BROCKMAN RESOURCES LIMITED

MARILLANA PROJECT
ACCOMMODATION VILLAGE SITE SELECTION

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REVISION NUMBER F

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Prepared By

Ausenco Services Pty Ltd
Level 1 Podium
44 St Georges Terrace
Perth • Western Australia
6000 • Australia
Phone • 61 9 223 1900
Fax • 61 9 9202 1443

REVISION STATUS

REVISION	DATE	DESCRIPTION	AUTHOR		APPROVED	
			FirstName LastName Position Title	Signature	FirstName LastName Position Title	Signature
A	15/07/09	First draft	Owen Horton Study Manager			
B	16/07/09	Updated	Owen Horton			
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E	21/08/09	Fine-tuned recommendation	Owen Horton			
F	24/08/2009	Incorporate client's comments	Owen Horton			

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1 INTRODUCTION

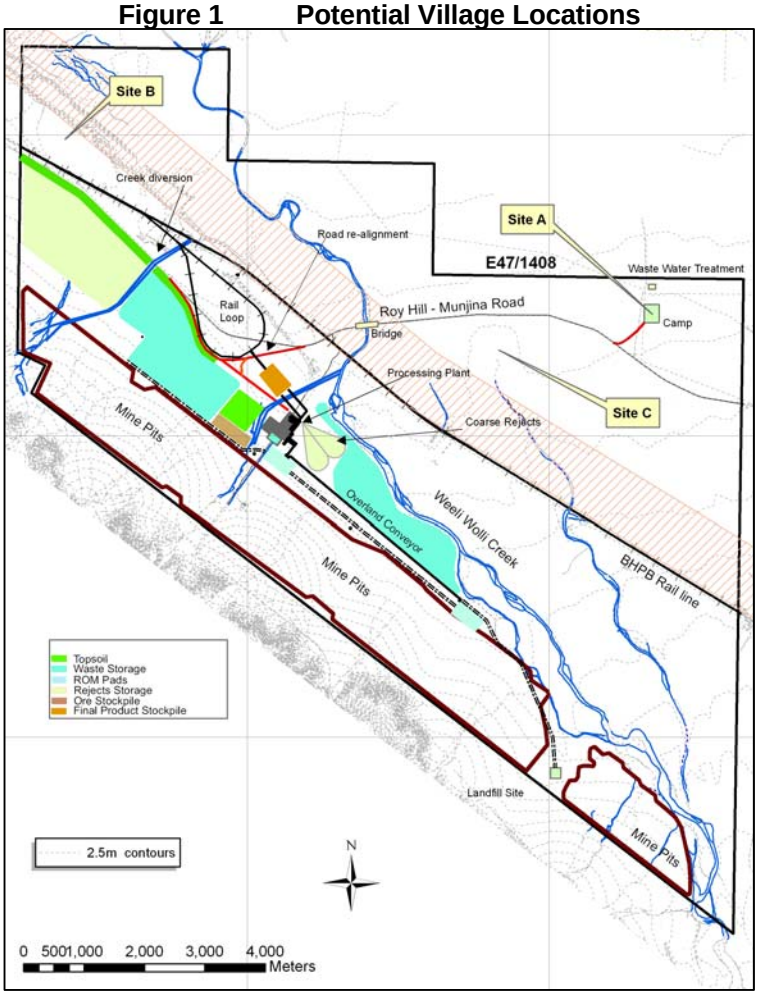
The nearest substantial town to Brockman Resource Limited's (Brockman) Marillana Iron Ore Project is Newman, some 196 km by road to the south. Consequently, accommodation for site personnel needs to be provided on site. This document reviews potential sites for the accommodation village, looks at the differential costs of establishing the village in each site, and evaluates the risks associated with each site.

2 SELECTION PROCESS

The process of selecting the accommodation village site has been through three phases. At each step, an alternative village site has been evaluated. These sites are shown in Figure 1, and the evaluation process is discussed in the following sections.

- During the 2008 Scoping Study (Site A)
- During the 2009 Prefeasibility Study (Site B)
- After the 2009 Prefeasibility Study (Site C)

Figure 1 Potential Village Locations



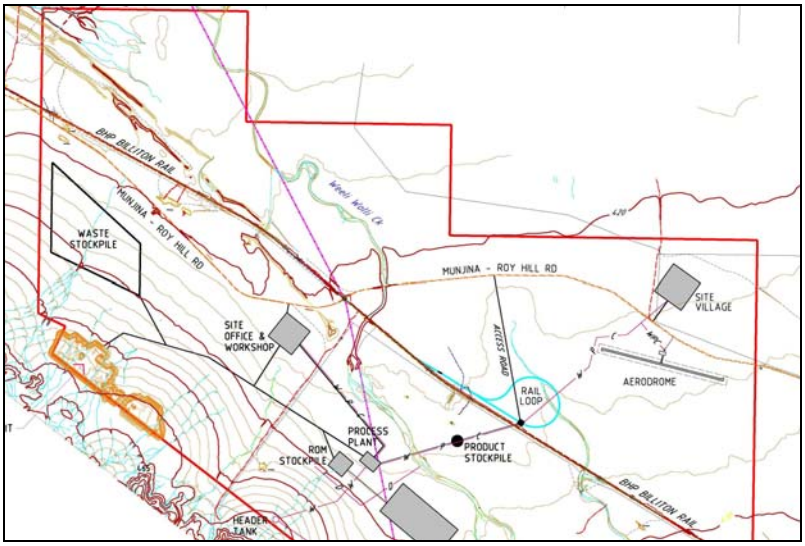
Hancock Prospecting Pty Ltd (HPPL) have applied for a File Notification Area (FNA/8271) for a strip of land 1,000m wide north of the BHPBIO rail line (shown on Figure 1 as the red hatched area), as the potential site for a future rail line from their Roy Hill Project. Documentation on this application is on file with DOIR, A1014/2008.

2.1 Scoping Study Selection Process

Engenium Pty Ltd (Engenium) completed a Scoping Study for Brockman into the Marillana Iron Ore Project in March 2008. This was followed by a feasibility study into what was then known as Stage 1 of the project, a proposal to mine 2 Mt/y of Direct Shipping Ore (DSO), and use a combination of road and rail to transport the product to Port Hedland for shipping, as a precursor to the full blown project in Stage 2. This proposal and study were placed on hold at the end of 2008 following the global economic downturn, with the Close-Out report from this study being completed in December 2008.

Both the Scoping Study and Feasibility Study completed by Engenium proposed to construct the accommodation village in the northeastern corner of the tenement, to the north of Roy Hill-Munjina Road. This site is some 2.3 km from HPPL's FNA. Figure 2 is an extract from the Scoping Study site layout, and shows the proposed location of the village (also shown as Site A on Figure 1). There is no documentation within the study reports to indicate why this site was selected.

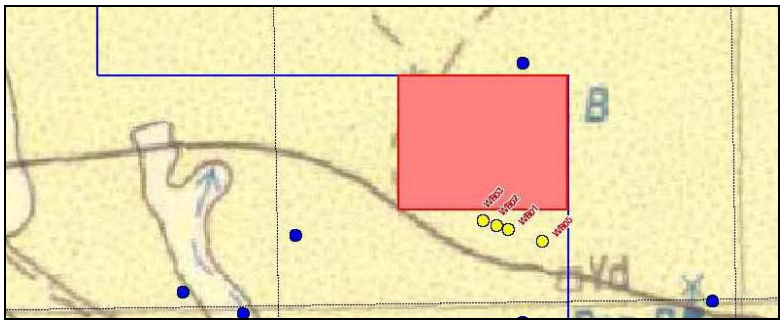
Figure 2 Scoping Study Village Location



During the Feasibility Study, Aquaterra Consulting Pty Ltd (Aquaterra) was commissioned to construct a set of test bores to determine water quality and potential production capability[1]. The yellow markers on Figure 3 show the locations of these test bores, with the aim of supplying water to a village located within the pink area to the north of the bores.

[1] Strong, S, "*Potable Bore – Initial Site Investigations*", 10 December 2008, Aquaterra memo to B. Hynes, C. Paterson.

Figure 3 Test Water Bore Locations



These holes were drilled in November 2008. Aquaterra concluded that all bores produced water that can be classified as "potable", and that it is likely that only one bore would be required to provide the village with sufficient water.

2.2 Prefeasibility Study Selection Process

At the start of the Prefeasibility Study (PFS), the first surface hydrology assessment became available. This report indicated that the entire area to the north of Weeli Wolli Creek within the Exploration License would be inundated with water during a 1 in 10 Year Annual Recurrence Interval (ARI) flood event. Such an event would result in sufficient water build-up behind the BHP Billiton Iron Ore (BHPBIO) rail line that flood waters would overtop this line. Figure 4 shows that Site A lies in a flood plain, and that the clayey soils are as a result of deposition during sheet flow inundation.

Figure 4 Photograph of Site A

Consequently, an investigation was conducted into alternative locations for the accommodation village, for locations that would not potentially be impacted by flood waters.

The surface hydrology assessment provided estimated flood levels for the 1 in 10 year and 1 in 100 Year ARI events, superimposed on the regional topography. Sufficient detail was available from the site infrastructure planning process to indicate that all land south of the BHPBIO rail line and south of Weeli Wolli Creek would be required for site infrastructure (fine rejects storage, waste storage, plant site, mining void, etc). With all land north of Weeli Wolli Creek likely to be affected by floodwaters, the only area

potentially available for an accommodation camp that would be above the 1 in 100 Year event was the triangle of land north of the BHPBIO rail line and south of the dune system running sub-parallel to, and south of, Weeli Wolli Creek, on the western side of the lease. The selected site is shown on Figure 1 as Site B. Figure 5 is a photo taken from the BHPBIO rail line showing the vegetation to the east of Site B.

Figure 5 Photograph of near to Site B

One feature of Site B is that it lies immediately adjacent to the BHPBIO rail line. Just off the lease to the west, this line is joined by the rail spur to Yandi. Traffic on the combined line, together with the impact of the Marillana tonnage, is likely to be of the order of 165 Mt/y, or train movements between 10 and 15 a day, each way. In order to reduce this noise at the accommodation village, it will be necessary to construct 10 m high noise bunds on three sides of the village (the rail line is elevated up to 2 m above the surrounding plain, and with the height of the locomotives, the noise generators will be up to 5 m above the plain, thereby requiring 10 m high noise bunds as a minimum). It is assumed that the noise bunds would be constructed from mine waste material, rather than disturb additional native vegetation.

Site B lies within the envelope of the BHP Miscellaneous license L47/249 for the potential duplication and/or triplication of the rail line, which is subject to appeal by Brockman and others.

Site B also lies immediately adjacent to HPPL's FNA, though separated from it by the low line of sand dunes. It is noted that 6 km to the north-west, HPPL's FNA bends southwards, and crosses the BHPBIO line. It is assumed that this is intended to be a rail-over-rail crossing. Whilst the HPPL rail line would have to ramp up for this cross-over (the grade separation is expected to be at least 12 m), at 6 km distance, the rail line in the vicinity of Site B would still be at ground level.

The archaeological survey conducted for the Marillana Project[1] indicated that there was a clay pan immediately off lease to the west of Site B that had the potential to be archaeologically-sensitive. Whilst this area is some 800 m from Site B, there is the potential that camp activities may come close to a sensitive area.

[1] Liebelt, B. *Martidja Banyjima Archaeological and Anthropological Cultural Heritage Survey, Brockman Resources Marillana, Pilbara, W.A.* August 2009

2.3 Post-PFS Refinement

Towards the end of the PFS, the site infrastructure plan was completed. This plan was used as one of the inputs into the final surface hydrological modelling exercise, with the aim to evaluate the post-development impact of the infrastructure on flood levels. As part of the finalisation of the report, once modelling was completed, water depth contours were developed. These contours indicated that the area to the north of Weeli Wolli Creek was not totally inundated during the 1 in 10 Year ARI flood event, as previously assumed. Figure 6 shows the 1 in 10 year ARI predicted flood depths, with the area within the red circle being shown as above water level. A full copy of this plan is contained in Appendix 1. The expected water depth at Site A is between 0.5 m and 1.0 m. Site B is outside of the flood-affected area.

Figure 6 1 in 10 Year ARI, Post-development

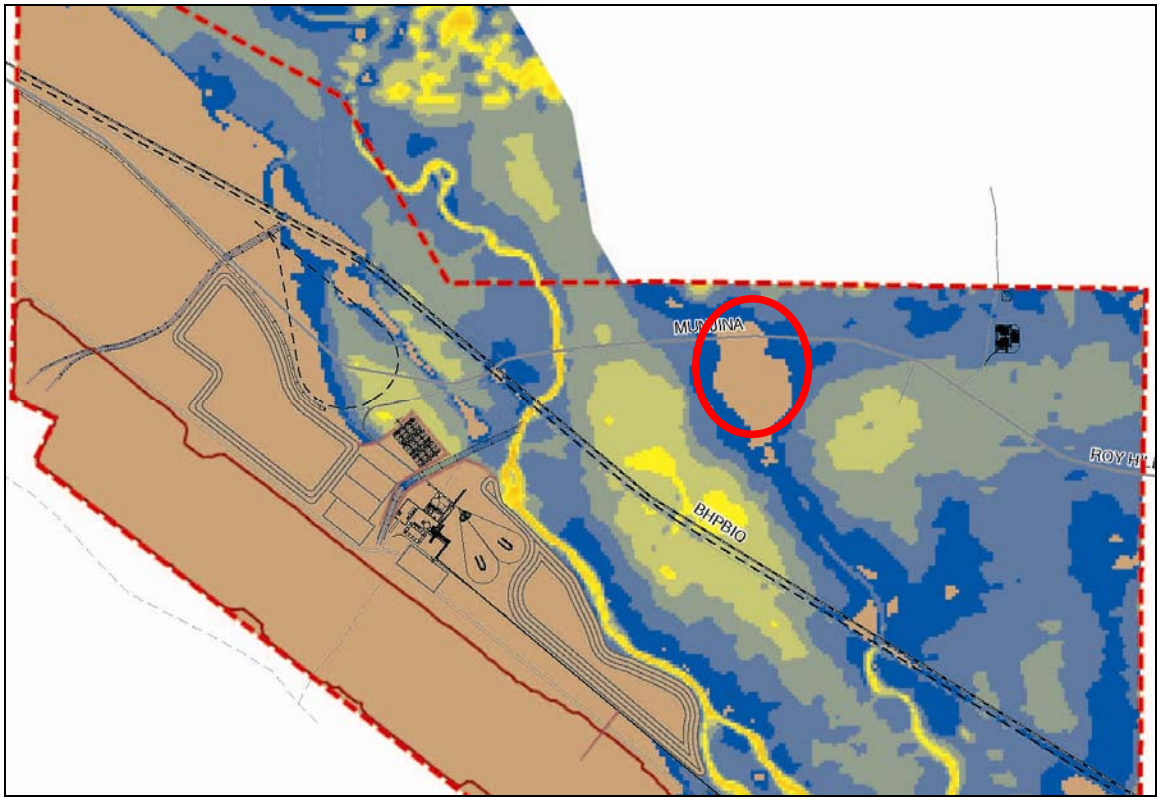
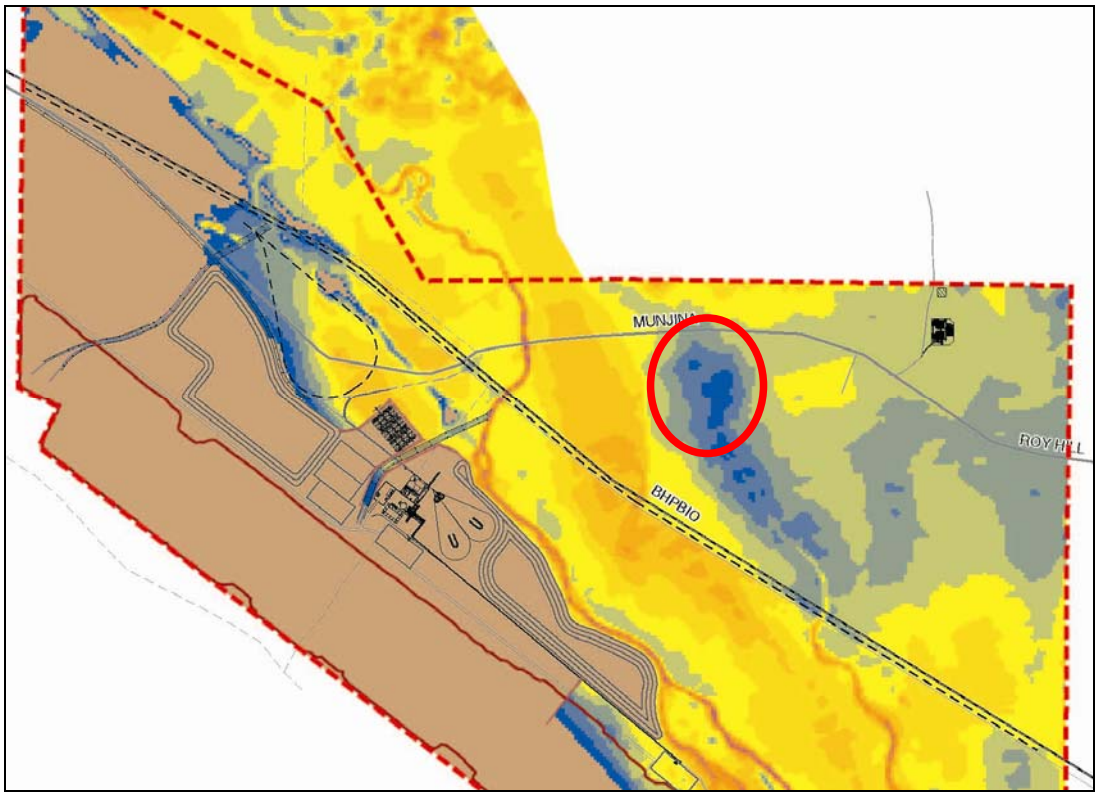


Figure 7 shows the 1 in 100 Year ARI predicted flood depths, with the red circle showing the same area as having a water depth of less than 0.5 m. A full copy of this plan is contained in Appendix 1. The expected water depth at Site A is between 1.5 m and 2.0 m. Site B is outside of the flood-affected area.

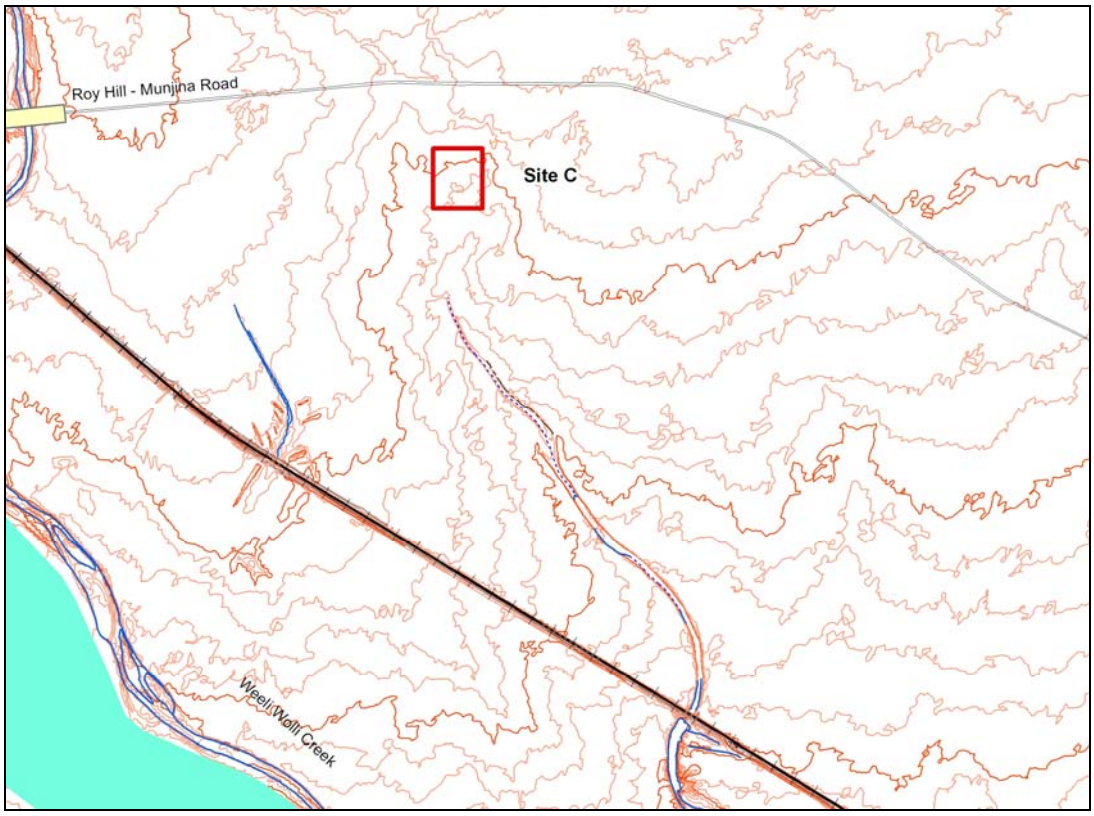
Figure 7 1 in 100 Year ARI, Post-development



As this site appears to have lower water levels during all flood events than Site A, it is a viable alternate site, and is nominated as Site C.

Examining Site C in the two figures above shows that it is immediately downstream of one of the main Weeli Wolli Creek distributaries to the southwest (shows up on Figure 6 as a band of deep water (yellow) similar to that of Weeli Wolli Creek itself). This initially appears counter-intuitive – how can an area immediately downstream of a creek be higher than that creek? Figure 8 shows the 0.5 m contours in the region, with the contours to the northwest being lower than those to the southeast. As such, the Weeli Wolli Creek distributary appears to be running along a ridge, rather than in a valley as per a conventional creek.

Figure 8 Site C Contours



This distributary is an overflow from Weeli Wolli Creek and by its very nature, as it flows out onto the plain, water velocities decrease and suspended sediments will start to drop out. This results in a build-up of sediment along the distributary banks and towards the end of the distributary, where it branches out into sheet flow water. The situation now is such that the build-up downstream of the distributary has been sufficient to result in the overflow being pushed sideways rather than downstream, leaving the Site C area elevated over the surrounding area.

The advantages of Site C over Site A are:

- No requirement to construct a 1.0 m pad to elevate the site above the 1 in 10 Year ARI flood level
- Protection for the 1 in 100 Year ARI flood level can be achieved through the use of low bunds and elevated accommodation units
- It is closer to the administration offices, resulting in a reduction in the length of paved roads and power/communication lines

However, Site C is approximately 500 m from HPPL's FNA.

3 SITE EVALUATION

3.1 Infrastructure requirements

The infrastructure requirements for each option, and the associated estimated costs (exclusive of contingency) include

	Site A	Site B	Site C
• Access road from Roy Hill-Munjina Road - 6m wide paved road to be constructed	0.8 km *$ 0.117 M*	0.5 km *$ 0.073 M*	0.3 km *$ 0.044 M*
• Pave Roy Hill-Munjina Road from village access to site access	6.8 km *$ 0.683 M*	4.1 km *$ 0.412 M*	4.1 km *$ 0.412 M*
• Power/communication links from village to site administration facilities access	6.5 km *$ 0.650 M*	6.1 km *$ 0.610 M*	3.6 km *$ 0.360 M*
• Weeli Wolli Creek crossing	*$ 1.329 M*	n/a	*$ 1.329 M*
• Elevated pad for site	75,000m^3 *$ 1.126 M*	n/a	n/a
• BHPBIO rail crossing	n/a	*$ 0.400 M*	n/a
• Noise protection bunds	n/a	180,000 m^3 *$ 0.810 M*	n/a
• **Total estimated cost**	**$ 3.91 M**	**$ 2.31 M**	**$ 2.15 M**

The cost of constructing the village itself is the same in all three cases, and so is not included as part of this exercise.

3.2 Environmental Impacts

There are two types of environmental impacts associated with the siting of the accommodation village: the physical impact of the disturbance required to construct the village, and the social impact that relative locations of the village, rail line and the mining operation may have on the residents of the village.

3.2.1 Environmental Disturbance

Figure 4 and Figure 5 show the types of vegetation to be impacted upon by the construction of the village. All three sites have been covered by the "V*egetation and Flora Assessment"* completed by ecologia in April 2009.

Site A has been mapped regionally as belonging to the Turee Land System (Stony alluvial plains with gilgaied and nongilgaied surfaces supporting tussock grasslands and grassy shrublands of mulga and snakewood), Site B as belonging to the Divide Land System (sandplains and occasional dunes supporting shrubby hard spinifex grasslands),

and Site C as belonging to the Fortescue Land System (alluvial plains and floodplains supporting patchy grassy woodlands, shrublands and tussock grasslands).

Sites A and C have been identified as being represented by Acacia aneura low woodland, over Acacia synchronicia tall shrubland, over Cenchrus spp. Tussock grassland. Site B is represented by Acacia dictyophleba tall shrubland, over triodia schinzii open hummock grassland. No threatened ecological communities (TECs) or priority ecological communities (PECs) have been identified in Sites A, B or C.

3.2.2 Social Disturbance

Site B is located adjacent to the BHPBIO rail line, and 5 km northwest of the proposed Marillana processing plant. However, the northern limit of the area of disturbance will be only 300 m from Site B.

Local weather data is not available from the site, so data is taken from the nearest sites, at Redmont (66 km NNW, 1971 – 1993) and Sand Hill (42 km ESE, 1971 – 1984).

Figure 9 Redmont Average Annual Wind Roses (9am & 3pm)

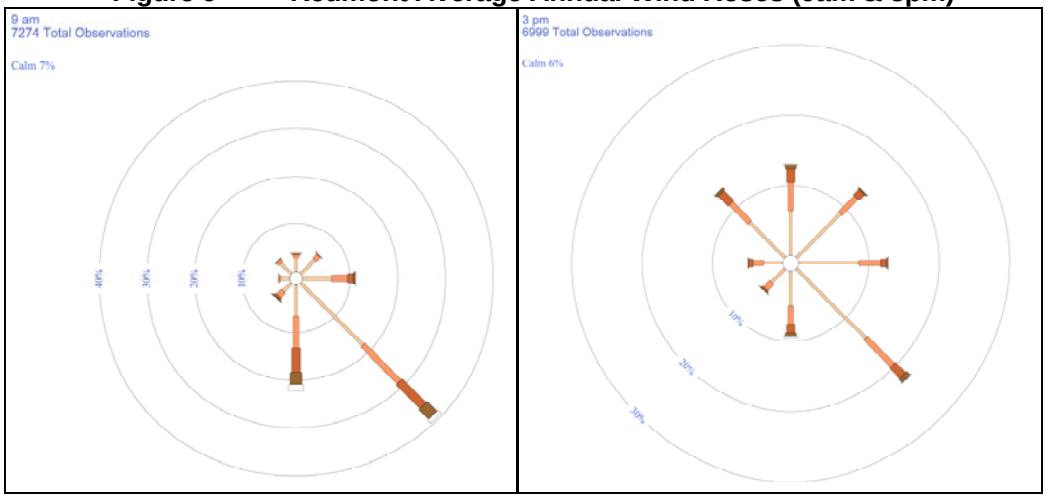
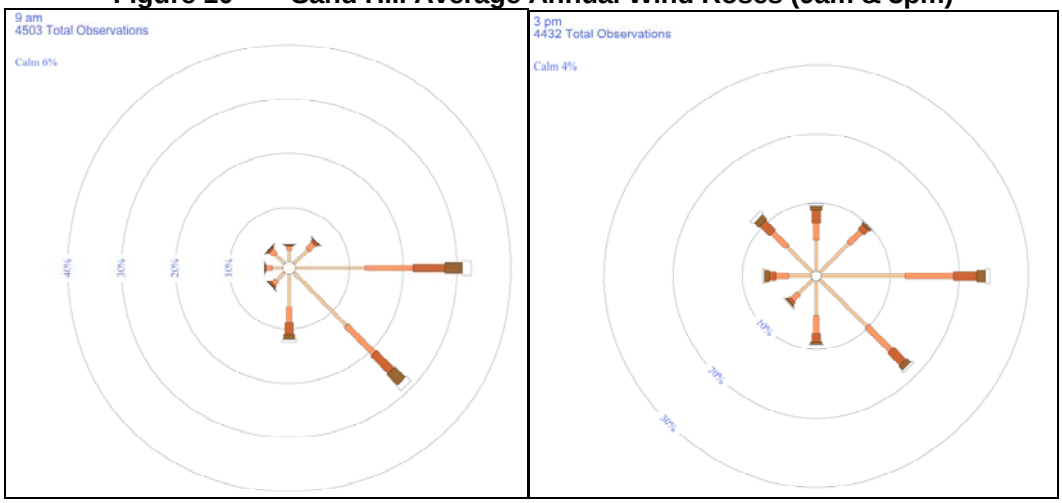


Figure 10 Sand Hill Average Annual Wind Roses (9am & 3pm)



The wind roses in Figure 9 and Figure 10 show the average annual wind directions and strengths for these two sites respectively, and indicate that the most predominant wind direction is from between the east and southeast. This means that any noise or dust will be carried directly from the processing plant towards Site B, and have the potential of impacting on the village residents.

Records from Redmont and Sand Hill indicate very infrequent and low strength winds from the west and southwest. Dust (and noise) from the mine would not be expected to be carried to Sites A or C.

As noted in Section 2.2, the BHPBIO rail line runs immediately adjacent to Site B, and with 10-15 movements each way, will definitely require the construction of noise bunds to reduce noise levels in the village to acceptable levels.

Should the HPPL rail line be constructed within HPPL's FNA, then Site B will have a second rail line on the northern side

3.2.3 Fortescue Marshes

The Fortescue Marshes to the north of the project area has been identified as a Wetland of National Significance (DIWA listing), and has been classified as an Environmentally Sensitive Area (ESA) under the Environmental Protection Act 1986.

Site A lies 12.5 km south of the closest edge of the Fortescue Marches ESA, Site B is 10.8 km south, and Site C 12.9 km south.

3.3 Risk Analysis

3.3.1 Site A

Identified risks for this site are

- Site A is known to lie in an area that will be inundated during a 1 in 10 Year ARI. Construction of a pad is required to elevate the site 1 m, to above the projected flood level. This will significantly increase the disturbance on the local environment, as the pad will need to be constructed from material from local borrow pits, since the site is too far from the proposed mining operation to make the use of mine waste economically viable. The potential exists that the material used for the pad may not withstand the impact of flood waters, and will require substantial maintenance after each flood event.

- The village will be cut off from the mine site when flood events occur that over-top the embankments of Weeli Wolli Creek

    - An elevated causeway has been costed for Weeli Wolli Creek, to permit traffic between the village and mine site when run-off is contained within the banks of Weeli Wolli Creek. The Roy Hill-Munjina Road will also be paved between the village and mine site so as to facilitate traffic movements during high rainfall / flood events

  - Significant flood events that overtop Weeli Wolli Creek also have the potential to influence rail traffic and, hence it is anticipated that mining activities during these times will also be affected.

- The 1 in 100 Year ARI flood event is likely to inundate this site to a depth of 1.5 m. The construction of 1 m high bunds around the edge of the pad for the village should be sufficient to mitigate the potential impact of such an event.

3.3.2 Site B

Identified risks for this site are

- While noise bunding has been included in the cost estimate, there is still the significant potential that noise levels in the village may not be acceptable. Noise modelling would be required to verify this.

- The potential exists for the site to be compromised by the proposal to duplicate the BHPBIO rail line

- The potential exists for the site to be sandwiched between the BHPBIO rail line and the proposed HPPL rail line, resulting in noise impacts from all directions

- While the mining operation is some distance from the village site, fine rejects and waste storage sites are much closer, and potential exists for dust to become an issue. No modelling has been done to verify this.

- Permission would be required from BHPBIO for the road-rail crossing

- A potentially-archaeologically sensitive area exists some 800 m to the west

3.3.3 Site C

Identified risks for this site are

- The village will be cut off from the mine site when flood events occur that over-top the embankments of Weeli Wolli Creek

  - Mitigation activities are the same as for Site A

- The 1 in 100 Year ARI flood event is likely to inundate this site to a depth of 0.5 m. The construction of 1 m high bunds and diversion drains should be sufficient mitigation to direct water flows around the village site, thereby avoiding the requirement to construct a pad for the village.

- The potential construction of the HPPL rail line could result in a rail line resulting in a substantial increase in potential noise levels

4 CONCLUSIONS

Three potential accommodation village sites have been evaluated.

- Site A, the initial site, in the northeast corner is
    - estimated to cost $ 3.91 M to set up (exclusive of constructing the camp)
    - likely to be inundated during a 1 in 10 year ARI event (and so is to be constructed on a 1 m high pad)
    - 2.3 km from adjacent to HPPL's FNA
- Site B, on the western edge is
    - estimated to cost $ 2.31 M to set up (exclusive of constructing the camp)
    - above the 1 in 100 year ARI flood level
    - adjacent to the BHPBIO rail line and is likely to be impacted by noise from the 10-15 movements each way each day, despite the impact of noise bunds
    - adjacent to the mining operation and is likely to be impacted by noise and dust from that operation
    - adjacent to HPPL's FNA, and likely to be impacted by noise if this line is constructed
    - adjacent to a potentially-sensitive archaeological site
- Site C, 2.5 km west of Site A
    - Is estimated to cost $ 2.15 M to set up (exclusive of constructing the camp)
    - lies on a local high, and is likely to escape inundation during a 1 in 10 year ARI event
    - can avoid the 1 in 100 Year ARI flood event by the simple construction of diversion drains and bunds
    - lies 500 m from HPPL's FNA, and likely to be impacted by noise if this line is constructed

5 RECOMMENDATIONS

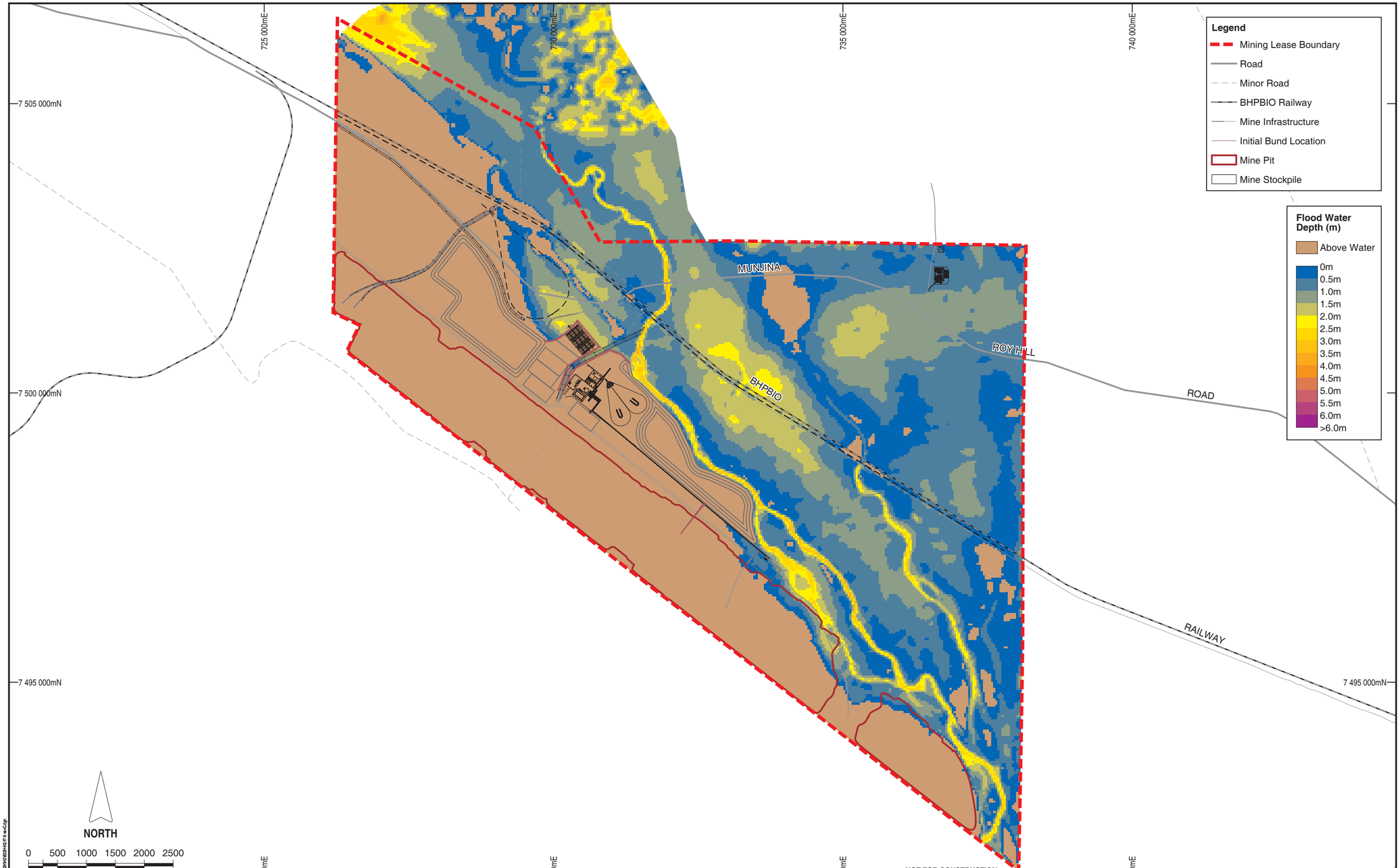
Although site A has the highest capital cost, it is significantly removed from impacts associated with the project and potential impacts associated with the activities of others outside of Brockman's control. Site A provides certainty for the project, albeit at a cost penalty. Sites B and C are currently subject to non-financial risks outside of Brockman's control as follows:

- the construction of additional rail lines by BHP Billiton
- the construction of rail lines by HPPL.

Potential cost reductions can be realized if the uncertainty relating to HPPL and BHPB can be clarified, and it is recommended that

- discussions be held with HPPL to determine whether a suitable compromise can be agreed in relation to a rail alignment through the Brockman tenement
- discussions be held with BHP Billiton to establish a greater level of certainty in regard to their future rail network expansions affecting the Brockman tenement .

APPENDIX 1
FLOOD DEPTH CONTOURS



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NOT FOR CONSTRUCTION

PRELIMINARY

aquaterra
water resource and environmental solutions
Suite 4, 125 Melville Parade
Como, Western Australia 6152
Telephone: (08) 9368 4044
Facsimile: (08) 9368 4055

REFERENCES

REVISIONS

No	DATE	DESCRIPTION	DRN	CHK	APP
A	17-06-09	DRAFT. ISSUED FOR CLIENT REVIEW	CR	LC	
B	19-06-09	INITIAL FLOOD BUNDING INCLUDED. ISSUED FOR CLIENT REVIEW	CR	LC	
C	02-07-09	REVISED LEASE BOUNDARY. ISSUED FOR CLIENT REVIEW	CR	LC	

		DATE
DESIGNED	L. CHONG	12-06-09
DRAWN	C. REEVES	02-07-09
CHECKED	L. CHONG	02-07-09
APPROVED		

CLIENT: **BROCKMAN RESOURCES**

DRAWING TITLE:

FIGURE 7.5
10 YEAR ARI POST-DEVELOPMENT FLOOD DEPTH MAP

PROJECT NUMBER: 832H-H2

DRAWING NUMBER:

832H-H2-f7-5

REV **C**

SCALE: 1 : 60 000 at A3

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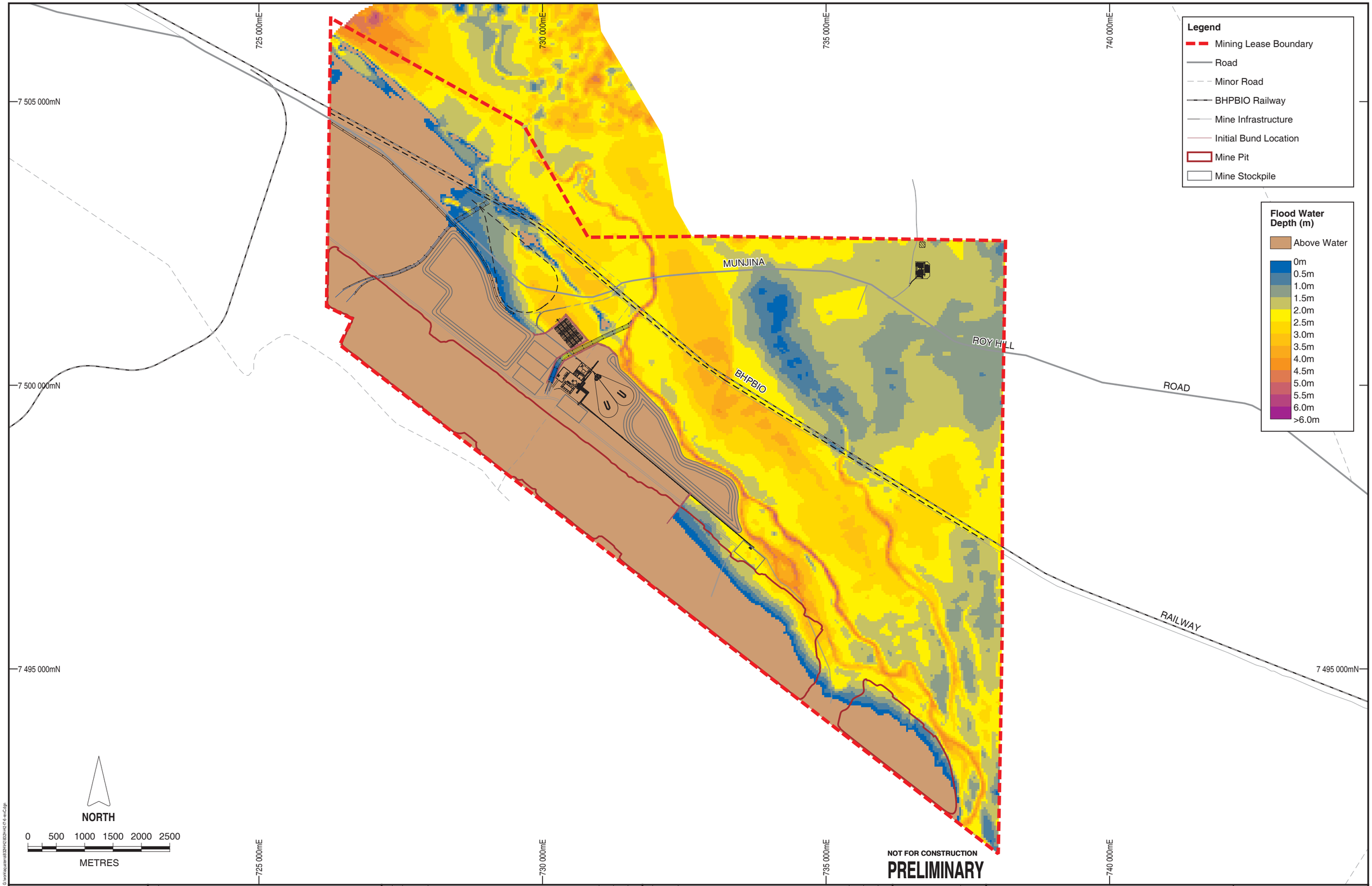

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aquaterra
water resource and environmental solutions
Suite 4, 125 Melville Parade
Como, Western Australia 6152
Telephone: (08) 9368 4044
Facsimile: (08) 9368 4055

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		DATE
DESIGNED	L. CHONG	12-06-09
DRAWN	C. REEVES	02-07-09
CHECKED	L. CHONG	02-07-09
APPROVED		

CLIENT: **BROCKMAN RESOURCES**

DRAWING TITLE:

FIGURE 7.6
100 YEAR ARI POST-DEVELOPMENT FLOOD DEPTH MAP

PROJECT NUMBER: 832H-H2

DRAWING NUMBER:

832H-H2-f7-6

SCALE: 1 : 60 000 at A3

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