JULY 2010

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BROCKMAN RESOURCES LIMITED
MARILLANA IRON ORE PROJECT
RESPONSE TO PUBLIC SUBMISSIONS
EPA ASSESSMENT NO. 1781

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Document Status						
Rev No.	**Author**	**Reviewer/s**	**Date**	**Approved for Issue**		
				Name	**Distributed To**	**Date**
A	K. van der Beeke	G. Connell	09/07/10	G. Connell	J. Grieve	12/07/10
1	K. van der Beeke	G. Connell	15/07/10	J. Grieve	Office of EPA (V. Angus)	26/07/10

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Appendices

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1.0 Introduction

Brockman Iron Pty Ltd (Brockman) proposes to develop a new iron ore mine at Marillana, approximately 100 km from Newman. The proposal location abuts the Hamersley Ranges, is dissected by the Weeli Wolli Creek and is bounded by the Fortescue Marsh, some 15 km to the north. Brockman propose to mine iron ore at a rate of up to 19 Mtpa for approximately 20 years.

In accordance with the *Environmental Protection Act 1986* (WA), a Public Environmental Review (PER) has been prepared which describes the Project and its likely effects on the environment. The PER was available for public review for a period of 4 weeks between 10th May and 8th June 2010 (EPA Assessment No. 1781). This report presents Brockman's response to the public submissions received.

2.0 Public Submissions

A total of six public submissions were received from the Office of EPA on the 16th June in response to the Marillana PER. From these submissions, 62 individual comments and/or recommendations were identified and collated in Table 1, presented in Appendix 1. A copy of Table 1 was provided to the Office of EPA Case Officer on 25th June for review and to ensure all issues had been identified. Confirmation of this was received on 5th July.

All 62 items have been allocated an individual reference number, and these are aligned between this report and Table 1 for ease when cross-referencing the two. In order to retain the level of detail which appears within Table 1, Brockman has included the majority of responses to the public submissions within Table 1 wherever possible. Where responses require more detailed information (greater than 150 words); the response has been included within this document and cross-referenced to Table 1.

Public submission references are able to be grouped according to the origin of the submission:

Ref No.	Origin of Submission
1 – 9	Department of Mines and Petroleum (DMP)
10 – 26	Department of Environment and Conservation (DEC)
27 – 32	Public Submission
33 - 47	BHP Billiton Iron Ore (BHPBIO)
48 – 52	Department of Indigenous Affairs (DIA)
53 – 62	Department of Water (DoW)

Through the responses in this report and Table 1, Brockman aims to provide submitters with the most accurate information that is available at this stage of the Project development and design of the Marillana Iron Ore Project.

Brockman would like to extend their appreciation to all groups that chose to forward a submission to the Western Australian Government as part of this environmental approvals process.

3.0 Response to Public Submissions

3.1 Department of Mines and Petroleum

- ***Ref 1: Ore body proximity to the tenement boundary***

  Submission Recommendation: Provide further details as to consideration of the zone of instability associated with the pit, and location of infrastructure and abandonment bunds.

It is the current understanding from the Definitive Feasibility Study (DFS), for a standoff area of 50 metres in width between the southern lease boundary and the mine pit crest. This will incorporate the engineered surface water drains, bunds and an access road running in parallel to the pit area. The pit design parameters outlined in the DFS Mine Planning and Closure report include a south wall angle of 37 degrees. This recommended pit slope has been developed based on detailed geotechnical investigations and has a Factor of Safety (FOS) of 1.2. The configuration of the pit wall and associated surface infrastructure is shown as a cross-section in Figure 5.1 in Appendix 3 of this report. Further to this, the mine pit will be progressively backfilled over the life of the mine, and it is not expected to have areas of the pit wall exposed for an extended period of time. Therefore, as the pit will be progressively backfilled, the zone of stability associated with the pit will be negligible.

Brockman is required to submit a Mining Proposal for the Project to the Department of Mines and Petroleum (DMP) for approval under the Mining Act. Brockman will submit detailed plans to the DMP as part of the approval of a Mining Proposal which will detail this.

- ***Ref 2: Leachates resulting from landforms***

  Submission Recommendation: Provide further detail on possible leachates

The comment is noted. The current understanding from the Definitive Feasibility Study (DFS) indicates that the majority of waste will be incorporated into the mine pit and there will be no waste dumps outside the pit footprint.

Investigations have been carried out as part of the DFS regarding the physical, geochemical and mineralogical properties of material relating to the FRS. Further details of these are provided in the response to Ref 3 below. Brockman commits to including this information and relevant management strategies in the Mining Proposal in liaison with the DMP.

- ***Ref 3: Testing of waste material and erodilbility of final landform***

  Submission Recommendation: Provide discussion on the issue

The Definitive Feasibility Study (DFS) is currently underway for the Project and as part of this; Brockman has further investigated the need for permanent waste dumps as final landforms. As a result of the DFS, the current preference is for waste material to be stored within the mine pit void. The remaining final landform is therefore likely to consist of the Fine Rejects Storage (FRS) facility and waste dumps constructed on top of the backfilled parts of the pit. The designs for the waste dumps and FRS have been developed to satisfy the key design and environmental compliance criteria outlined in the PER, including:

  - Permanent landform alterations are to be minimised and landforms created by the Project are to be safe, stable, sustainable and consistent with post-closure use of the site.

Broadly, erodibility describes the susceptibility of a given material to erosion. Erodibility can be predicted on the basis of material properties, or it can be measured using laboratory or field experimentation. Soil properties can directly affect erodibility, such as soil structure and stability, soil cohesion, particle size and particle density. A number of test pits have been excavated across

the Project area. Geotechnical logs and laboratory testing to characterise the soils encountered will be provided to the DMP in the Mining Proposal, which is under development along with the finalisation of the DFS. Laboratory testing has been performed during the DFS on the physical and geochemical characteristics of waste material, fine rejects and coarse rejects comprising particle size distribution, particle density, Atterberg limits, compaction characteristics, permeability, shear strength, pH, EC and acid neutralising capacity. Mineralogy tests have been carried out on fine reject samples with the major minerals present being hematite and quartz; minor mineral components were geothite, kaolinite and maghemite. Materials erosion assessment and associated analysis has been performed to feed into the planning and design of the FRS and waste dumps. Brockman is required to submit a Mining Proposal for the Project to the Department of Mines and Petroleum (DMP) for approval under the Mining Act. Brockman will submit detailed plans, testing information and management strategies to the DMP as part of the Mining Proposal which will detail management of waste material throughout the mine life and into closure. The aim of closure design is to create a landform that is safe and stable in the long term, and therefore resistant to erosion.

- ***Ref 4: Incorporation of course rejects into waste landforms and rehabilitation***

  Submission Recommendation: Provide detail on how course rejects will be incorporated into waste landforms or rehabilitated separately

Waste products from the Project will be divided into three streams; coarse rejects, fine rejects and overburden waste. At the time of submitting the PER, management of coarse rejects was based on the Preliminary Feasibility Study (PFS), which indicated that coarse rejects would be stored in external waste dumps and a separate stockpile. The current understanding from the Definitive Feasibility Study (DFS) indicates that the coarse rejects (and waste) will principally use to backfill the pit, thus avoiding the need for external waste dumps.

Brockman is required to submit a Mining Proposal for the Project to the Department of Mines and Petroleum (DMP) for approval under the Mining Act. As part of the Mining proposal documentation, Brockman will submit detailed plans to the DMP as part of the approval of a Mining Proposal which will address how coarse rejects will be managed and the rehabilitation of the remaining landforms upon closure.

- ***Ref 5: Inconsistencies in the Figures***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 6: 1 in 10 year flood design***

Refer to response provided in Table 1. , Appendix 1.

- ***Ref 7: 1 in 10 year flood design:***

  Submission Recommendation: The village disposal area would be better managed by locating it outside the zone inundated during a 1 in 100 ARI flood event.

The Accommodation Village Site Selection (PER Appendix B) outlines the design criteria for siting of the accommodation village. Surface water hydrology superimposed onto regional topography was utilised to assist in selecting potential sites. With all land north of the Weeli Wolli Creek affected by floodwaters, a site north of the BHPBIO rail line and south of the dune system to the west of the tenement was identified. However some of the issues with this site included noise from the rail line and dust transmitted by prevailing winds from the stockpiles which are located close by, both causing potential health and safety issues for site personnel. Cultural and archaeological surveys had indicated that a clay pan immediately off-lease to the west of Site B had the potential to be archaeologically sensitive. Finally, the site is subject to a proposal by BHP to duplicate their rail line and is immediately adjacent to Hancock Prospecting Pty Ltd's (HPPL) File Notification Area and an

intended rail over-crossing. This would sandwich the village between two rail lines resulting in further noise impacts.

Towards the end of the PFS the site infrastructure plan was completed and post-development surface water modelling started to indicate that not all of the land north of the creek would be inundated during floods. Site C (south west of Site A) was selected as it appeared to have lower water levels during flooding than Site A. The advantages of this site were that there was no requirement to construct an elevated pad to protect from a 1 in 10 ARI flood and the site is closer to the administration offices which would result in shorter roads and power lines. However the disadvantages include the potential for an HPPL rail line to be constructed nearby, which would create a noise issue outside of the control of Brockman. Once all three sites were evaluated, a decision was made to adopt Site A as this site provided Brockman with maximum control over the activities and associated impacts likely to result from these. Engineering solutions will be undertaken to adequately protect the site during a 1 in 10 ARI flood event.

Although site A has the highest capital cost, it is significantly removed from impacts associated with the project and potential impacts associated with the activities of others outside of Brockman's control. Site A provides certainty for the project, albeit at a cost penalty.

A Surface Water Management Plan will be implemented as part of the environmental management framework for the Project and details strategies to control the effects of flooding.

- ***Ref 8: Reference to DMP Guidance***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 9: Advice for Mine Closure***

Refer to response provided in Table 1, Appendix 1.

3.2 Department of Environment and Conservation

- ***Ref 10: Essential project infrastructure not included in PER***

  Submission Recommendation: (DEC1) That key environmental constraints relating to infrastructure essential to the project are clearly identified in the PER

The scope of the Project for which approval is being sought is the specifications outlined in Section 1.0 and within Table 1.1 of the PER.

PER section 5.6.8 outlines that applications for regulatory approvals for the required additional rail infrastructure do not form part of the Marillana PER scope. A separate application for environmental impact assessment and other regulatory approvals will be made once the requisite surveys and technical studies for extensions to existing rail infrastructure have been completed. Three potential rail routes are currently still being investigated and it is not possible at this stage to include the details in the scope of the Marillana mine site PER.

At the time of submitting the PER, an agreement for the use of the Barimunya Aerodrome was under negotiation and could not be included in the Marillana PER scope due to lack of commercial arrangements being in place. Airport location studies were carried out as shown in PER Appendix D and various options were evaluated. The preferred option is considered most feasible based on costing, impacts and accessibility. The final agreements (when they are in place) will dictate the scope of the airport access road, so this is aspect also falls outside the scope of the Marillana PER.

- ***Ref 11: Water Supply additional cumulative risks to environmental values including the Fortescue Marsh***

  Submission Recommendation: (DEC1) That key environmental constraints relating to infrastructure essential to the project are clearly identified in the PER

Since submission of the PER, further definitive groundwater modelling and optimisation of the mine plan has provided a water solution from dewatering operations to Year 16 of life of mine (LOM). A supplementary supply would be required after Year 16. A hierarchy of water options have been clearly outlined in PER, such that use of an on-tenement water source is far down the list of preferred options for the Project. It has also been noted in the PER that the requisite studies to approve such a supply would be undertaken as/when required in order to approve any additional water source. It is noted that Brockman has undertaken consultation with neighbouring tenement holders under Confidentiality Agreement to develop a water off-take agreement utilising their excess water which is currently being discharged to the Weeli Wolli Creek system (an outcome that would be beneficial as it relates to cumulative impacts in the catchment).

- ***Ref 12: Rail operations potentially face significant environmental constraints in relation to 2015 areas.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 13: Conservation of lands under the 2015 pastoral lease exclusion***

  Submission Recommendation: (DEC2) That the proponent provides clear commitment to avoid indirect impacts of the project on the Fortescue Marsh 2015 area

The Fortescue Marsh is located approximately 15 km north of the Project area. The areas of current pastoral station which plan to be relinquished by the DEC in 2015 have been mapped and are shown in Figure 1.1 in Appendix 2 of this report. There are no areas of land related to the 2015 relinquishment zones which fall within the Brockman Marillana tenement.

The distance between the Fortescue Marsh boundary and the Marillana Project area is 15 kilometres. The distance between the 2015 relinquishment area boundary and the Marillana tenement is 12 kilometres. Whilst the area between the Marsh boundary and the 2015 exclusion area boundary was not directly addressed within the PER, in assessing indirect impacts of the Project on the Fortescue Marsh, the PER has considered the regional context which include this area.

Brockman has proactively sought advice and input from government departments; including the DEC at all stages of the project as shown in the consultation register (PER Appendix I). The specific recognition of the 2015 relinquishment areas have not been raised in any of the prior communication with DEC.

Given the distance between the Project area and the 2015 relinquishment zones being approximately 12 kilometres away, there will be no direct or indirect impacts.

- ***Ref 14: Aspect of* CALM Act 1984**

Refer to response provided in Table 1, Appendix 1.

- ***Ref 15: Conservation of lands under the 2015 pastoral lease exclusion***

  Submission Recommendation: (DEC2) That the proponent provides clear commitment to avoid indirect impacts of the project on the Fortescue Marsh 2015 area

Brockman recognises the natural values associated with the Fortescue Marsh and is an active member of Fortescue Marsh Working Group, providing expert hydrogeologist and ecologist to attend the Strategy workshop and having involvement in subsequent discussions on the way

forward. Prior to this, Brockman has provided the Department of Water with all available parameters for inclusion into the Fortescue Marsh Strategy development.

The potential indirect impacts of groundwater drawdown in relation to the Fortescue Marsh 2015 area is not expected to be any greater than previous stated for the Fortescue Marsh (i.e. negligible). Therefore, establishing monitoring networks and continuing to update the groundwater model stands as a suitable measure to address groundwater drawdown at this point in time. As stated in DoW public response, "The DoW considers that the limitations of the model can be adequately managed by an appropriate monitoring and review program. This would comprise a network of monitoring bores and measurement program, defined triggers and regular and ongoing review of the model."

- ***Ref 16: Groundwater impacts in the Fortescue Marsh delta***

  Submission Recommendation: (DEC3) That the proponent obtains expert advice on the potential for extensive groundwater drawdown in the delta on the south side of the Fortescue Marsh to affect surface inundation in the Marsh.

The values of Fortescue Marsh have not been defined, and this is the subject of the Fortescue Marsh Working Group, of which Brockman is an active member. Brockman has provided the Department of Water with all available parameters for inclusion into the Fortescue Marsh Strategy development. In addition to this, the groundwater modelling carried out for the Project has been developed in consultation with, and reviewed by, DoW experts in the region. DEC Hydrogeologist has also been engaged in discussions on the modelling where DoW have indicated satisfaction with groundwater modelling undertaken.

In addition to the response outlined for Ref 15, the PER is more likely to overstate groundwater impacts than understate them because (as discussed in PER section 7.4.3) the lateral extent of the dewatering zone of influence as represented by the model represents the "worst case" scenario, and is considered extremely unlikely to eventuate. In particular, in the absence of detailed resolution, it has been assumed that the calcretes in the area are thick and laterally continuous (a conservative modelling assumption). If the calcretes are less extensive or less continuous in nature than simulated (calcretes in the Pilbara are typically "patchy" in nature), the lateral extent of drawdown to the north will be significantly reduced.

- ***Ref 17: Groundwater impacts in the Fortescue Marsh delta***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 18: Groundwater impacts in the Fortescue Marsh delta***

  Submission Recommendation: (DEC3) That the proponent obtains expert advice on the potential for extensive groundwater drawdown in the delta on the south side of the Fortescue Marsh to affect surface inundation in the Marsh.

As per response to Ref 16, the lateral extent of the dewatering zone of influence as represented by the model represents the worst case scenario, and is considered extremely unlikely to eventuate. In particular, in the absence of detailed resolution, it has been assumed that the calcretes in the area are thick and laterally continuous (a conservative modelling assumption), if the calcretes are less extensive or less continuous in nature than simulated (calcretes in the Pilbara are typically "patchy" in nature, as many calcrete bodies are remnants of larger areas that have been dissected by recent drainages[1]), the lateral extent of drawdown to the north will be significantly reduced.

[1] JOHNSON, S. L. and WRIGHT, A. H., 2001, Central Pilbara Groundwater Study, Water and Rivers Commission, Hydrogeological Record Series, Report HG 8.

As discussed in some detail in PER Section 6.6 (page 66), Appendix E Section 3.3.3, and noted during the recent Fortescue Marsh Strategy Workshop (19 March 2010), the conceptual understanding (as presented by Gary Clark NWH independent expert water consultant) presented is that the Marsh is a surface water driven system. This is in alignment with the conceptual basis adopted for the modelling of the Brockman Marillana Project dewatering, and subsequent potential regional impact discussions. To expand on this discussion, particularly as it relates to infiltration of surface water:

In a ponded surface water environment (as is the case in the Fortescue Marsh inundation periods), the infiltration rate at which water would seep into the marsh bed or the creek channel is controlled by the physical characteristics of the sediments that the surface water is seeping into (the permeability of the unsaturated sediments above the water table). The infiltration rate is therefore independent of the groundwater level below it, so groundwater drawdown will not affect the infiltration rate, and therefore will not affect the surface water pond.

The Project will have no net impact on the volumes of surface water flowing from the Hamersley Ranges to the Fortescue Marsh, with all small drainages from the ranges being temporarily diverted around operations, and no interference with the Weeli Wolli Creek channel flows. Also to be considered is in the overall water balance of the Fortescue Marsh, studies suggest that the Weeli Wolli catchment contributes approximately 15% of the total natural catchment area for the marsh, with the Fortescue Valley being the main contributor.

- ***Ref 19: Surface water inflow to the Fortescue Marsh***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 20: Impact on phreatophytic vegetation in Weeli Wolli Creek***

  Submission Recommendations: (DEC4) That the proponent undertakes:

  a) more rigorous prediction and an assessment of the significance and acceptability of any impacts on Weeli Wolli creek vegetation that may occur downstream of the project prior to project approval; and

  b) monitoring and management of groundwater in a way that ensures that the vegetation in Weeli Wolli Creek (between project area and the Fortescue Marsh) does not suffer mortality resulting from the project.

  DEC5: That consideration is given to applying an outcome based commitment or condition to the protection of existing surface and groundwater hydrology regimes in proximity to the Fortescue Marsh from changes resulting from the project.

DEC4:

DEC4a) Studies conducted to date show that the Project will have no net impact on the volumes of surface water flowing from the Hamersley Ranges to the Fortescue Marsh, with all small drainages from the Ranges being temporarily diverted around operations, and no interference with the Weeli Wolli Creek channel flows. Also to be considered is in the overall water balance of the Fortescue Marsh; studies suggest that the Weeli Wolli catchment contributes only approximately 15% of the total natural catchment area for the Marsh, with the Fortescue Valley being the main contributor. Brockman has indicated, in discussions with the DEC regarding conservation offsets (refer to minutes in Appendix 4 of this report), willingness to contribute towards programs which look at regional studies and cumulative impacts relating to Fortescue Marsh.

The PER Environmental Management Commitment No.13 commits to the development of a monitoring program to assess impacts to the potentially phreatophytic vegetation within the project area as a result of dewatering. The PER also includes Commitment No.14 which commits to the development a Management Plan in consultation with the DEC if groundwater abstraction is

found to be affecting the health of the potentially phreatophytic vegetation within the first five years of operation. At a meeting held with DEC in October 2009, the DEC agreed that current groundwater modelling showed no significant impacts to Fortescue Marsh and agreed to develop a management plan for Groundwater Dependant Ecosystems if future surveys or ground water modelling work indicated impact. This is reflected in the PER and the Project EMP (PER Appendix F).

It is expected that all groundwater monitoring plans will be developed in consultation with the Department of Water (DoW) via the 5C Operating Strategy process. As a result, data collected for the Project would be utilised as part of Weeli Wolli Creek vegetation health monitoring. Regarding supplementary application of fresh water, such a commitment would be included in the monitoring plan details (Commitment No.13).

DEC4b) As stated in the response to DEC4a above, monitoring and management of groundwater will be developed in consultation with the DEC and DoW.

PER Section 6.7.3 explains that surveys have shown the creek banks, floodplains and flat clay-pan areas at Marillana are in a poor condition. These areas are characterised by high levels of cattle grazing and significant weed populations. It is therefore questionable how effective the vegetation lining Weeli Wolli Creek is at maintaining water quality and the ecological integrity of waterways. While there may be an effect locally on phreatophytic vegetation, only 0.08% of the River land system occurs within the Project area. Therefore, the impact to the vegetation of the wider catchment area would be very low, even in the highly unlikely case that all the vegetation on site was affected by changes in groundwater levels.

Further to this, the Project EMP Section 5.5 Groundwater Management includes the Key Performance Indicator 'No significant change to the health of vegetation lining Weeli Wolli creek'. A monitoring program to asses the potential impacts of dewatering on phreatophytic vegetation will be undertaken. Appropriate management actions, agreed with the DEC, will be undertaken if results show an adverse effect. The proposed monitoring programme will include:

- Regional groundwater levels on a monthly basis;
- Pumping bore water levels and pumping volumes from abstraction bores on a monthly basis;
- Reinjection bore water levels and re-injection volumes on a monthly basis;
- Installation of monitoring piezometers between the Project and the southern Fortescue Marsh boundary to allow for ongoing assessment of background seasonal fluctuations in groundwater levels and quality, monitoring of longer -term drawdowns and confirming the nature of the calcretes;
- Recharge volumes to the MAR operations on a monthly basis;
- Quarterly water quality sampling and analysis from pumping bores and a selection of piezometers (screened in alluvial and basement sequences). Samples to be analysed for major ions, salinity and pH as a minimum.
- Annual review and assessment of all monitoring data, including validating and updating the groundwater model to confirm that predictions remain valid on the basis of operational data

DEC5:

A baseline understanding of the Fortescue Marsh area does not currently exist; therefore, meaningful, outcome-based commitments are currently unable to be developed in detail. It is expected that all groundwater monitoring will be developed in consultation with the DoW via the Rights in Water and Irrigation (RIWI) Act 1914 5C licence Operating Strategy process. As a result, data collected for the Project would be utilised as part of Weeli Wolli Creek vegetation health

monitoring/assessment. Regarding supplementary application of fresh water, such a commitment would be included in the monitoring plan details (Commitment No.13).

- ***Ref 21: Marillana sand dunes PEC***

  Submission Recommendations:

  DEC6: That the PER includes further discussion of proactive management measures to protect these regionally significant sand dunes by means of fencing the dune habitat and through education of the workforce.

  DEC7: That the proponent provides clearly worded commitments and associated documentation as the basis for determining what actions will be undertaken to protect environmental values such as the sand dune PEC

  DEC8: That consideration is given to applying an outcome based commitment or condition for preventing direct or indirect impacts on the sand dune PEC

DEC6:

Within the Project PER (Section 7.8.4), Brockman has committed to the following proactive environmental management measures:

- PEC demarcated as a 'no go' area on site maps;
- access restrictions communicated to site staff and contractors through inductions throughout the life of the project;
- signage will be erected between the rail and the dunes to notify employees and contractors that the sand dunes are a 'no go' area; and
- no tracks will be created to allow access to the dunes and vehicles are prohibited off tracks.

Fencing is not considered appropriate as it may impede fauna movements. In addition, as per previous discussions with the DEC, fencing of the PEC cannot be committed to by Brockman due to the land being part of an active pastoral station under management by a third party. Therefore, Brockman does not have the ability to install fencing around the whole PEC area. Brockman does not anticipate that there will be any impact to the PEC. The potential impacts will be managed in accordance with the Project Environmental Management Plan (EMP) and Environmental Management System (EMS). The Project EMP (PER Appendix F) Management Procedure 5.2 provides controls and procedures to avoid impacts to native vegetation and this specifically includes the sand dune PEC. The EMS (PER Appendix G) outlines procedures for site clearing permits (EMS Form 8) and employee training program (EMS Procedure 6). All employees/contractors will be inducted on the importance of minimising vegetation clearing and disturbance as per EMS Procedure 6 and Procedure 7. The EMS sets out monitoring of environmental performance on site at various levels through inspection (Monitoring and Review Procedure), reporting, investigation and analysis of incidents and non-conformances (Incident Management Procedure; Non-conformance Management Procedure) and regular audits (Audits Procedure).

DEC7:

Environmental Management Commitment No.15 in the Project PER states that the PEC will not be cleared or excavated. This commitment has been worded as clearly as possible and was developed in consultation with the DEC. The proactive management measures outlined in the response to DEC6 above (signage, staff training, etc) clearly outline the actions which are to be undertaken to protect environmental values of the sand dune PEC. In addition, the Project EMP outlines detailed objectives, key performance indicators and management procedures for all environmental aspects of the Project.

The project area has a significant weed problem as a result of cattle grazing activities. Brockman realises that preventing the spread of existing and introduction of new weeds is important in managing the overall environmental values on site. Weed management strategies are outlined in section 7.8.4 of the Project PER and apply to the entire site, including the PEC. In addition, the access restrictions and absence of tracks to this area of the site will prevent the spread and/or introduction of weeds to the area. The Project EMP outlines management procedures for weed management (PEMP 5.3). All employees/contractors will be inducted on the importance of avoiding weed infested areas as per EMS P6 and P7. Brockman will report on weed species distribution, status and weed management undertaken in the Annual Environmental Review.

As outlined in the Surface Water Management Plan (PER Appendix S), the design of surface water management structures is such that flows of water around the PEC will remain unchanged. The BHP rail line culverts will receive the same flows as current (no change).

DEC8:

There will be no direct or indirect impacts on the sand dune PEC. Brockman has provided clear environmental management commitments as outlined in response to DEC7 above. The Project EMP outlines detailed objectives, key performance indicators and management procedures for all environmental aspects of the Project and these are relative to the PEC area.

- ***Ref 22: Potential effects of blasting on avian fauna of Fortescue Marsh***

  Submission Recommendations: (DEC9) That the proponent provides clearer and more specific commitments to monitor and address the effects of blasting noise on the behaviour of water birds during flood periods

PER Section 7.14.3 discusses the potential impacts of noise on fauna. As outlined in the noise desktop assessment (PER Appendix U), very little research has been undertaken in Australia regarding the effects of noise on birds and much of the work is inconclusive or contradictory. The desktop assessment concludes that *'there is unlikely to be any disturbance to the wetland. In any case, birds are quick to adapt to a changing environment, particularly when other senses such as optical or smell are undisturbed and would be expected to resume normal activities in a short period of time*'.

The noise desktop assessment states the distance between the northern most point of the mine area and southern most point of the Fortescue Marsh is approximately 12.5 kilometres. This provides a worst case scenario and is only relevant to the period of time when mining occurs in this western section of the mine pit. The current understanding from the Definitive Feasibility Study (DFS) is that mining will begin in the eastern part of the mine pit and move west sequentially over time, thus mining in this area is planned for much later in the mine life. Therefore, the eastern section of the mine pit (where blasting will occur initially) is at the southern boundary up to 20 kilometres away from the Marsh. As sound levels decrease with distance from a sound source, the noise from blasting in the initial years of mining will be much lower than the levels indicated in the desktop assessment (PER Appendix U).

Brockman intends to remain actively involved in the Fortescue Marsh Working Group and will form part of the industry contribution towards gaining better understanding and knowledge of the issues facing the Fortescue Marsh over time. At this stage, however, there is little information available about the behaviour of birds at Fortescue Marsh during times of flood or after major rainfall events. Brockman is unable therefore to provide more specific commitments to address the effects of blasting noise on the behaviour of water birds during flood periods. Nonetheless, Brockman has previously indicated, in discussions with the DEC regarding conservation offsets (refer to minutes in Appendix 4 of this report), willingness to contribute towards programs which look at regional studies and cumulative impacts relating to Fortescue Marsh.

Given the low likelihood of blasting noise to have any significant impact on birds at Fortescue Marsh, it should be noted that times when the Fortescue Marsh is in flood are infrequent, with cyclone events expected approximately every 3-5 years in the Weeli Wolli Catchment. It should also be noted that the Weeli Wolli catchment contributes approximately 15% of the flows into the Fortescue Marsh and the Fortescue Valley and Ophthalmia Dam Catchments contribute the majority of water flows into the Fortescue Marsh.

Regarding potential for monitoring, the Fortescue Marsh southern-most boundary is located approximately 15 kilometres away from Brockman's Project area, and therefore Brockman has no direct ability to carry out regular monitoring of bird activity at the Fortescue Marsh. However, Brockman has been (and will continue to be) a willing member of the Fortescue Marsh Strategy Working group, whose aim is to develop the Fortescue Marsh Management Strategy in partnership with industry to guide a management approach which will support environmental outcomes acceptable to all parties. The absence of baseline information has been openly acknowledged by the Fortescue Marsh Working Group and there is a process underway to set up the Fortescue Marsh Knowledge Management Steering Group in order to consolidate knowledge and prioritise research and monitoring in order to improve information. In addition, Brockman have already indicated willingness to contribute towards appropriate research as part of an environmental offsets package for the Project.

Brockman is not in a position to determine the likelihood of cumulative impacts of other projects within the region as this would require access to other Company project activities and commercial information. Therefore, any such cumulative impact assessment is purely speculative and rightly should be undertaken by government departments who are privy to regional project activities. Nonetheless, Brockman has previously indicated, in discussions with the DEC regarding conservation offsets (refer to minutes in Appendix 4 of this report), willingness to contribute towards cumulative impact studies relating to Fortescue Marsh, where those studies are sanctioned and managed by the DEC and other relevant government departments..

Brockman will, however, be implementing management strategies as outlined PER Section 7.14.4 to minimise potential noise impacts including: layout of mine site (e.g. stockpile locations) to minimise the noise emissions towards Fortescue Marsh, blasting during daylight hours only (not at dawn or dusk) and continued involvement in the Fortescue Marsh Strategy Working group.

- ***Ref 23: Feral Animal Activity***

  Submission Recommendation: (DEC10) That the proponent provides clear commitment to best practice landfill management and identifies monitoring based triggers for initiating feral animal control programmes.

The comment is noted. Although specific reference was not made within the PER to the potential to increase feral animal activity in the Fortescue Marsh area, feral animals have been considered within the following sections of the PER, which will in turn reduce the risk of increased feral animal activity in areas outside Brockman Mining tenement:

- Section 7.7.3 Potential Impacts of Closure: refers to inadequate closure potentially leading to a site which harbours feral animals.
- Section 7.9.3 Vertebrate Fauna Potential Impacts: refers to indirect impacts associated with increased human activity in the area leading to introduction of weed and feral fauna species in the area.
- Section 7.14.3 refers to light sources and human activity being a potential attraction for feral predators.

The Project Environmental Management Plan (PER Appendix F) details a number of management measures which will in turn reduce the risk of increased feral animal activity in areas outside Brockman Mining tenement:

- Section 5.7 Terrestrial Fauna Management: introduction of feral/domesticated animals onto the project site will be prohibited and a feral animal management program will be developed if required in ongoing collaboration and consultation with the DEC.
- Section 5.7 Monitoring and Reporting: requirement to report and investigate native animal injuries/deaths by the Operations / SHE Manager (or delegate).
- Procedure 5.13 Municipal Waste and Sewage: All site generated waste is appropriately contained within the on-site landfill.
- Procedure 5.13 Municipal Waste and Sewage: Key Performance Indicator is 'Number of incidents of fauna scavenging for food'. This includes sightings of feral species.
- Procedure 5.13 Municipal and Sewage Waste Management outlines in detail the relevant Regulatory and Other Requirements which will be incorporated in order to appropriately manage such a facility. Monitoring and Measurement will ensure best practice, including housekeeping inspections, is employed on site.

Brockman is committed to best practice landfill management and will identify triggers for initiating feral animal control programmes. It is anticipated that this would result from the audit and reporting program to be developed in consultation with the DEC, as outlined in the PEMP Section 7.0 Review and Reporting. Compliance with the commitments set out in the audit and reporting program will be internally audited by Brockman and externally audited by the DEC, DMP and any other relevant regulatory authorities. Brockman will submit an annual audit Compliance Report, indicating the compliance with the conditions set out in the approval.

- ***Ref 24: Impact of powerlines and fences on bats and water birds***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 25: Predicted and residual impacts***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 26: Management Commitments***

Refer to response provided in Table 1, Appendix 1.

3.3 Public Submission

- ***Ref 27: Fortescue River Flats***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 28: Degradation due to Pastoralism***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 29: Dewatering***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 30: Water Quality***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 31: Water Quality***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 32: Water Quality***

Refer to response provided in Table 1, Appendix 1.

3.4 BHP Billiton Iron Ore

- ***Ref 33: Hydrological Impacts along Railway***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 34: Infrastructure Use and Environmental Impacts***

Brockman is subject to Confidentiality Agreement (CA) and is unable to respond in detail. Brockman has continually engaged with stakeholders and the Pilbara community since the commencement of the feasibility studies. Correspondence has been maintained with tenement holders within regional proximity, including BHPBIO, FMG and Rio Tinto.

As part of its commitments regarding stakeholder engagement, Brockman has sent letters regarding various issues and progress that directly and indirectly affect BHPBIO operations.

In addition, Brockman issued a courtesy letter to Gavin Price (BHPBIO) providing notification of the PER and offering to discuss any issues. A copy of the letter is provided in Appendix 5.

Discussion of the airport location and the rail loop are summarised in greater detail in the response to Ref 10 in this report.

- ***Ref 35: Pastoral Land Activities***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 36: Zone of Safety at Boundary***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 37: Road and bridge Level of Information***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 38: Lack of information around Brockman Rail Loop Infrastructure, Management and Impacts***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 39: Impact on BHPBIO infrastructure and pastoral activities***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 40: Cumulative Impacts on the Catchments***

Brockman's Marillana Project has minimal to no effect of surface water flows in the Weeli Wolli Catchment. Groundwater on a catchment scale has been discussed in the PER (utilising any publically available information) in relation to the Project to highlight the fact that the operations up the catchment are likely to be elevating the groundwater throughflow on the basis of dewatering and discharge volumes. It should be noted that Brockman's preferred solution to long-term supplementary water supply is to gain a third-party water off-take agreement with one of these excess water dischargers. This outcome is a solution that would be beneficial to the cumulative water balance impacts currently occurring within the catchment.

Whilst it has considered cumulative impacts on the catchment, Brockman is not in a position to determine the likelihood of cumulative impacts of other projects within the region as this would

require access to third party project activities and commercial information. Therefore, any such cumulative impact assessment is purely speculative and rightly should be undertaken by government departments who are privy to regional project activities.

Brockman is an active member of Fortescue Marsh Working Group, and to date has been very forthcoming with the provision of data and provided expert hydrogeologist and ecologist to attend the Strategy workshop and having involvement in subsequent discussions on the way forward. The Department of Environment and Conservation (DEC), the Office of the EPA and the Department of Water (DoW) are, in collaboration with the mining industry, developing a Fortescue Marsh management strategy to ensure that there is a framework for decision-making relating to mining projects to prevent unintended or unacceptable cumulative impacts on the marsh.

Brockman has previously indicated, in discussions with the DEC regarding conservation offsets (refer to minutes in Appendix 4 of this report), willingness to contribute towards cumulative impact studies relating to Fortescue Marsh, where those studies are sanctioned and managed by the DEC and other relevant government departments.

- ***Ref 41: Impacts on existing licenses bores***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 42: Contingencies for water off-take agreement***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 43: BHPBIO bores not considered in the assessment***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 44: Cumulative impacts on vegetation downstream of Weeli Wolli creek.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 45: Differentiate between management of on site environmental issues and existing BHPBIO infrastructure and operations.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 46: General Summary***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 47: Consultation with BHPBIO***

Refer to response provided in Table 1, Appendix 1.

3.5 Department of Indigenous Affairs

- ***Ref 48: If sites are to be impacted at a later time, the proper section 18 processes under the AHA are followed.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 49: DIA have not received heritage reports and cannot advise or confirm statements made ion table ES1 relating to Indigenous heritage.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 50: The buffer area around any find should be allocated in consultation with the relevant Indigenous group and an archaeologist.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 51: DIA regional office is in Hedland.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 52: Potential impacts of groundwater drawdown on Aboriginal heritage sites.***

Refer to response provided in Table 1, Appendix 1.

3.6 Department of Water

- ***Ref 53: Adequate monitoring and response program***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 54: The two bores identified in the PER are unlikely to adequately represent the hydraulic properties of the area.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 55: Additional water source worst case scenario***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 56: MAR has been identified as the preferred option for excess water management.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 57: Potential for the project to have an impact on subterranean fauna and phreatophytic vegetation.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 58: Impacts on Phreatophytic vegetation associated with Weeli Wolli creek are possible with changes in groundwater and alterations to the natural hydrological regime.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 59: There are no predicted cumulative impacts within the PER.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 60: The document has not demonstrated that the existing flood regime will not be detrimentally affected by the project.***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 61: Development of the Groundwater Operating strategy***

Refer to response provided in Table 1, Appendix 1.

- ***Ref 62: Closure Plan and Water Management Plan***

Refer to response provided in Table 1, Appendix 1.

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APPENDIX 1: Response to Public Submissions - Table 1

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
1	DMP	Ore body proximity to the tenement boundary	PER page 33 states "*The pit has been designed to have an average standoff distance of 50m from the pit crest to the lease boundary. This allows for a 30 m wide service corridor to be maintained along the power line an additional 20 m accommodating surface drainage, bunding and access along the pit crest*". No detail has been given as to whether this standoff distance and positioning of infrastructure has taken into consideration the zone of instability associated with the pit. All infrastructure and abandonment bunds should be located outside of this zone and within tenement boundaries and verified by a geotechnical engineer.	Provide further details as to consideration of the zone of instability associated with the pit, and location of infrastructure and abandonment bunds.	Refer to response in Response to Submissions Report
2	DMP	Leachates resulting from landforms	Limited detail has been provided on any investigations and subsequent management, if required, of possible leachates that may result from the landforms in non acid forming conditions.	Provide further detail on possible leachates	Refer to response in Response to Submissions Report
3	DMP	Testing of waste material and erodilbility of final landform	No discussions on the testing of the physical characteristics of the waste material to ensure geophysically adverse (i.e. dispersive and sodic material), if present, will be managed to minimise the erodilbility of the final landform.	Provide discussion on the issue	Refer to response in Response to Submissions Report

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
4	DMP	Incorporation of course rejects into waste landforms and rehabilitation	PER page 38 details that 43 million tonnes of course rejects will remain in external waste dumps, and a separate reject stockpile at closure. It would appear no detail has been given on how these course rejects will be incorporated into the waste landforms or if the course rejects piles will be rehabilitated separately. In comparison to waste, course rejects have a uniform size and can have less stability than waste rock which can be challenging to rehabilitate to a stable condition.	Provide detail on how course rejects will be incorporated into waste landforms or rehabilitated separately.	Refer to response in Response to Submissions Report
5	DMP	Inconsistencies in the Figures	In Figure 5.4 the location of the explosive magazine has not been detailed, however in Figure 7.9 its location has been detailed.		This comment has been noted. The location of the explosive magazine as shown in Figure 7.9 is correct.
6	DMP	1 in 10 year flood design	As Weeli Wolli Creek bisects the project and the proposal life of project is 20 years, the adoption of flood protection that incorporates a 1 in 10 year design is inappropriate.	Flood management should incorporate design of 1 in 100 year or locate infrastructure outside the 1 in 100 ARI flood zone. If divergence from this occurs then reasons should be given in adopting the new design parameters.	Flood modelling was undertaken for the 10 year and 100 year ARI events. All critical infrastructure will be protected against inundation due to the 100 year ARI flood event. Similarly, diversion drains have been designed to convey the 100 year ARI flood event with an appropriate freeboard. As a result of the width of flow during major flood events (many kilometres), flood velocities are low with limited potential for damage. The submergence of the base of selected infrastructure in major flow events has been considered acceptable.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
7	DMP	1 in 10 year flood design	PER states that the proposed village disposal area will be inundated by less than 1 m during a 1 in 10 year ARI flood event. In light of this the village disposal area would be better managed by locating it outside the zone inundated during a 1 in 100 ARI flood event.	The village disposal area would be better managed by locating it outside the zone inundated during a 1 in 100 ARI flood event.	Refer to response in Response to Submissions Report
8	DMP	Reference to DMP Guidance	PER page 129, the document refers to the DMP guidance document titled "Guidelines for Mining in Arid Environments". This document is currently under review and has been removed from DMP's website. It is not recommended to be referenced and as such, parts of the content are not endorsed by the DMP.	It is recommended that reference should be made to the Department of Industry, Tourism and Resources, Leading Practice Series.	This comment has been noted and will be taken into consideration and note that the guidance was publicly available at the time PER was developed. The Department of Industry, Tourism and Resources, Leading Practice Series will be referred to in the development of the Mining Proposal.
9	DMP	Advice for Mine Closure	PER page 179 within Commitment 11, "Mine Decommissioning and Rehabilitation" the role of the DMP has not been acknowledged in matters related to mine closure.	Acknowledge the role of the DMP in matters related to mine closure.	Brockman acknowledge the role of DMP in matters relating to mine closure and consider that DMP involvement is implicit. This comment has been noted and will be taken into consideration in development of the Mining Proposal, which will involve DMP input in regards to mine closure.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
10	DEC	Essential project infrastructure not included in PER	Infrastructure essential to project viability is not included in the PER. Clarify which essential & interdependent components of the overall Project require approval but are not included in the proposal being assessed in the PER i.e. rail transport infrastructure, airport, airport access road, supplementary water source after year 9. The key environmental constraints that relate to development of components external to the PER approval need to be clearly identified so that the EPA and Minister for Environment are aware of these when considering the environmental approval of this proposal and future approvals risks are clearly identified.	DEC1: That key environmental constraints relating to infrastructure essential to the project are clearly identified in the PER	Refer to response in Response to Submissions Report
11	DEC	Water Supply additional cumulative risks to environmental values including the Fortescue Marsh.	As an example of the point above, PER page 11 states "…there will be further groundwater available on tenement…" without indicating what the abstraction of this additional water would present in terms of additional cumulative risks to environmental values including the Fortescue Marsh.	DEC1: That key environmental constraints relating to infrastructure essential to the project are clearly identified in the PER	Refer to response in Response to Submissions Report
12	DEC	Rail operations potentially face significant environmental constraints in relation to 2015 areas.	It needs to be stated that rail options that would impact on Mulga woodland fringing the Fortescue Marsh and/or the DEC 2015 exclusion area, potentially face significant environmental constraints.	DEC1: That key environmental constraints relating to infrastructure essential to the project are clearly identified in the PER	Refer to response provided to Ref 10 in Response to Submissions Report

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
13	DEC	Conservation of lands under the 2015 pastoral lease exclusion	The PER does not appear to recognise the proximity of areas that have been agreed for future conservation management under the 2015 pastoral lease exclusion process	DEC2: That the proponent provides clear commitment to avoid indirect impacts of the project on the Fortescue Marsh 2015 area	Refer to response in Response to Submissions Report
14	DEC	Aspect of CALM Act 1984	Table 3-1 mistakenly identifies the focus of the CALM Act 1984 as relating to "Flora and fauna/habitat/weeds/pests/diseases". This is incorrect in strict terms as the purpose of the CALM Act relates to the management of land for conservation purposes.	DEC2: That the proponent provides clear commitment to avoid indirect impacts of the project on the Fortescue Marsh 2015 area	This comment has been noted. The purpose of Table 3-1 in the PER is to outline the aspects of the project to which the Legislation is relevant. The aspects mentioned in the table are relevant to the management of land for conservation purposes.
15	DEC	Conservation of lands under the 2015 pastoral lease exclusion	The Government has agreed to exclude land near Fortescue Marsh from pastoral lease and place under the management of DEC for conservation purposes in 2015. This important area for conservation does not appear to be identified or referred to in the PER (e.g. Section 6-2 or Figures 5-1 to 5-3) despite indirect impacts of the project such as the groundwater drawdown, noise and light emissions extending into the area. The proponent needs to recognise the potential for nearby lands to be managed for conservation purposes for the majority of the mine life and plan for management of any impacts of the project on the natural values of these lands on this basis.	DEC2: That the proponent provides clear commitment to avoid indirect impacts of the project on the Fortescue Marsh 2015 area	Refer to response in Response to Submissions Report

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
16	DEC	Groundwater impacts in the Fortescue Marsh delta	The PER may understate the impact of groundwater impacts in the Fortescue Marsh delta:	DEC3: That the proponent obtains expert advice on the potential for extensive groundwater drawdown in the delta on the south side of the Fortescue Marsh to affect surface inundation in the Marsh.	Refer to response in Response to Submissions Report
17	DEC	Groundwater impacts in the Fortescue Marsh delta	The groundwater drawdown footprint affecting the aquifer underlying land on the southern fringe of the Fortescue Marsh is extensive, as shown in the PER figure 7.4 and Groundwater Study report (PER Appendix E, page 80)	DEC3: That the proponent obtains expert advice on the potential for extensive groundwater drawdown in the delta on the south side of the Fortescue Marsh to affect surface inundation in the Marsh.	Refer to response provided to Ref 15 and Ref 16 in Response to Submissions Report
18	DEC	Groundwater impacts in the Fortescue Marsh delta	The second paragraph on page 66 of PER infers that, while surface water may infiltrate through the marsh bed into the groundwater table during surface flood events, the groundwater table beneath the marsh at the time of flood events will not affect the degree of infiltration. Clarify the basis for this statement. The relationship between surface water and groundwater levels under the dewatered scenario during flood events is critical to the assessment of potential impacts on the marsh.	DEC3: That the proponent obtains expert advice on the potential for extensive groundwater drawdown in the delta on the south side of the Fortescue Marsh to affect surface inundation in the Marsh.	Refer to response in Response to Submissions Report

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
19	DEC	Surface water inflow to the Fortescue Marsh	The observation on page 66 that the Marsh surface hydrology will not be affected by drawdown because "…the proposal will have an insignificant effect on groundwater levels beneath the Marsh…" appears partially dependant on the accuracy and level of conservatism of groundwater drawdown predictions. Additionally, surface water inflow to the marsh may be affected by the predicted significant change in groundwater levels (which affect recharge and runoff rates) in the area between the marsh and the Hamersley Range as well as under the marsh bed itself. it is unclear whether the indirect as well as direct effects of the project on surface water inflow to the marsh have been fully considered.	DEC3: That the proponent obtains expert advice on the potential for extensive groundwater drawdown in the delta on the south side of the Fortescue Marsh to affect surface inundation in the Marsh.	Refer to response provided to Ref 18 in Response to Submissions Report
20	DEC	Impact on phreatophytic vegetation in Weeli Wolli Creek	Impacts on phreatophytic vegetation in Weeli Wolli Creek need to be avoided in order to mitigate impacts on the integrity of the Fortescue Marsh 2015 area. While only a small proportion of the 'River' land system occurs in the project area, the health of the (potential phreatophytic) mature *'Eucalyptus vitrix* and *Acacia citrinoviridus* low to high woodland' vegetation fringing Weeli Wolli creek is considered important for maintaining water quality and the ecological integrity of an important waterway feeding into the Fortescue Marsh. Groundwater drawdown predictions (PER figure 7.4b) in the vicinity of Weeli Wolli creek are for up to	DEC4: That the proponent undertakes: a) more rigorous prediction and an assessment of the significance and acceptability of any impacts on Weeli Wolli creek vegetation that may occur downstream of the project prior to project approval; and b) monitoring and management of groundwater in a way that ensures that the vegetation in Weeli Wolli Creek (between project area and the Fortescue Marsh) does not suffer mortality resulting from the project. DEC5: That consideration is	Refer to response in Response to Submissions Report

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
			5 metres drawdown within 5-6 km of the Fortescue Marsh after 15 years of pumping. Although the PER (page 106) indicates that drawdown effects on creek vegetation in the area are likely to be mitigated "...by channel flow events numerous times per year that will recharge the creek channel groundwater level.", the unreliable and episodic nature of rainfall and runoff in the Pilbara means that there is significant risk that drawdown will coincide with long periods (several months to a few years) of limited natural creek flow and low groundwater levels in the vicinity of the creek. Moreover, the PER (page 143) indicates that "whether the extent of drawdown proposed is likely to significantly affect the potentially phreatophytic vegetation lining Weeli Wolli Creek is as yet unknown...". This section of the PER also indicates that a study of the potential effects of drawdown will be presented to DEC for review after approval of the project. t is unclear from the PER whether there is any capacity to mitigate impacts of drawdown on creek vegetation (for example by supplementary application of fresh water) in the event that such impacts are observed.	given to applying an outcome based commitment or condition to the protection of existing surface and groundwater hydrology regimes in proximity to the Fortescue Marsh from changes resulting from the project.	

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
21	DEC	Marillana sand dunes PEC	Clearer provision for protection of the Marillana sand dunes PEC is required. The sand dunes of the Hamersley range/Fortescue valley have been identified as significant and are listed as a PEC (Priority 3). As a physiographic unit, the dunes are regionally rare and have a unique fauna assemblage associated with them. They are also small, fragile and highly susceptible to threatening processes (weed invasion and erosion). The only other dunes in the area are generally degraded and heavily invaded by buffel grass. The PER states that the project will not directly impact on these dunes (not excavated or cleared), however, mine related infrastructure (Rail loop) is to be placed in close proximity to this area. Pro-active protective measures such as fencing to protect the dunes throughout the life of the project need to be considered for these regionally significant dunes. The proponent should also give consideration to education of all personnel involved in the project and through the use of signage, demarcate the area from unauthorised access. it is important these strategies provide adequate protection of this PEC through appropriate reporting requirements to DEC. Additionally, a major diversion drain capturing surface flow from the Hamersley Range and diverting water for the western half of the infrastructure footprint will emerge from the northern	DEC6: That the PER includes further discussion of proactive management measures to protect these regionally significant sand dunes by means of fencing the dune habitat and through education of the workforce. DEC7: That the proponent provides clearly worded commitments and associated documentation as the basis for determining what actions will be undertaken to protect environmental values such as the sand dune PEC DEC8: That consideration is given to applying an outcome based commitment or condition for preventing direct or indirect impacts on the sand dune PEC	Refer to response in Response to Submissions Report

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
			side of the BHP rail line in close proximity to an area of the PEC. Stabilisation measures for the outlet at this location will need to be well designed and the area monitored closely to address potential erosion issues as they emerge. Weed management may also be required in this area to detect the introduction or engagement of weed species. This issue is not specifically mentioned in section 7.5.4 or section 7.8.4.		

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
22	DEC	Potential effects of blasting on avian fauna of Fortescue marsh	There is little discussion in the PER of potential effects of blasting on avian fauna of Fortescue marsh or proposed monitoring to address these impacts. Fortescue Marsh is a wetland of national significance for waterbirds and is currently the subject of a proposal for nomination as a wetland of international importance under the Ramsar Convention. As the proposal is located approximately 12 km from the Marsh (at the closest point), there may be potential for blasting noise to affect waterbird behaviour (possibly disruption of breeding) when large numbers of birds congregate on the Marsh after major rainfall events. This issue is not examined in suitable detail in either the PER or noise impacts report (PER App U) although it is noted that noise levels from blasting are likely to reach 89-109 dB at the Marsh without blasting controls. Blasting controls are referred to on page 165 and 166 (section 7.14) of the PER. The controls do not provide information relevant to addressing potential impacts of blasting on the behaviour of episodic bird aggregations. The PER does not address the cumulative effects of blasting from other operations (such as FMG) located in close proximity to the Marsh.	DEC9: That the proponent provides clearer and more specific commitments to monitor and address the effects of blasting noise on the behaviour of water birds during flood periods	Refer to response in Response to Submissions Report

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
23	DEC	feral animal activity	The PER should contain specific provisions for avoiding the enhancement of feral animal activity in the Fortescue Marsh area. The Fortescue Marsh 2015 exclusion area (subject to agreement from current pastoral leasees) is under consideration as a target area for DEC reintroduction of threatened fauna. There is potential for the landfill site to contribute to incrased feral animal activity in the Fortescue Marsh Area. This potential issue is not mentioned in the PER (e.g. sections 7.9.3 or 7.15.2). Suitable management of the landfill site and control program for introduced fauna needs to be included in environmental management commitments. While the EMP (PER APP F) contains provisions relatign to landfill management and indicates that a feral animal control programme will be developed, if required, it is unclear whether there will be any monitoring or action triggers to determine when such a programme would be initiated.	DEC10: That the proponent provides clear commitment to best practice landfill management and identifies monitoring based triggers for initiating feral animal control programmes.	Refer to response in Response to Submissions Report
24	DEC	Impact of powerlines and fences on bats and water birds	Use of bat deflectors on any overhead powerlines and avoidance of the use of barbed wire on fencing to avoid impacts on water birds and bats.	DEC11: That the proponent commits to the use of bat deflectors on any overhead powerlines and avoidance of the use of barbed wire on fencing to avoid impacts on water birds and bats.	Brockman will happily commit to having no barbed wire on site. Overhead powerlines will be fitted with industry recommended deflectors (large orange discs) to help birds and bats to see the power lines and thus avoid them.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
25	DEC	Predicted and residual impacts	The PER does not identify the predicted and potential residual impacts of the project and conservation values to be used as a basis for discussion of environmental offsets. It is suggested that the proponent presents an appraisal of the residual impacts of the proposal on the environmental values in its response to submissions to enable review of proposed environmental offsets. this appraisal would ideally be structured in accordance with examples provided in EPA's Guidance Statement on Environmental Offsets.	DEC12: That the proponent identifies the predicted and potential residual impacts of the project and conservation values as the basis for consideration of offset commitments.	Potential environmental offset packages have been discussed with the DEC along with investigation into appropriate environmental offsets programmes. A copy of meeting minutes is included in Appendix 4 of this report. These discussions were still taking place when the PER was submitted for public review. Brockman has since consulted further with the DEC and is developing details of the proposed offset package in accordance with EPA Guidance. EPA Guidance No. 19 Environmental Offsets - Biodiversity (September 2008) recognises that consideration of offsets may become apparent in the final stages of the Environmental Impact Assessment process during the proponents' preparation of their final EIA document.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
26	DEC	Management Commitments	Environmental management commitments in the PER are in some cases unclearly worded, unauditable or not linked to clearly worded subsidiary documentation that specifically identifies what actions will be undertaken. The management commitments as listed in Section 7.3.6 are supported by the DEC but in many cases they are not considered auditable or enforceable. Many of the key commitments are not written in a manner that would enable them to be assessed for adequacy or audited. In many cases the entries under 'action' , 'objective' and 'timing' are not specific enough to enable third parties to fully understand what is involved in the proposed actions, the environmental outcome that will be achieved or the timing of proposed outcomes. For example C4 objectives is highly unclear.	DEC13 That the proponent provides clearly worded commitments and associated documentation as the basis for determining what actions will be undertaken to protect environmental values.	Environmental Management Commitments made in the PER outline the objectives which the Project seeks to satisfy, their timing and the stakeholders from whom advice will be sought. They have been developed as high-level over-arching commitments, under which the detailed management plans and programs have been formed. The Project EMP (PER Appendix F) provides structured procedures to guide environmental management and rehabilitation, monitoring, and reporting for the Project. It provides an overview of the environmental risk assessment process and outlines the key environmental factors, defines the key performance indicators, outlines the operational procedures and the monitoring and reporting procedures which would demonstrate the achievement of the objectives. The Project EMP should be read in conjunction with Brockman's Environmental Management System (PER Appendix G) procedures manual, which outlines provisions for performance review and continuous improvement.
27	public	Fortescue River Flats	Agrees with DEC ranking that the ecosystem is at risk and believes it will be further degraded by mine dewatering		This comment has been noted.
28	public	Degradation due to Pastoralism	Pastoralism has existed along the Fortescue River Flats for more than 100 years without adverse consequence		This comment has been noted although Brockman considers that environmental investigations carried out on site have shown pastoral activities to be detrimental. The Department of Water, Heritage and the Arts (DEWHA) website, in describing the Hamersley-Pilbara region as one of Australia's 15 National Biodiversity Hotspots, refers to the effects of past over-grazing and grazing pressure of current stock contributing to land degradation (http://www.environment.gov.au/biodiversity/hotspots/national-hotspots.html)

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
29	public	Dewatering	- All project mine dewatering should be fed back into the aquifer as fresh (potable) water only, not brackish. - Desalination should be used when required. - Regular inspection and water quality samples taken at the mine site and downstream should be carried out by an independent body, to determine and record any changes in water quality or soil degradation. - Strict mining standards need to be established for legislative compulsory cessation.		The Department of Water (DoW) specialists are satisfied that the submission meets their requirements at this time. Particular aspects raised will be addressed adequately under the *RIWI Act* approvals, 5C Licence conditions and Operating Strategy.
30	public	Water Quality	Page 107 of PER indicates 'water bores north of the project area are brackish', which raises concerns for quality of water at the project area.		Water quality gradients are openly discussed within the PER and PER Appendices. Salinity modelling of dewatering operations has been undertaken, again to a standard that has satisfied the DoW.
31	public	Water Quality	Potential impacts from mining and dewatering activities stated in the PER are of concern as follow: - page 107 'the predicted drawdown is extensive…' - page 108 'the potential for groundwater quality to deteriorate' with 'pollution and increased salinity' - page 109 Groundwater recovery at closure prediction of recovery to 80% of pre-mining levels within 50 years and to the pre-mining level in 120 years is not acceptable.		The potential impacts quoted in this public submission (regarding page 107 and 108) have been taken out of context with adequate qualification and explanation provided in the text. Groundwater drawdown measures are assessed as the “worst case” scenario and are unlikely to eventuate. Brockman disagrees with the statement relating to groundwater recovery at closure (Page 109), and this section of the PER also discusses that recovery times may be enhanced by cyclonic rainfall events. Brockman’s activities regarding water are in consultation with the Department of Water (DoW). Appropriate water modelling has been adopted to determine and assess potential impacts, and these provide a reliable assessment of the water balance in the region. The Department of Water (DoW) has assessed the reports in detail and is satisfied with the

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
					assessment.
32	public	Water Quantity	The entire review has assumption that water quantity is eternal which is now known to be incorrect and is the subject of a book 'Voyage of Discovery' by Professor Lance Endersbee.		Brockman recognises that water is a finite resource and is committed to achieving the highest industry standards of water resource use and management in the region. Modelling was undertaken with understanding of a finite resource, and captures the water balance for the region to optimise effectiveness and minimise impacts as possible. The book referred to here is not a generally held view, and has not been documented through reputable peer-reviewed science literature.
33	BHP	Hydrological impacts along railway	The Project proposes substantial excavations and infrastructure being built up to and along the railway and there is no discussion in the document of the hydrological impacts tat will occur when the drainage is altered from its current state and the management control required.		All surface water management designs ensure that volumes of surface water reporting to the various culverts of the BHPBIO railway line are unaffected by diversion works (i.e.. no change from pre-development scenario).

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
34	BHP	Infrastructure use and environmental impacts	Discussed in little detail is the construction of a railway loop and spur connecting to the Newman Railway line and the use of the Barrimunya airport. BHP Billiton has not been consulted on the use of any infrastructure nor what those environmental impacts will be in relation to their projects, land holdings and associated environmental management programs.		Refer to response in Response to Submissions Report
35	BHP	Pastoral land activities	BHPBIO also owns and operates the Marillana Pastoral Station as part of the Ethel Creek Pastoral Company. There is little information in relation to potential environmental impact on pastoral land activities. No consultation has occurred in relation to these aspects of the PER.		There has been consultation with Marillana and Ethel Creek Station Manager in relation to field surveys and investigations. In addition, letters were sent by Brockman to the Station Manager and BHPBIO inviting a discussion of the PER prior to it being finalised. Copies of the letters are provided in Appendix 5 of this report. No response was received from BHPBIO. The Station Manager provided an informal verbal response indicating a preference for further consultation in the form of an update to take place after finalisation of the definitive feasibility study in Q3 2010. Further discussion of consultation which has occurred for the project is summarised in the response to Ref 34 of this report. Brockman has attempted to engage with BHPBIO in relation to the Rail Duplication ML in order to determine any impacts to Marillana from rail duplication. Brockman were forced to pursue legal avenues before BHPBIO would engage.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
36	BHP	Zone of safety at boundary	The Brockman Mine Plan shows mining right up to the boundary of the adjoining ML 70/270SA. A zone of safety is required at this boundary which is nominally three times the depth of the planned open cut plus the area needed to construct fencing and a safety bund to prevent access by people, stock and wildlife. It is unclear how these aspects will be incorporated into the conceptual operations and closure planning and the effect for ongoing environmental management of our land holdings and associated activities.		Refer to response to Ref 1 in Response to Submissions Report
37	BHP	Road and bridge level of information	Section 5.2.2 indicates this road may be diverted but there is no plan of this shown. This section also mentions that a causeway or bridge will be constructed where the Munjina-Roy Hill Road is crossed by Weeli Wolli Creek. Table 5-1 indicates this will be a concrete or steel bridge. This needs to be clarified as the structure will have an effect on hydrology and a resulting impact on creek dynamics and the existing infrastructure.		Brockman is undertaking a Definitive Feasibility Study and upon its completion, will provide clarity over the final design. The requisite studies for causeway or bridge design will be completed in due course, and the relevant approvals will be sought. However, it is noted that the location of this proposed infrastructure is downstream of the BHPBIO railway line, and therefore will not have any impact on existing infrastructure.
38	BHP	Lack of information around Brockman rail loop infrastructure, management and impacts	Various figures show a rail loop connecting to the BHPBIO Newman rail line, however, there are no details of what is proposed or what additional rail infrastructure Brockman is planning at the site or how train traffic will be controlled and the associated environmental impacts.		Refer to response provided to Ref 34 in Response to Submissions Report

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
39	BHP	Impact on BHPBIO infrastructure and pastoral activities.	The document discusses some effect on Fortescue Marsh in isolation from existing infrastructure and does not consider the effects on existing BHPBIO infrastructure including its bores and pastoral activities. The groundwater drawdown model also does not indicate whether it will affect existing infrastructure or where this is located.		Groundwater drawdown will not affect existing infrastructure. The effect that dewatering activities may have on existing water bores in the region will be assessed as part of pending Operating Strategy development and 5C licence applications. However, it is noted that is regards to station water bores, that any supply intercepted will be supplemented from the proposed mine water supply.
40	BHP	Cumulative impacts on the catchments	The PER mentions that Area C (as well as Hope Downs and Marillana Creek) is upstream of Weeli Wolli catchments, however, fails to consider cumulative impacts on the catchments,.		Refer to response in Response to Submissions Report
41	BHP	Impacts on existing licenses bores	Section 5.7.1 discusses use of bores with existing 26D licenses and a proposed water use of 2.3GL over 2 years. Impacts on the existing licensed bores in the area don't appear to be evaluated in this proposal.		Of the bores listed by BHPBIO for consideration regarding impacts (T255, T275 and M286), only the T-series bores are registered in the DoW database of licensed bores, and the bores mentioned are significant distances away from dewatering activities (T275 is approximately 8km away, while T255 is approximately 35km away). Bore M286 does not appear to be registered with the DoW, and therefore is not able to be considered. Any potential interference with existing licensed groundwater users will be assessed in detail as part of the *RIWI Act* 5C licence process.
42	BHP	Contingencies for water off-take agreement	Section 5.7.5 discussed a water take-off agreement with a neighbouring site. The site is not identified and contingency plans may be required to be assessed in the event that the neighbouring site agreement is not available both in short or medium to long term.		As outlined in the PER Groundwater Management Plan (PER Appendix E), there are several contingency plans in place in the event that a water off-take agreement is not achieved. These contingencies have been discussed in detail with DoW and DEC during the PER development.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
43	BHP	BHPBIO bores not considered in the assessment	Section 7.4.3 indicates the only groundwater user in the area is Marillana Station. BHPBIO also has other bores in the area. These should be considered in this assessment.		Refer to response provided to Ref 42
44	BHP	Cumulative impacts on vegetation downstream of Weeli Wolli creek.	The document indicates that it may temporarily affect vegetation downstream of Weeli Wolli creek. The cumulative impacts of this are not considered, making it difficult to assess.		Refer to the response provided to Ref 40 regarding cumulative impacts and Ref 20 regarding Weeli Wolli creek vegetation provided in Response to Submissions Report.
45	BHP	Differentiate between management of on site environmental issues and existing BHPBIO infrastructure and operations.	Section 6.7 discusses priority flora and Section 6.9 discusses troglofauna. These section indicate species in close proximity to the BHPBIO rail line (figure 6-11). The impact of the project needs to differentiate management of these issues from the existing infrastructure and associated operations.		The scope of the Project for which approval is being sought is the specifications outlined in Section 1.0 and within Table 1.1 of the PER. The PER and associated management plans clearly relate to the Brockman Marillana Project.
46	BHP	General summary	In summary, there remain a number of environmental matters with this proposal that will likely have a direct impact on our land holdings and their management that have not been considered in the PER or have been inadequately addressed.		This comment has been noted and Brockman has responded to the specific items in detail within this report, refers to the response provided to Refs 33-45. The environmental acceptability or otherwise of the proposed project is the subject of the current PER formal assessment by the EPA and will be determined by the Minister for Environment once due process has been completed.
47	BHP	Consultation with BHPBIO	In addition Brockman's consultation on any of the matters with BHPBIO has been lacking.		This comment has been noted and is responded to in detail within Ref 34.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
48	DIA	If sites are to be impacted at a later time, the proper section 18 processes under the AHA are followed.	The DIA expects that, should the sites identified on page 88 of the PER (not located within Project footprint) be required to be impacted at a later time, the sites will be recorded to a level consistent with the standard for section 18 Notices and a section 18 Notice pursuant to the AHA will be lodged in due course.	Should the sites identified on page 88 of the PER (not located within Project footprint) be required to be impacted at a later time, the sites will be recorded to a level consistent with the standard for section 18 Notices and a section 18 Notice pursuant to the AHA will be lodged in due course.	Brockman agrees with these comments and intends to follow all applicable legislation, standards and guidelines relating to Indigenous Heritage. Section 1.8 (Ministerial Consent) of the Interim Cultural Heritage Management Plan (PER Appendix H) confirms the approach if it is found that there are sites which exist within the footprint of the project area which cannot be avoided.
49	DIA	DIA have not received heritage reports and cannot advise or confirm statements made ion table ES1 relating to Indigenous heritage.	Table ES1 states that Brockman is not proposing to impact any of the areas where stone artifacts were discovered. This statement implies that Brockman will not be impacting any of the areas where cultural material was identified (including the 98 isolated artifacts).	As the DIA has not received the heritage reports relating to surveys, they are unable to advise on the Aboriginal heritage values associated with the project and cannot confirm whether the above statement is accurate.	Heritage surveys have been carried out as outlined in Section 6.11.1 of the PER. Brockman does not have permission from the Native Title Claimants to make the survey report public. An Interim Cultural Heritage Management Plan (CHMP) is in place and is provided as Appendix H of the PER. Environmental Management Commitment No. 18 commits to the development of a full CHMP and to implement, monitor and review this plan in consultation with claimants throughout the life of the project.
50	DIA	The buffer area around any find should be allocated in consultation with the relevant Indigenous group and an archaeologist	Pages 156-157 outline procedures to be followed by all Brockman employees and contractors should skeletal remains be located during proposed works. The first point states 'Immediately cease all works within 25 m of the find'.	The presence of skeletal remains would raise possibility of the presence of Aboriginal cultural material in the vicinity, therefore any area surrounding the skeletal remains in which the work is to cease should be allocated in consultation with representatives of the relevant Indigenous group and an archaeologist.	These comments are noted. The final CHMP will encompass this approach.
51	DIA	DIA regional office is in Hedland	Point six of the procedure above states 'Inform the local (Karratha) branch of the DIA and the Registrar of Site'.	The DIA Pilbara regional office is actually located in Hedland and should be amended accordingly.	This comment has been noted and project information will be subsequently updated.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
52	DIA	Potential impacts of groundwater drawdown on Aboriginal heritage sites	DIA is concerned with the potential detrimental impacts of groundwater drawdown on Aboriginal heritage sites located in the broader area, particularly along the Weeli Wolli creek catchments area. This includes any unrecorded Aboriginal heritage sites associated with pools and sinkholes present along the Weeli Wolli creek line. It is possible that heritage values of such sites may be altered by changes to groundwater levels in the area and a reduction in groundwater outflow to adjacent areas.	In order to obtain further information regarding potential impacts of dewatering and changes to groundwater outflow rates on features associated with Aboriginal heritage, DIA requests a copy of the Groundwater Study and Management Plan be forwarded.	The Groundwater Study & Management Plan was provided to the DIA in advance of the public review period as an Appendix to the PER (Appendix E) which was included as a CD in the back of the PER. It also noted in relation to groundwater-related pools and sinkholes, that due to the groundwater levels being tens of metres below ground surface that such pools and sinkholes do not occur in the lower Weeli Wolli Creek system. Therefore there is no risk of such features being impacted by dewatering activities at this Project. Nonetheless, the CHMP and Native Title agreements also acknowledge agreed significant water systems and how they will be managed.
53	DoW	Adequate monitoring and response program	The supporting groundwater study has modelled a groundwater drawdown of one metre within the boundary of the Fortescue Marsh. Due to the conservative nature of the model, and Marsh hydrology, the DoW does not consider this a major issue.	The proponent will need to have an adequate monitoring and response program to ensure impacts are consistent with those predicted	In line with advice from the Department of Water (DoW), the monitoring and response program will be outlined as part of the development of a dewatering operating strategy in line with the *RIWI Act* processes. This will be developed through ongoing consultation with the relevant DoW personnel.
54	DoW	The two bores identified in the PER are unlikely to adequately represent the hydraulic properties of the area.	The two bores identified in the PER (between the Marillana lease and the Marsh) are unlikely to adequately represent the hydraulic properties of the area. Should there be a one metre groundwater drawdown and a flood events occur the Marsh, there will be artificial hydraulic gradient driving fresh lake water into the alluvials. This worst case scenario should be further validated with extra monitoring off-tenement between the mining area and the Fortescue Marsh.	The DoW considers that the limitations of the model can be adequately manage by an appropriate monitoring and review program. This would comprise of a network of monitoring bores and measurement program, defined triggers and regular and ongoing review of the model.	In addition to the response provided in relation to Ref 53 above, ongoing consultation with DoW will ensure that the monitoring network will provide data adequate to assess dewatering effects. It should be noted that Brockman may be restricted in locations to install monitoring bores due to tenure considerations, and gaining the permission of relevant landholders has the potential to inhibit this process.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
55	DoW	Additional water source worst case scenario	The PER states an additional water source will be required by year ten of mining. However, should the aquifer have more storage than predicted, additional sources may be less urgent and dewatering can continue. The additional water source is to be subject to a separate impact assessment and approval process. the DoW endorses this as a preferred source but also recognises that there is some risk, as the future of the proposal will be dependant on obtaining on off-tenure source of water, and recommends the proponent continues to investigate alternative sources.	DoW recommends proponent continues to investigate alternative sources for the additional water source required by year ten of mining	As discussed in the response to Ref 11, changes to mine plans and dewatering sequencing, groundwater will now supply requirements until Year 16 of operations. Investigations into alternative water sources for long-term supplementary supply are ongoing, in the form of an off-take agreement and various borefield options.
56	DoW	MAR has been identified as the preferred option for excess water management.	The DoW supports this approach, however experience from other projects has shown that reinjection can be technically difficult. Issues such as bore construction, iron fouling and water mounding can make sustained re-injection of excess water difficult to achieve. The DoW will require contingency measures addressing this issue to be included in the operating strategy provided in support of a licence for mine dewatering.	Include contingency measures addressing this issue in the operating strategy provided in support of a licence for mine dewatering.	Firstly, it is noted that further hydrogeological drilling will be taking place in Q3 2010, along with a re-injection trial to further confirm the technical feasibility of the preferred Managed Aquifer Recharge (MAR) option. The contingency MAR option of an infiltration pond arrangement will also be further developed. Details of this work will feed into the development of the dewatering operating strategy and will be addressed in the DoW 5C licensing process.
57	DoW	Potential for the project to have an impact on subterranean fauna and phreatophytic vegetation.	Depending on the depth to groundwater, troglofauna habitats may be affected by the lowering of the groundwater moisture in the capillary zone.	The proponent should identify the depth to groundwater to determine whether a shallow water table is evident, which would lead to potential impacts on these habitats. Brockman should consult with the DEC to determine appropriate	The DEC has been thoroughly consulted throughout development of the Project PER regarding potential impacts to troglofauna, as shown in the Consultation register (PER Appendix I). Environmental Management Commitments 1-3 have been developed in liaison with the DEC in order to monitor and manage potential impacts to subterranean fauna.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
				monitoring and contingency measures.	
58	DoW	Impacts on Phreatophytic vegetation associated with Weeli Wolli creek are possible with changes in groundwater and alterations to the natural hydrological regime.	The PER states that studies are being prepared and will be forwarded to DEC for review. The importance of groundwater in sustaining phreatophytes becomes greater when there have been no surface water inputs to replenish soil water stores.	This study should include a discussion of the relative importance of surface water inputs from Weeli Wolli Creek, including a discussion on the frequency and duration of no or low flow periods when the relative importance of groundwater is likely to be greater relative to surface water impacts.	PER Environmental Management Commitment No.13 commits to the development of a monitoring program to assess impacts to the potentially phreatophytic vegetation within the project area as a result of dewatering. The PER also includes Commitment No.14 which commits to the development a Management Plan in consultation with the DEC if groundwater abstraction is found to be affecting the health of the potentially phreatophytic vegetation within the first five years of operation. Refer to the response to public submission Refs 18 and 19 addressing surface water / groundwater interactions, along with Ref 20 regarding Weeli Wolli creek vegetation.
59	DoW	There are no predicted cumulative impacts within the PER.	Considering the mining tenement is surrounded by other mining companies, it is highly likely that cumulative impacts will occur in the future. The DoW supports the commitment to provide relevant data to government in order to assist in gaining a better understanding of the environment management techniques for cumulative impacts.	Provide relevant data to government	As noted by the DoW, Brockman has committed to make pertinent data available to government in order to assist in gaining improved understanding of cumulative impacts in the region. Brockman is also participating in the recently formed Fortescue Marsh Working Group with the aim of assisting in the facilitation of similar outcomes.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
60	Dow	The document has not demonstrated that the existing flood regime will not be detrimentally affected by the project.	The document has not demonstrated that the existing flood regime will not be detrimentally affected by the project.	It is recommended that the post development modelling provided is compared to similar modelling for pre-development conditions, to quantify the impacts of the proposal. It should then be re-assessed by the DoW.	An assessment considering that the existing flood regime will not be detrimentally affected by the project has been completed. The Aquaterra report entitled "Marillana Surface Hydrology Assessment" is included now as a supplementary document in Appendix 6 in the Response to Submissions Report. The key summary outcome of the study was "The post-development modelling shows that 10 and 100 year ARI water levels do not increase significantly from pre-development conditions due to the widespread flooding that would occur in such events. The model predicts that water levels will increase by about 0.1m in areas where flood protection bunding is required around mine infrastructure. The redistribution of water across the extensive floodplain also shows less water flowing through the main Weeli Wolli Creek while more is being retained in the adjacent distributaries. As a result of this redistribution of flow, downstream of the railway, 100 year ARI water levels in the main Weeli Wolli Creek typically decrease by 0.3m while flow depths in the Western Distributary typically increase by up to 0.2m. No changes in flow depths are expected in the Eastern Distributary."
61	DoW	development of the Groundwater Operating strategy	The DoW considers that the Groundwater management Plan (Appendix A of PER) adequately identifies the water management issues associated with developing and operating the project. DoW will provide guidance on developing the groundwater Operating Strategy.	The DoW requires that operational details of how these strategies will be applied are specified in the Groundwater Operating strategy. This should include an appropriate monitoring ad review program, defined contingency measures for drawdown impacts and a commitment to ongoing review and improvement of the hydrogeological model.	As per the response to Ref 53, the development of the operating strategy will include ongoing consultation with DoW, and will identify an appropriate monitoring and review program, defined contingency measures, and a commitment to ongoing review and improvement of the hydrogeological model.

Ref	Origin	ISSUE	FURTHER DETAIL	Submission Recommendation	Proponent Response
62	DoW	Closure Plan and Water Management Plan	The DoW supports the current closure options. Given the uncertainties in the modelling, the predicted fill rates and water quality responses cannot be determined. The DoW would expect to see the closure plan continually updated as results from monitoring drawdown and hydrologic regimes become available. The DoW considers that the post-mining water status should be integrated into the Water Management Plan, to be assessed prior to the commencement of mining.	closure plan continually updated as results from monitoring drawdown and hydrologic regimes become available. post-mining water status should be integrated into the Water Management Plan, to be assessed prior to the commencement of mining.	It is noted that the DoW supports the current closure options. In future, the Water Management Plan will be updated to integrate closure aspects and updated on the basis of monitoring data and modelling predictions. This will be assessed by DoW as part of the 5C licensing process.

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APPENDIX 2: Figure 1.1

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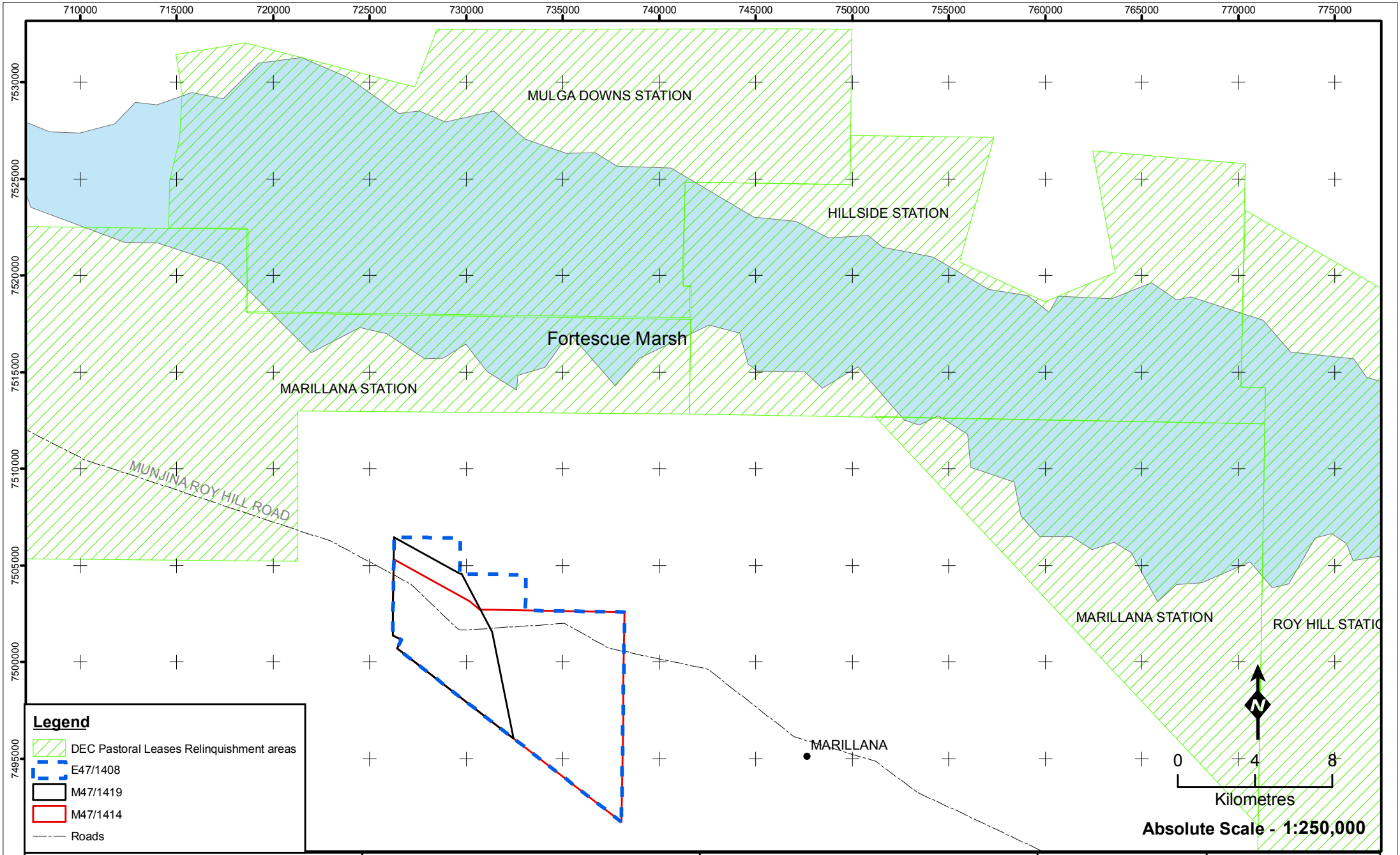

ecologia ENVIRONMENT

brockman resources.

Proximity of Brockman Marillana Project Area to Fortescue Marsh 2015 areas

Figure: 1.1
Project ID: 1140

Drawn: AH
Date: 09/07/10

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: A208

A4

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APPENDIX 3: Figure 5.1

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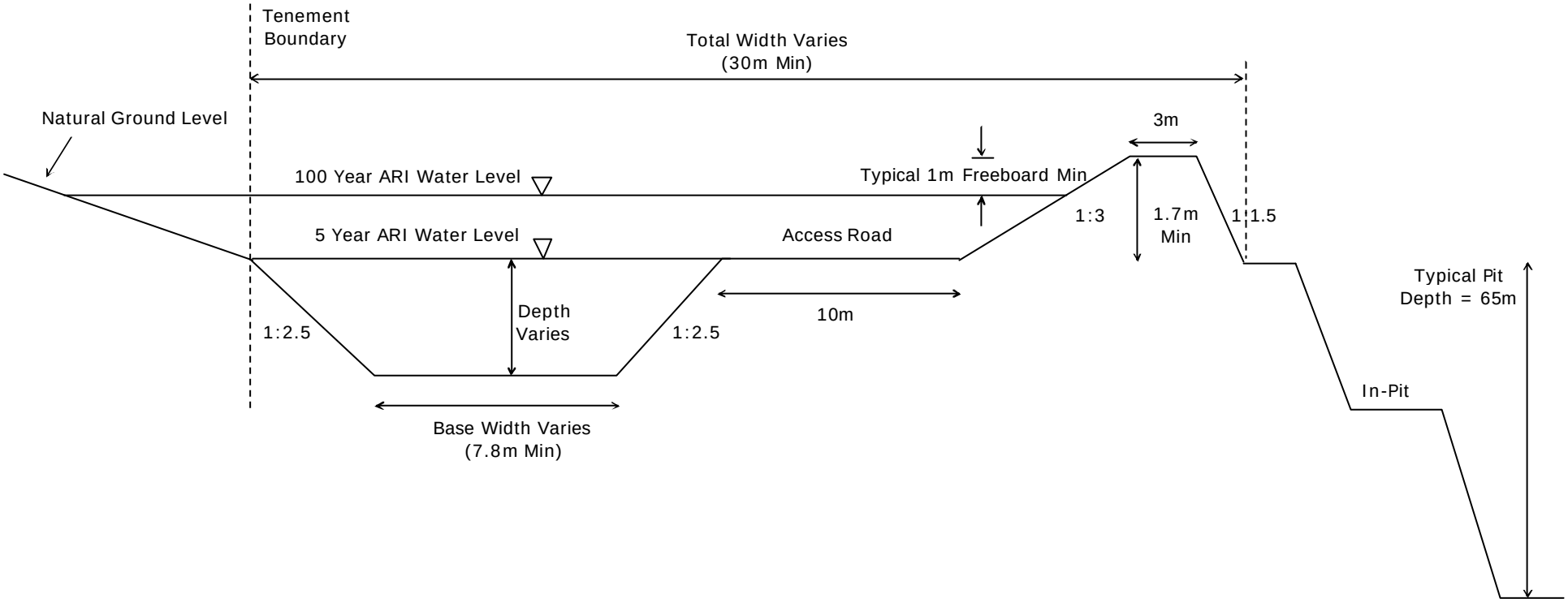

Note: Not to Scale

aquaterra

FIGURE 5.1
MAIN DRAIN - TYPICAL CROSS SECTION
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APPENDIX 4: Minutes of Meeting with DEC Conservation Offsets

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www.ecologia.com.au

Marillana Iron Ore Project EIA
Brockman Resources

Attention: **Colin Paterson; Jason Grieve**

MEMO

Meeting Minutes: Marillana PER Conservation Offsets DEC Meeting

Date: 23-Mar-2010

Time: 14:00 hours

Location: DEC Kensington

Subject: Discussion of potential conservation offsets relating to the Marillana PER

Attendees: (Initials)NW (DEC), AJ (DEC), HV [via telephone] (DEC), GC (Eco), KvdB (Eco), CP (BR)

NO	ITEM		Actions	Responsibility
1	Ecologia outlined the key residual impacts at end of mine life, as presented within the PER: - clearing footprint of the mine pit and infrastructure; - alteration to landscape; and - loss of Troglofauna habitat in some mine pit areas. It was noted that no significant residual impacts on surface water and groundwater balance are likely to occur (pit would be backfilled to above water table). Ecologia also confirmed there would be no impact to the Sand Dune PEC community.		Noted	
2	Several potential options for inclusion in an offsets package were discussed, and further details listed below:			
	2.a.	Co-contribution towards an existing study into hydrology at Fortescue Marsh - currently being run by UWA and inlcudes Rio Tinto.	DEC will investigate and advise whether this would be worthwhile consideration.	NW/AJ
	2.b.	Contributing data on troglofauna towards a regional database	DEC have been working on developing a regional database, work is ongoing.	

	2.c.	Instigating a Management Program to control weeds, feral animals and fencing in areas included in the relevant 2015 pastoral lease exclusion areas	DEC and Ecologia noted that, for this option, BR is limited to the areas which fall under their direct management control. Also noted that the project area is not directly affected by the 2015 exclusion area.	
	2.d.	A Management Programme for the PEC sand dune which addresses specifically feral animal control.	Ecologia noted that the PEC does not fall into any of the 2015 pastoral lease exclusion areas. BRM may be able to pursue an MOU with the station owner (BHP) to allow management programme to be implemented.	
	2.e.	Contributing towards an SRE taxonomy research project to clarify areas of current ambiguity		
3	There was general agreement that a suitable offsets package would be developed further over the coming months and further consultation with Stephen van Leeuwen will be beneficial to capture any other potential options.		DEC will consult internally and provide feedback to Ecologia/BR.	NW/AJ

Best regards,
Kate van der Beeke
Senior Environmental Advisor

31/03/2010

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APPENDIX 5: Letter to Gavin Price (BHPBIO) and Marillana Station

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brockman
RESOURCES

Our Ref: O10_0074

1 April 2010

Mr. Gavin Price
Manager Environment & Sustainable Development
BHP Billiton Iron Ore
225 St Georges Terrace
Perth WA 6000

Dear Gavin

RE: NOTIFICATION OF PUBLIC ENVIRONMENTAL REVIEW (PER) FOR THE MARILLANA IRON ORE PROJECT

Brockman Resources Limited (Brockman) is currently developing the 100% owned Marillana Iron Ore Project located approximately 100 km north west of Newman on granted Mining Lease M47/1414.

As a courtesy we would like to advise your organisation that Brockman is currently finalising its PER document and that the public release of this document is expected in the coming weeks.

If you wish to discuss anything or have any queries or concerns, please do not hesitate to contact me on 08 9389 3000.

Yours sincerely,

JASON GREIVE
General Manager – Operations

Level 1/117 Stirling Highway
Nedlands WA 6009

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brockman
RESOURCES

Our Ref: O10_0073

1 April 2010

By: Mail & Email

Mr. Barry Gratte
Marillana Station
PO Box 62
Newman WA 6753

Email: ethelcreek@bigpond.com

Dear Barry

RE: NOTIFICATION OF PUBLIC ENVIRONMENTAL REVIEW (PER) FOR THE MARILLANA IRON ORE PROJECT

Brockman Resources Limited (Brockman) is currently developing the 100% owned Marillana Iron Ore Project located approximately 100 km north west of Newman on granted Mining Lease M47/1414.

As a courtesy we would like to advise your organisation that Brockman is currently finalising its PER document and that the public release of this document is expected in the coming weeks.

If you wish to discuss anything or have any queries or concerns, please do not hesitate to contact me on 08 9389 3000.

Yours sincerely,

Jason Greive

JASON GREIVE
General Manager – Operations

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APPENDIX 6: Marillana Surface Hydrology Assessment Report

(see attached CD)