 0.44 GL/y total groundwater volume to be abstracted from the W2 pit within the 2006-07 abstraction range of 0.38 GL/y to 0.56 GL/y that has been used for dust suppression at the Windarling mine.

Although the continued use of saline groundwater for dust suppression is not expected to impact adjacent native vegetation, as identified in Chapter 5 of the draft EPS document, Portman has made a commitment (Commitment 2) to amend the Operating Strategy under the *Rights in Water and Irrigation Act 1914* (WA) Groundwater Licence GWL 154459, in consultation with DoW, to include a requirement to rehabilitate any areas of terrestrial native vegetation that may be impacted by saline groundwater used in dust suppression. This commitment is considered to be the most appropriate management strategy for addressing the potential risks and impacts on vegetation from the continued use of saline groundwater for dust suppression.

Appendix 8 – Letter from EPA to Portman of 26 June 2008 on revised draft EPS document.

Dr Robert Howard
Manager Environmental Services
Portman Iron Ore Limited
Level 11, The Quadrant
PERTH WA 6000

Our Ref: DEC6352
Enquiries: Maree Heath 6467 5410
Email: maree.heath@dec.wa.gov.au

Dear Dr Howard

KOOLYANOBBING IRON ORE PROJECT W2 PIT – MINING BELOW THE GROUNDWATER TABLE DRAFT ENVIRONMENTAL PROTECTION STATEMENT (EPS) DOCMUENT

As stated in our previous correspondence of 26 May 2008, the management strategies for the protection of flora and vegetation from dust and fire have not been sufficiently addressed within the EPS draft document.

The EPS requires management of dust specific to the W2 pit and in particular Declared Rare Flora (DRF) *Ricinocarpos brevis*. The EPS should include implementation strategies, management actions, monitoring, contingencies, auditing and reporting for dust management. If the existing Dust Management Plan is considered to be adequate, the key aspects should be summarised and there should be some discussion to demonstrate that its implementation has been successful in protecting flora and vegetation in the past.

Management of fire needs to be included within the EPS document. If the existing Bushfire Management Plan is considered adequate, details should be provided of the content.

Please do not respond to these issues by letter, rather revise the EPS document and resubmit it.

Yours sincerely

C J MURRAY
DIRECTOR
ENVIRONMENTAL IMPACT ASSESSMENT DIVISION

26 June 2008

Cc: Stuart Hawkins

Appendix 9 – Portman letter response to EPA dated 1 July 2008.

PORTMAN IRON ORE LIMITED
A.B.N. 46 001 892 995

Level 11, The Quadrant
1 William Street
Perth, Western Australia, 6000
GPO Box W2017, Perth, 6846
Telephone: (08) 9426 3333
Facsimile: (08) 9426 3390

1 July 2008

Chairman
Environmental Protection Authority
Locked Bag 33
Cloisters Square
PERTH WA 6850

Attention: Mr Colin Murray

Dear Colin,

KOOLYANOBBING IRON ORE PROJECT – WINDARLING W2 PIT MINING BELOW THE GROUNDWATER TABLE

I refer to your letter of 26 June 2008 to Portman Iron Ore Limited (Portman) regarding the above proposal.

In accordance with the requests contained in your letter, Portman has amended the draft Environmental Protection Statement (EPS) document to include additional information on dust management specific to the W2 pit and *Ricinocarpos brevis*, and included a new chapter on fire management. Please find enclosed five copies of the amended draft EPS document for your consideration.

On receipt of this letter, it would be greatly appreciated if you could advise Portman of the Environmental Protection Authority's projected timelines for assessment so that this can be incorporated into project scheduling.

If you require any assistance or further information on the proposal, please contact Portman's environmental consultant, Mr Stuart Hawkins on 0400 455 554 or by email at shawkins@portman.com.au.

Yours sincerely

Dr Robert Howard
Manager Environmental Services
Portman Iron Ore Limited

Appendix 10 – Portman letter response to EPA dated 29 July 2008.

PORTMAN IRON ORE LIMITED
A.B.N. 46 001 892 995

Level 11, The Quadrant
1 William Street
Perth, Western Australia, 6000
GPO Box W2017, Perth, 6846
Telephone: (08) 9426 3333
Facsimile: (08) 9426 3390

29 July 2008

Chairman
Environmental Protection Authority
Locked Bag 33 Cloisters Square
PERTH WA 6850

Attention: Mr Colin Murray

Dear Colin,

KOOLYANOBBING IRON ORE PROJECT – WINDARLING W2 PIT MINING BELOW THE GROUNDWATER TABLE.

I refer to the July 2008 email correspondence between Ms Maree Heath of the Environmental Protection Authority Service Unit (EPASU) to Mr Stuart Hawkins of Globe Environments Australia regarding the above proposal.

In accordance with the requests contained in the EPASU correspondence, Portman has amended the draft Environmental Protection Statement (EPS) document to include the minor clarifications requested. Please find enclosed ten copies of the amended draft EPS document for your consideration. I trust that these clarifications will enable the EPASU and the Environmental Protection Authority to complete the environmental impact assessment of the proposal.

Although requested previously, Portman has not received the EPASU's projected timelines for the assessment of this proposal. It would be greatly appreciated if you could provide Portman with the EPASU's projected timelines so that this information can be incorporated into Portman's project scheduling.

If you require any assistance or further information on the proposal, please contact Portman's environmental consultant, Mr Stuart Hawkins on 0400 455 554 or by email at shawkins@portman.com.au(.)

Yours sincerely

Paul West
A/Manager Environmental Services
Portman Iron Ore Limited

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