

Extension Hill Hematite Haulage

Mt Gibson Mining

**Report and recommendations
of the Environmental Protection Authority**

**Environmental Protection Authority
Perth, Western Australia
Report 1296
July 2008**

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
16/10/07	Referral received	
23/6/08	Final ARI documentation received from proponent	36
21/07/08	ARI Level of Assessment set and EPA report to the Minister for the Environment	4

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1. Introduction and background

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for the Environment on the proposal to upgrade, widen and straighten local roads and construct and operate a rail siding south of Perenjori by Mount Gibson Mining.

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires the EPA to report to the Minister for the Environment on the outcome of its assessment of a proposal. The report must set out:

- The key environmental factors identified in the course of the assessment; and
- The EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject. The EPA may include in the report any other advice and recommendations as it sees fit.

The proponent has submitted a referral document setting out the details of the proposal, potential environmental impacts and proposed commitments to manage those impacts.

The EPA considers that the proposal, as described, can be managed to meet the EPA's environmental objectives, subject to the EPA's recommended conditions being made legally binding.

The EPA has therefore determined under Section 40 of the EP Act that the level of assessment for the proposal is Assessment on Referral Information (ARI), and this report provides the EPA advice and recommendations in accordance with Section 44 of the EP Act.

2. The proposal

Mount Gibson Mining Limited proposes to upgrade, widen and straighten existing local roads and construct and operate a rail siding south of Perenjori, to facilitate the transport of hematite iron ore from the already approved Extension Hill mine site at Mount Gibson to Geraldton Port for export (Figure 1).

The proposed haulage route is an 85 kilometre length of existing rural roadway that connects the Extension Hill mine site in Mount Gibson to 2 kilometres south-east of Perenjori, where a rail siding facility is proposed to be built (Figure 2). The roads to be upgraded are the Perenjori to Rothsay Road, Wanarra Road and Wanarra East Road. The proposed roadway would consist of a two-way single width carriageway, with each lane being 4 metres wide, with a maximum typical total width of road 16 metres from batter to batter. It is proposed that 161 hectares of land would be cleared in total to accommodate the road upgrade, borrow pits and rail siding. 79 hectares would be cleared for the road upgrade, up to 80 hectares for borrow pits and 2 hectares for the rail siding.

The rail siding would be accessed from the Perenjori-Rothsay Road. It would contain two open stockpile areas of 150,000 tonnes capacity each (one for lump and one for

finer product) on either side of the rail spur. Hematite stockpiled at the rail siding would be loaded by two front end loaders onto rail cars for transport along the existing Westnet rail track to Geraldton Port, via Mullewa. The rail siding would be located on 100 ha of previously cleared private land and include ancillary facilities such as offices, lunchrooms and toilets, truck maintenance, wash down and refuelling facilities.

Road trains would travel along the upgraded 85 kilometre road and arrive at the siding every 9 minutes (80 trucks per day 365 days per year). Ore would be side tipped onto a designated area and pushed up by front end loaders to a height of 3 metres. The stockpiles would be the length of the trains to minimise the requirement of shunting during the loading operation. Trains would consist of 90 wagons, which would depart every 6 hours (2 trains per day, 4 train movements).

The main characteristics of the proposal are summarised in Table 1 below and the regional location is shown in Figures 1 and 2.

Table 1: Summary of key proposal characteristics

Element	Description
Proposed Haulage Route	Haulage of hematite from the Extension Hill mine 85 kilometres by road to Perenjori then 239 kilometres by rail to Geraldton Port via Mullewa.
Proposed Rail siding location	2 kilometres south-east of Perenjori – immediately east of and adjacent to the Wubin Mullewa Road and existing Westnet rail track, south of and parallel to Perenjori to Rothsay Road.
Roads to be upgraded	Wanarra East, Wanarra and Perenjori to Rothsay Roads.
Road Type	Two-way single width carriageway, with lanes 4 metres wide each. Maximum typical total width 16 metres, from batter to batter.
Connections to existing roads	Underpass to avoid Great Northern Highway. Rail Siding entrance positioned to avoid trucks entering the Wubin Mullewa Road Wanarra and Rothsay junction realigned.
Rail siding details	Two open stockpile areas (one for lump and one for fines products) on either side of the train line spur constructed off the existing Perenjori Mullewa rail line.
Rail Siding Stockpile Capacity	150,000 tonnes of lump and 150,000 tonnes of fine ore product.
Stockpile Height	3 metres.
Transport Type	Trucks – side-tipping triple road trains hauling concessional loads (up to 105 tonnes). Trains – 90 wagon trains carrying up to

Element	Description
	4,320 tonnes.
Transport Frequency (approx assuming 3 Mtpa rail capacity)	80 trucks per day (160 truck movements) = 1 truck every 9 minutes. 2 trains per day (4 train movements) = 1 train every six hours.
Vegetation Clearing	Road: 79 hectares. Borrow pits: up to 80 hectares. Rail siding: 2 hectares – crossing at Mullewa Wubin Road only.
Water Source	Groundwater abstraction.
Water Requirements	Construction: Road – 400 cubic metres per day approximately. Rail siding – 40 cubic metres per day approximately. Operation: Road – Nil. Rail Siding – 230 cubic metres per day approximately.
Operation	24 hours a day 7 days a week 365 days a year for at least 5 years.

The potential impacts of the proposal are discussed by the proponent in the referral document (*GHD, 2008*).

3. Key environmental factor

It is the EPA's opinion that the following key environmental factor relevant to the proposal requires evaluation in this report:

(a) Flora and Vegetation

The key environmental factor is discussed in Sections 3.1. The description of this factor shows why it is relevant to the proposal and how it would be affected by the proposal. The assessment of this factor is where the EPA decides whether or not a proposal meets the environmental objective set for the factor.

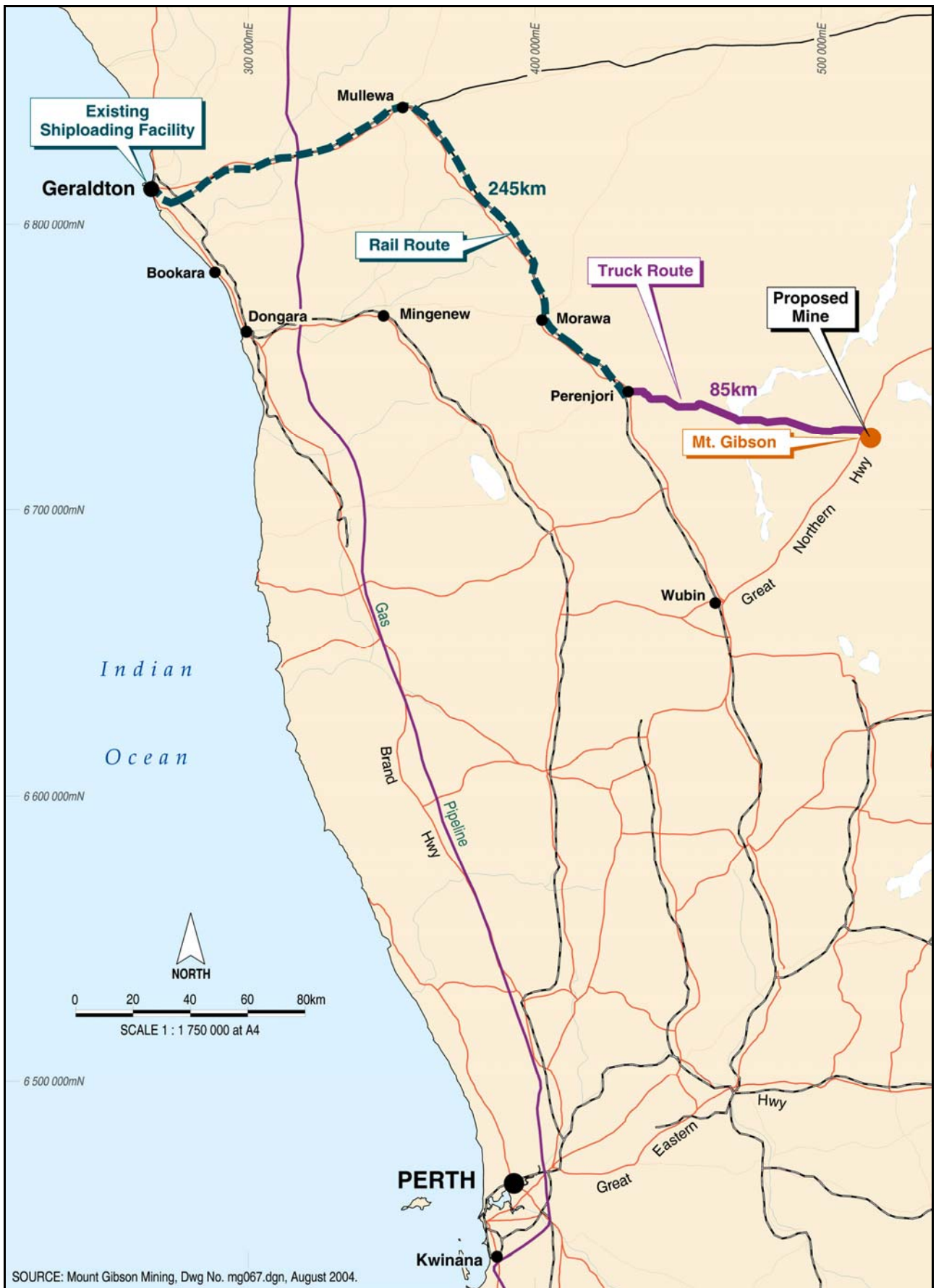


Figure 1: Regional location

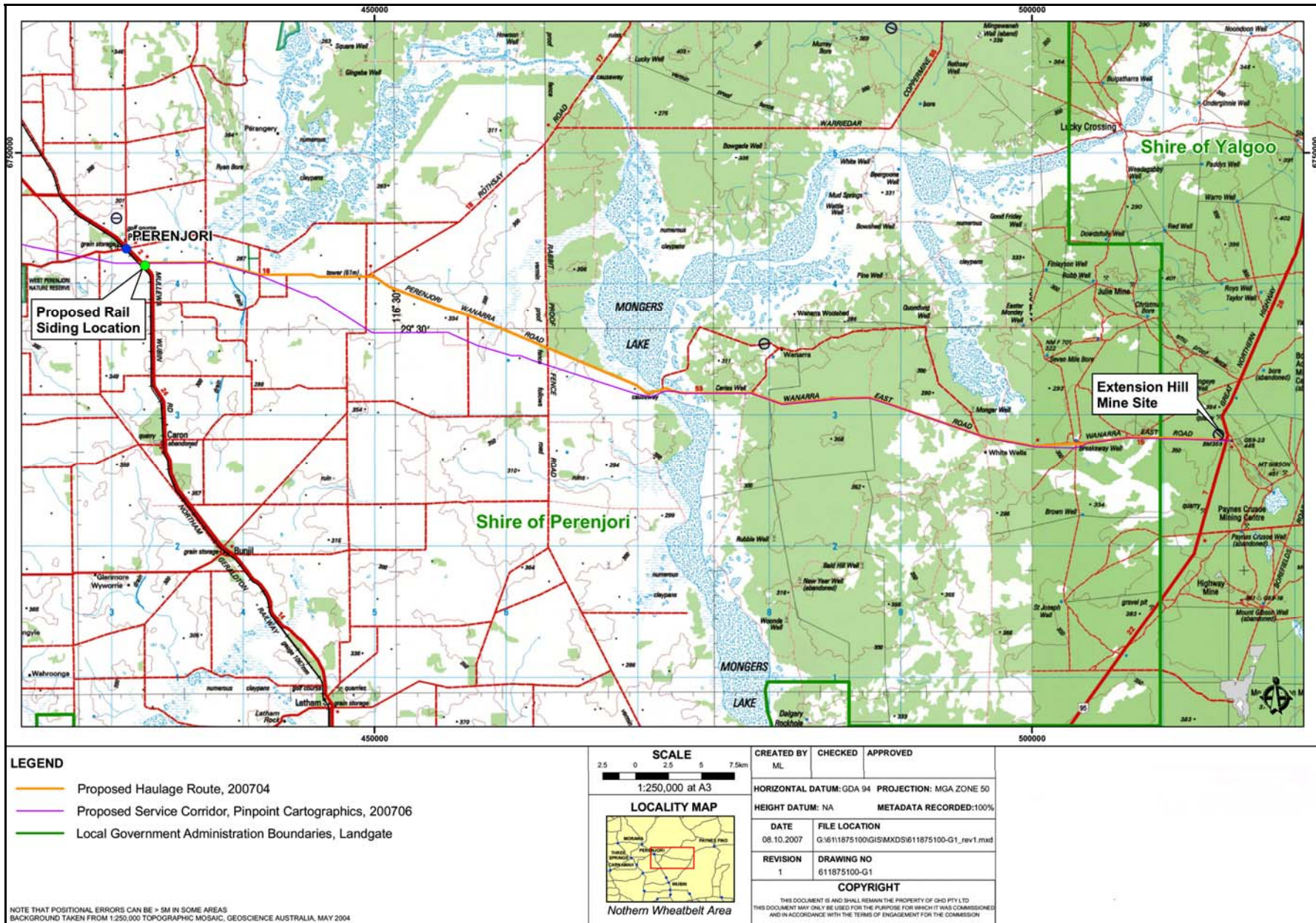


Figure 2: Road/Rail location

3.1 Flora and Vegetation

Description

The proposal has the potential to impact flora and vegetation by direct loss due to clearing and indirect loss due to groundwater drawdown, application of potentially saline water for road construction and dust control, transfer of weeds and fire. The proposal area is located within the Avon Wheatbelt Bioregion with a small portion of the eastern extent occurring within the Yalgoo Bioregion.

There are eleven vegetation communities that would be impacted. Six are classed as endangered, vulnerable or depleted. These are shown below in Table 2.

Table 2. Vegetation communities classified as endangered, vulnerable or depleted

Vegetation Association	Vegetation Community	Area proposed to be cleared (ha)	Impact on current extent (%)	Status
125	Bare area; salt lakes	1	Less than 0.01%	Depleted
352	Medium Woodland; York gum	25	0.03%	Vulnerable
435	Shrublands; <i>Acacia neurophylla</i> , <i>A. beauverdiana</i> and <i>A. resinimarginea</i> thicket	20	0.08%	Vulnerable
551	Shrublands; <i>Allocasuarina campestris</i> thicket	4	0.01%	Vulnerable
631	Succulent steppe with woodland and thicket; York gum over <i>Melaleuca thyoides</i> and samphire	1	Less than 0.01%	Depleted
1154	Shrublands; <i>Acacia</i> thicket with patches of heath	1	Less than 0.01%	Endangered

Flora and vegetation surveys identified no Declared Rare Flora (DRF), six priority species and no Threatened Ecological Communities (TEC's) in the survey area. The haul road extension is proposed to be widened to the north in order to avoid priority species, although it would impact on one priority species, *Cryptandra imbricata* (P3)¹. The *Cryptandra imbricata* (P3) populations recorded during the surveys continued

¹ Priority 3 taxa are classed as poorly known taxa and described as taxa which are known from several populations and the taxa are not believed to be under immediate threat. Such taxa are under consideration for declaration as 'rare flora' but are in need of further study.

further than the project area; therefore the population size is larger than the number of plants recorded.

1616 recorded plants of *Cryptandra imbricata* (P3) were observed within the project area. It is expected that 36 plants would be impacted, equating to 2.2% of the local population.

The proponent has selected a number of potential borrow pit locations along the haul road, in both the agricultural and pastoral zones. Some of these may not actually be used. In this regard, the proponent has stated that no more than 80 hectares would be cleared for the purpose of borrow material along the full length of the road.

Water abstraction is required for road construction and dust control at the rail siding. The majority of the water to be used for this purpose is of good quality. There are 7 bores available for water production. The ecosystems surrounding the bores have not been identified as potential groundwater dependent systems. One of the potential production bores (Bore DH1PB adjacent to Mongers Lake in the central area) has a salinity of 280,000 mg/l and therefore has the potential, if used, to impact on vegetation adjacent to the application area.

The proponent proposes to manage potential impacts to flora, vegetation and habitat by implementing the following actions:

- Minimising clearing of remnant vegetation and vegetation associations containing priority flora species;
- Avoiding location of borrow pits where there are DRF or priority species;
- Avoiding location of borrow pits where there are vegetation associations identified as endangered, vulnerable or depleted;
- Locating borrow pits in already cleared areas and utilising overburden produced through the mine construction process;
- Rehabilitation of borrow pit areas that are no longer required following construction and monitoring them for the life of the mine;
- Revegetation of an area of up to 20 ha surrounding the railway siding for amenity and habitat purposes;
- Weed inspection by a suitably qualified environmental professional and treatment, as required, of all fill for road construction purposes that is transported into the pastoral area;
- Use of a wash down bay to clean construction vehicles at the boundary between the agricultural area and the pastoral area;
- Training of personnel in fire management and control procedures; and
- Provision of fire fighting equipment for on site vehicles.

Assessment

The EPA's environmental objective for this factor is:

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

The area considered for assessment of this factor is the area where the local roads are to be widened and straightened, and an area where the rail siding is to be constructed.

Four surveys were carried out in the proposal area since 2003, including a survey carried out by ATA Environmental and Coffey Environments, who undertook a flora, vegetation and fauna assessment along the northern side of Wanarra Road and Perenjori Rothsay Road between the Great Northern Highway and Perenjori in October 2006. The EPA considers the surveys to be adequate.

In considering the potential impacts on flora and vegetation the EPA considered the following environmental aspects:

- Vegetation clearing for the road and borrow pits;
- The impact of water drawdown from the production bores; and
- The impact of the use of saline water for road construction and dust control.

Vegetation clearing for the road and borrow pits

Six vegetation associations to be impacted in the project area are classified as endangered, vulnerable and depleted and one species of priority flora would be impacted by widening the haul road on the northern side.

The EPA notes that the percentage area of each vegetation community that would be cleared for the proposal is very small, ranging from less than 0.01% to 0.08%.

In regard to the priority flora species *Cryptandra imbricata*, 36 plants would be cleared, amounting to 2.2% of the total population surveyed in the proposal area. The EPA accepts that the population may extend beyond the surveyed area, but without specific information to this effect, did not take it into consideration.

In considering the potential impacts on flora and vegetation the EPA expects proponents to design the proposal and management procedures to minimise the impacts to the extent possible. In this regard the EPA notes the following:

- The haul road extension has been designed to be widened to the north in order to reduce the impact on priority species, as surveys show that more priority species would be impacted if the haul road was widened to the south.
- The rail siding has been positioned in a location of previously cleared agricultural land and does not impact on any DRF or priority species.
- Although it is currently unknown which of the potential borrow pit locations would be used, no clearing will occur where DRF or priority species are present.
- Up to 20 hectares surrounding the railway siding would be revegetated, as would borrow pits that are no longer required.

The EPA considers these design considerations and management actions to be appropriate and adequate.

On advice from the Department of Environment and Conservation (DEC), the EPA considers that the impacts on the six vegetation associations classified as endangered, vulnerable and depleted and the taking of 2.2% *Cryptandra imbricata* are acceptable. In

order to limit the impact, the EPA recommends implementation of condition 6 which has the following requirements:

- 6-1 limits the area from which *Cryptandra imbricata* may be taken;
- 6-2 requires the proponent to monitor *Cryptandra imbricata* in order to demonstrate that the impact has been minimised;
- 6-3 requires the proponent to submit the monitoring results to the CEO of the DEC; and
- 6-4 limits clearing for borrow pits to 80 hectares that do not contain DRF or priority species and lists areas that may be used for this purpose.

The EPA also recommends that condition 6-11 and 6-12 be implemented, which require the proponent to rehabilitate completed borrow pits and all disturbed areas adjacent to the road and rail siding, and monitor and report the results to the CEO of the DEC.

Water drawdown from the production bores

The EPA notes the proponent's claim that the vegetation surrounding the groundwater production bores is not groundwater dependant. The Department of Water (DOW) has also advised that it considers that water abstraction is unlikely to have a significant impact on vegetation in the vicinity.

The EPA considers that condition 6-5 which requires the proponent to ensure that groundwater drawdown does not degrade or harm vegetation and 6-6 and 6-7 which require the proponent to carry out monitoring to demonstrate this to the CEO of the DEC, should be implemented.

Saline water for road construction

The EPA notes that whilst most of the groundwater available is of good quality, one of the seven bores which may provide water for road construction and dust management at the rail siding has a salinity level of 280,000 mg/l, and therefore groundwater use has the potential to impact on vegetation, if it is not well managed. The EPA considers that the impact on flora and vegetation is unlikely to be significant provided that condition 6-9 and 6-10, which require the proponent to ensure that saline water application does not cause a detrimental effect on flora and vegetation, and that monitoring to this effect is reported to the CEO of the DEC, is implemented.

Summary

Having particular regard to the:

- The number of *Cryptandra imbricata* in the proposal area;
- The proponent's proposed measures to protect priority flora from direct and indirect impacts;
- Advice from DEC that clearing is unlikely to have a significant impact on *Cryptandra imbricata* and the vegetation communities; and
- Advice from DOW that groundwater drawdown from the bores is unlikely to impact on vegetation and TEC's.

It is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor provided that the management measures detailed

in the Assessment on Referral Information (ARI) document and the recommended condition 6 are implemented.

4. Other Advice

1. The proponent's ARI document (GHD, 2008) also describes impacts associated with a service corridor construction platform; however, the proponent has a previous approval to construct the service corridor (Statement number 753) and the proponent will now seek approval for the service corridor construction platform separately through an application under section 45C of the EP Act. The service corridor part of the proposal was therefore excluded from the EPA's assessment as described in this report.
2. The proposal would result in an increase in the cumulative impact of train noise between Perenjori and Geraldton. The number of trains passing through Perenjori at night would increase from one seasonal wheat train to an additional two trains (4 train movements per day) to transport hematite from Perenjori to Geraldton Port. The proponent is in discussions with Westnet to negotiate for the trains to travel through Perenjori during the day in cooler months when higher speeds are possible. The proponent has stated that consultation in the towns of Perenjori and Morawa did not raise any concerns over rail noise through the towns. The general increase in train movements on the rail line to Geraldton, due to this and other proposals, is a planning issue that is beyond the scope of this assessment.
3. The EPA notes that there is an adequate supply of water for the proposal and the proponent would liaise with the DOW with regards to water supply. The proposal requires 400m³/day for the construction of the road and 40m³/day for the construction of the rail siding for a period of 34 weeks. The operation of the rail siding needs 230m³/day for a further five years for dust suppression. The water has been sourced from three locations, the Solomon's Bores at the west end of the haul road, a bore near Mongers Lake, in the central area of the haul road and bores at the mine site to the east of the haul road. Investigations were carried out by Rockwater and Golder in 2008. Water abstraction licences have been issued for the Solomon's bores and the central bore. Water from the eastern end of the haul road would be dealt with under the mine licences.
4. Dust from the rail siding operations was not considered to be a key environmental factor due to the separation distance from the nearest residents; however, the EPA did give it consideration. The proponent has stated that dust management will be similar to that carried out at its Mullewa rail siding where dust monitoring is used to trigger an operational response in addition to the routine dust management measures to avoid dust incidents during high winds. At Mullewa only one such incident has occurred so far.

5. Conclusions

The EPA has considered the proposal by Mt Gibson Mining to upgrade, widen and straighten existing local roads and construct and operate a rail siding south of Perenjori, to facilitate the transport of hematite iron ore from the already approved Extension Hill mine site at Mount Gibson to Geraldton Port for export.

The EPA notes that the proposal would directly remove 2.2% (36 plants) of the local population of the Priority 3 species *Cryptandra imbricata* but considers the impact to be acceptable. The EPA also considers that impacts on flora and vegetation, due to clearing for borrow pits, groundwater drawdown and application of potentially saline groundwater for road construction/dust control, can be managed provided that condition 6 is implemented, which includes:

- limiting the area from which *Cryptandra imbricata* can be taken, and hence the percentage of the population that can be taken;
- limiting the locations for borrow pits and limiting the area to no more than 80 hectares;
- protection of vegetation against excessive groundwater drawdown;
- protection of vegetation from the impacts of saline water application for road construction and dust control; and
- rehabilitation of all disturbed areas to pre-proposal condition.

The EPA has therefore concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2.

6. Recommendations

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

1. That the Minister notes that the proposal being assessed is for the upgrading, widening and straightening of existing local roads and construction and operation of a rail siding south of Perenjori, to facilitate the transport of hematite iron ore from the already approved Extension Hill mine site at Mount Gibson to Geraldton Port for export;
2. That the Minister considers the report on the key environmental factors as set out in Section 4;
3. That the Minister notes that the EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2; and
4. That the Minister imposes the conditions and procedures recommended in Appendix 2 of this report.

Appendix 1

References

ATA Environmental (2006b) *Flora and Vegetation Assessment: Proposed Slurry Pipeline Mt Gibson to Geraldton Port*, Unpublished report for Mount Gibson Mining Limited, ATA 2005/134.

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GDH (2008). *Mt Gibson Mining Extension Hill Hematite Haulage – Assessment on Referral Information*, June 2008.

Herring Storer Acoustics (2007) *Noise Impact Assessment for the Mount Gibson to Perenjori Haul Route*. Prepared for Mount Gibson Mining.

Mount Gibson Mining Limited (2008) *Water sources for the Extension Hill Project, Interim Report*.

Paul Armstrong and Associates (2004) *Vegetation Assessment and Rare Flora Search between Perenjori and Mt Gibson*. Prepared for Mt Gibson Iron Limited. Perth

Rockwater Proprietary Limited (2004) *Results of drilling bore-hole PSI for low-salinity water at the Salmons area, Perenjori*. Prepared for Shire of Perenjori.

Rockwater Proprietary Limited (2008) *Extension Hill Hematite Project. Groundwater supply bore completion report*. Prepared for Mt Gibson Iron Ltd.

Rockwater Proprietary Limited (2008) *Results of drilling at the Salmons area, Perenjori. Groundwater supply bore completion report*. Prepared for Mt Gibson Mining Limited.

Appendix 2

Recommended Environmental Conditions

RECOMMENDED ENVIRONMENTAL CONDITIONS

Statement No.

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE *ENVIRONMENTAL PROTECTION ACT 1986*)

EXTENSION HILL HEMATITE HAULAGE ROAD & RAIL SIDING SHIRES OF PERENJORI & YALGOO

- Proposal:** The proposal involves upgrading, widening and straightening 85 kilometres of existing local roads, and constructing and operating a rail siding south of Perenjori, to facilitate the transport of hematite iron ore from the already approved Extension Hill mine at Mount Gibson to the Port of Geraldton.
- Proponent:** Mount Gibson Mining Limited
- Proponent Address:** First Floor, 7 Havelock Street, WEST PERTH WA 6005
- Assessment Number:** 1747

Report of the Environmental Protection Authority: Report 1296

The proposal referred to in the above report of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures:

1 Proposal Implementation

- 1-1 The proponent shall implement the proposal as assessed by the Environmental Protection Authority and described in schedule 1 of this statement subject to the conditions and procedures of this statement.

2 Proponent Nomination and Contact Details

- 2-1 The proponent for the time being nominated by the Minister for the Environment under sections 38(6) or 38(7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal.
- 2-2 The proponent shall notify the Chief Executive Officer (CEO) of the Department of Environment and Conservation of any change of the name and address of the proponent for the serving of notices or other correspondence within 30 days of such change.

3 Time Limit of Authorisation

- 3-1 The authorisation to implement the proposal provided for in this statement shall lapse and be void within five years after the date of this statement if the proposal to which this statement relates is not substantially commenced.
- 3-2 The proponent shall provide the CEO of the Department of Environment and Conservation with written evidence which demonstrates that the proposal has substantially commenced on or before the expiration of five years from the date of this statement.

4 Compliance Reporting

- 4-1 The proponent shall submit to the CEO of the Department of Environment and Conservation environmental compliance reports annually reporting on the previous twelve-month period, unless required by the CEO of the Department of Environment and Conservation to report more frequently.
- 4-2 The environmental compliance reports shall address each element of an audit program approved by the CEO of the Department of Environment and Conservation and shall be prepared and submitted in a format acceptable to the CEO of the Department of Environment and Conservation.
- 4-3 The environmental compliance reports shall:
- 1 be endorsed by signature of the proponent's chief executive officer or a person, approved in writing by the CEO of the Department of Environment and Conservation, delegated to sign on behalf of the proponent's chief executive officer;
 - 2 state whether the proponent has complied with each condition and procedure contained in this statement;
 - 3 provide verifiable evidence of compliance with each condition and procedure contained in this statement;
 - 4 state whether the proponent has complied with each key action contained in any environmental management plan or program required by this statement;
 - 5 provide verifiable evidence of conformance with each key action contained in any environmental management plan or program required by this statement;
 - 6 identify all non-compliances and non-conformances and describe the corrective and preventative actions taken in relation to each non-compliance or non-conformance;
 - 7 review the effectiveness of all corrective and preventative actions taken; and

8 describe the state of implementation of the proposal.

4-4 The proponent shall make the environmental compliance reports required by condition 4-1 publicly available in a manner approved by the CEO of the Department of Environment and Conservation.

5 Performance Review and Reporting

5-1 The proponent shall submit to the CEO of the Department of Environment and Conservation Performance Review Reports at the conclusion of the first, third and fifth years after the start of implementation of the proposal and then, at such intervals as the CEO of the Department of Environment and Conservation may regard as reasonable, which address:

- 1 the major environmental risks and impacts; the performance objectives, standards and criteria related to these; the success of risk reduction/impact mitigation measures and results of monitoring related to the management of the major risks and impacts;
- 2 the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable; and
- 3 significant improvements gained in environmental management which could be applied to this and other similar projects.

6 Flora and Vegetation

Flora and Vegetation Clearing

6-1 In implementing the proposal, the proponent shall minimize the loss of the gazetted priority species *Cryptandra imbricata* and may only take *C. imbricata* within 11 metres of the northern edge of the existing road in the areas outlined in schedule 2.

6-2 The proponent shall monitor the number of *Cryptandra imbricata* referred to in condition 6-1 in order to demonstrate that the number lost has been minimized. This monitoring is to be carried out to the satisfaction of the CEO of the Department of Environment and Conservation.

6-3 Within two months following the completion of construction, the proponent shall submit the results of monitoring referred to in condition 6-2 and a report demonstrating that the number of *Cryptandra imbricata* lost has been minimized, to the CEO of the Department of Environment and Conservation.

6-4 The proponent shall not clear more than 80 hectares of vegetation for borrow pits, and in doing so, shall not take any Declared Rare Flora or Priority flora species. The clearing of vegetation for borrow pits shall only take place in areas of potential borrow pits as indicated in figures 4a-e, but shall not take place in areas listed in schedule 3.

Impact of Groundwater Drawdown on Flora and Vegetation

- 6-5 At all times, the proponent shall ensure that groundwater drawdown in the vicinity of the groundwater abstraction bores does not adversely affect the health or condition of vegetation.
- 6-6 The proponent shall monitor groundwater and vegetation in the vicinity of the groundwater abstraction bores to facilitate determination of whether the requirements of condition 6-5 are being met. This monitoring is to be carried out to the satisfaction of the CEO of the Department of Environment and Conservation.
- 6-7 The proponent shall submit the results of the monitoring of groundwater and vegetation required by condition 6-6 to the CEO of the Department of Environment and Conservation.
- 6-8 The proponent shall immediately provide proposed management measures to the CEO of the Department of Environment and Conservation in the event that the requirements of condition 6-5 are not met or are not likely to be met.

Impact of Saline Water Application on Flora and Vegetation

- 6-9 During construction and operation, the proponent shall ensure that the use of saline water for road-making and dust control does not cause detrimental effects on flora and vegetation.
- 6-10 The proponent shall monitor the health of fringing vegetation referred to in condition 6-9 before, during and for at least 12 months after construction, and shall report to the CEO of the Department of Environment and Conservation on the health of that vegetation following the cessation of monitoring.

Rehabilitation of Disturbed Areas

- 6-11 Generally within six months following the completion of construction, but in the case of borrow pits, within six months following their closure, the proponent shall commence rehabilitation by replacing top soil in all disturbed areas, and thereafter shall progressively rehabilitate by means of planting flora and vegetation to achieve pre-proposal composition, extent and condition.
- 6-12 For five years following the completion of construction, the proponent shall monitor progressively and submit a report at the conclusion of the five-year period on the performance of the rehabilitation required by condition 6-11 to the CEO of the Department of Environment and Conservation.

Schedule 1

Extension Hill Hematite Haulage, Road & Rail Siding, Shires of Perenjori and Yalgoo (Assessment No. 1747)

General Description

The proposal involves upgrading, widening and straightening 85 kilometres of existing local roads, and constructing and operating a rail siding two kilometres south-east of Perenjori, to facilitate the transport of hematite iron ore from the already approved Extension Hill mine at Mount Gibson to the Port of Geraldton.

The roads to be upgraded are the Perenjori to Rothsay Road, Wanarra Road and Wanarra East Road. The roadway consists of a two-way single width carriageway, with each lane being four metres wide, with a maximum typical total width of road 16 metres from batter to batter. Up to 161 hectares of land will be cleared to accommodate the road upgrade, borrow pits and rail siding. Of this, 79 hectares will be cleared for the road upgrade, up to 80 hectares for borrow pits and two hectares for the rail siding.

The rail siding will be accessed from the Perenjori-Rothsay Road. It will contain two open stockpile areas of 150,000 tonnes capacity (one for lump and one for fines product) on either side of the rail spur. Hematite stockpiled at the rail siding is loaded by two front-end loaders onto rail cars for transport along the existing Westnet rail track to the Port of Geraldton, via Mullewa. The rail siding will be located on 100 hectares of previously cleared private land and will include ancillary facilities such as offices, lunchrooms and toilets, truck maintenance, wash-down and refuelling facilities.

Road trains will travel along the upgraded 85 kilometre road and arrive at the siding every nine minutes (80 trucks per day 365 days per year). Ore will be side tipped onto a designated area and pushed up by front-end loaders to a height of three metres. The stockpiles will be the length of the trains to minimise the requirement of shunting during the loading operation. Trains consist of 90 wagons, which depart every 6 hours (2 trains per day, 4 train movements) for the 239 kilometre journey to the Port of Geraldton.

The proposal is described in the following document - *Mt Gibson Mining Extension Hill Hematite Haulage – Assessment on Referral Information*, GHD (April 2008).

Summary Description

A summary of the key proposal characteristics is presented in Table 1.

Extension Hill Hematite Haulage, Road & Rail Siding, Shires of Perenjori & Yalgoo (Assessment No. 1747)

Table 1 – Summary of Key Proposal Characteristics

Element	Description
Rail siding location	2 kilometres south-east of Perenjori, immediately east of and adjacent to the Wubin-Mullewa Road and existing Westnet rail track, south of and parallel to Perenjori to Rothsay Road.

Element	Description
Road Type	Two-way single width carriageway, with lanes 4 metres wide each. Maximum typical total width 16 metres, from batter to batter.
Connections to existing roads	The upgraded road will cross underneath the Great Northern Highway, which will be bridged over the haul road.
Rail siding	Two open stockpile areas (one for lump and one for fines products) on either side of the train line spur constructed off the existing Perenjori-Mullewa rail line.
Rail Siding Stockpile Capacity	Not more than 150,000 tonnes of Lump ore product. Not more than 150,000 tonnes of Fine ore product.
Stockpile Height	Not more than 3 metres
Transport Type	<i>Trucks</i> – side-tipping triple road trains hauling concessional loads (up to 105 tonnes). <i>Trains</i> – 90 wagon trains carrying up to 4,320 tonnes.
Transport Frequency (assuming approx. 3 Mtpa rail capacity)	80 trucks per day (160 truck movements) = 1 truck every 9 minutes 2 trains per day (4 train movements) = 1 train every six hours.
Vegetation Clearing	Clearing by purpose: <i>Road</i> : Not more than 79 hectares <i>Borrow pits</i> : Not more than 80 hectares <i>Rail sidings</i> : Not more than 2 hectares – crossing at Mullewa Wubin Road only Clearing by area: <i>Agricultural Zone</i> - Not more than 36 hectares <i>Pastoral Zone</i> - Not more than 125 hectares <i>Total Clearing</i> - Not more than 161 hectares
Water Source	Significant proven groundwater sources exist at both the eastern and western ends of the road alignment with small quantities available along the length. (A groundwater bore installation and abstraction licence has been granted for the eastern and central bores.)
Water Requirements <i>Construction:</i> <i>Operation:</i>	Road – 400 cubic metres per day Rail siding – 40 cubic metres per day Road – Nil Rail siding - 230 cubic metres per day
Operation	24 hours per day 7 days per week 365 days per year for at least 5 years

Figures (attached)

Figure 1 – Regional Location. (See Figure 1 page 4 above)

Figure 2 – Road / Rail Location. (See Figure 2 page 5 above)

Figure 3 (a and b) – Location of *Cryptandra imbricate*.

Figures 4 (a to e) – Potential Borrow Pit Locations.

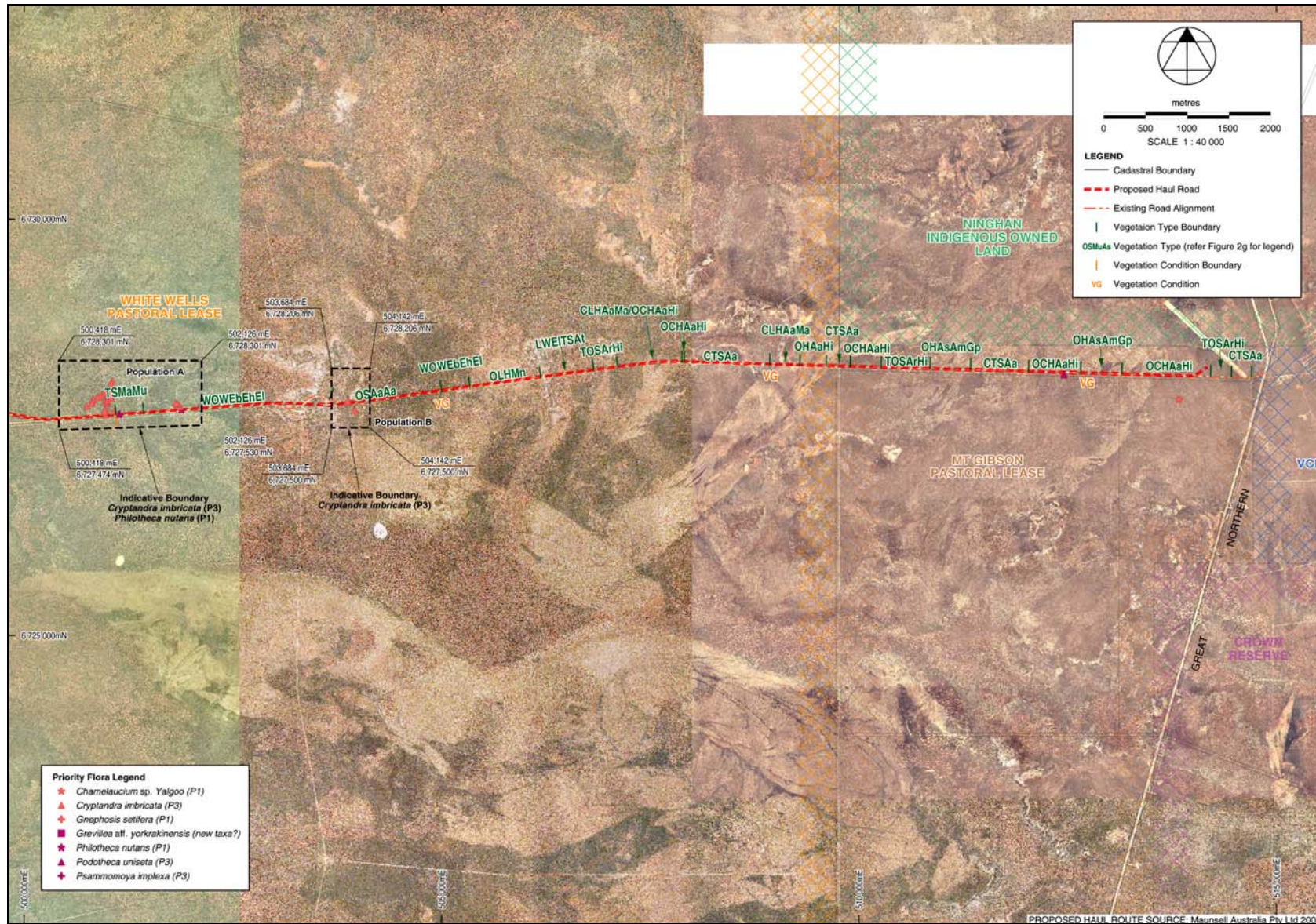


Figure 3a: Location of *Cryptandra imbricata*.

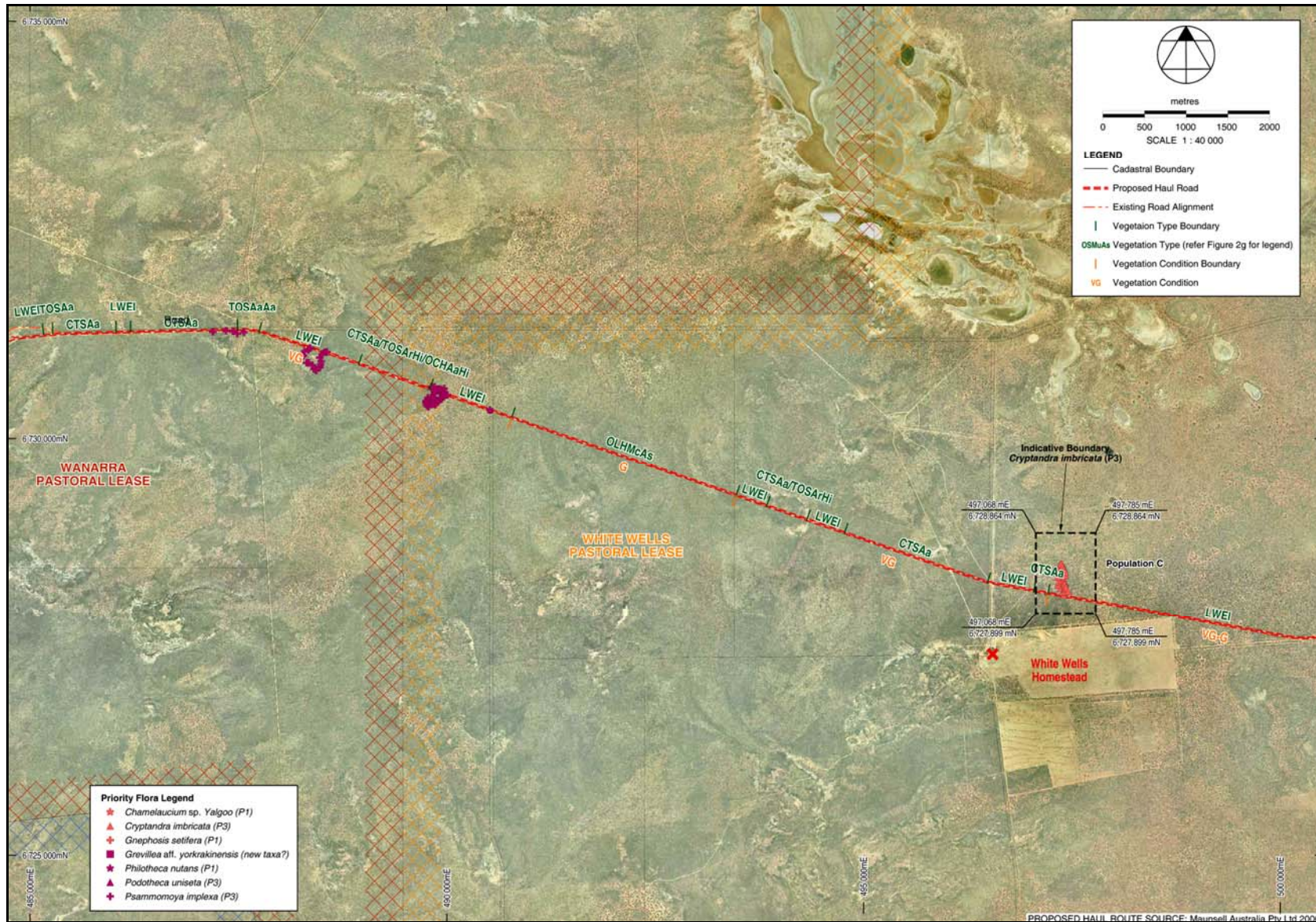


Figure 3b: Location of *Cryptandra imbricata*.

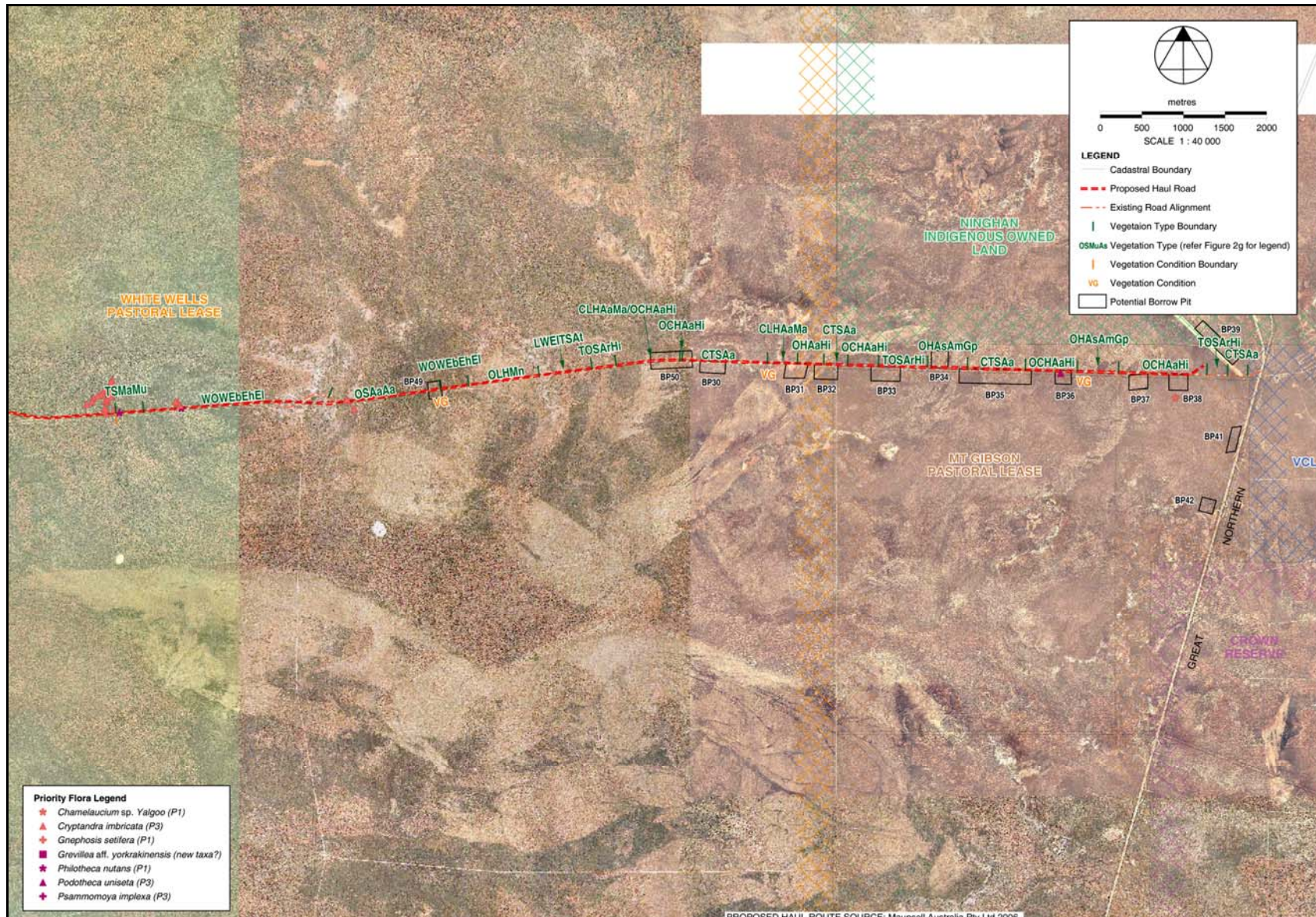
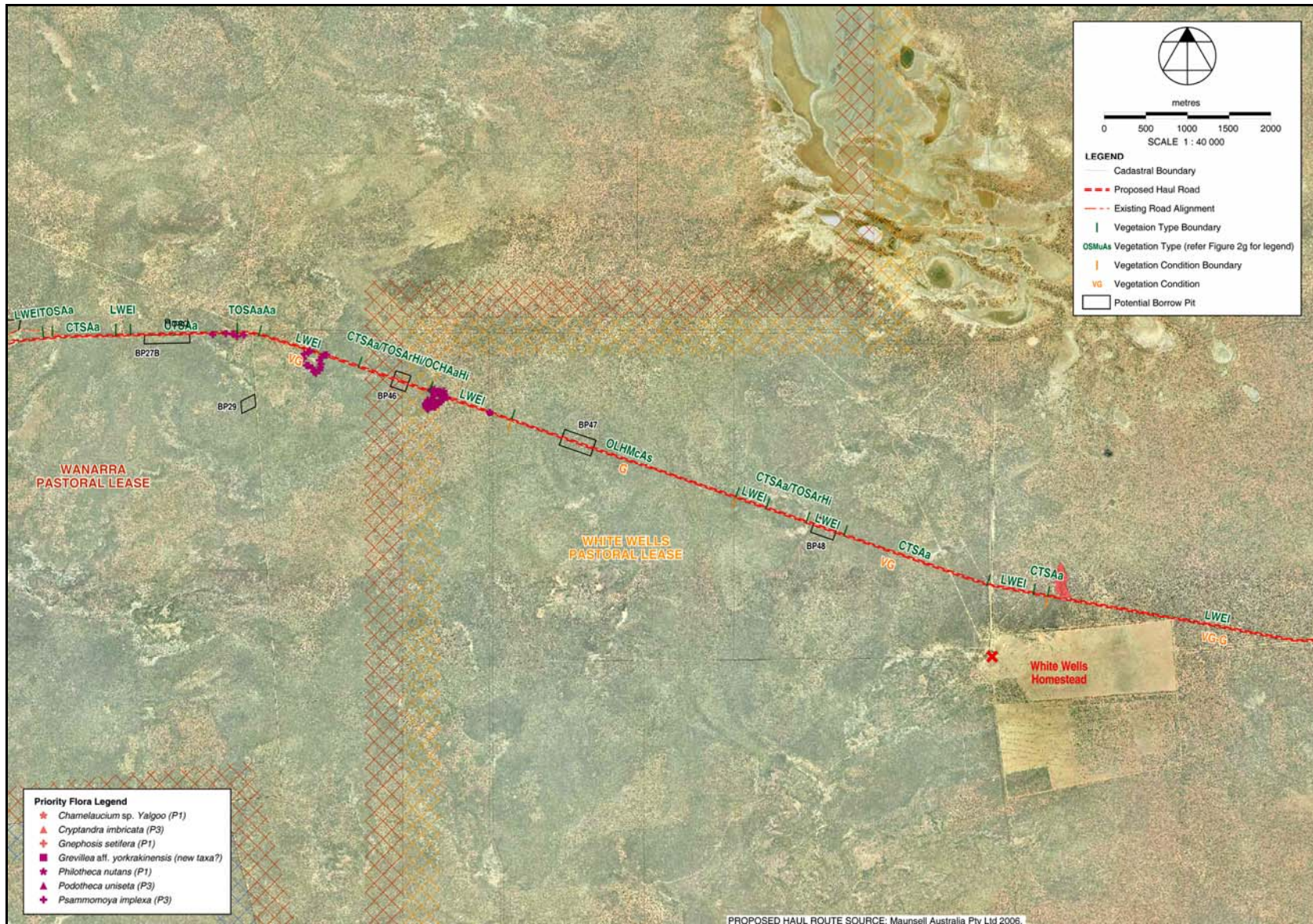
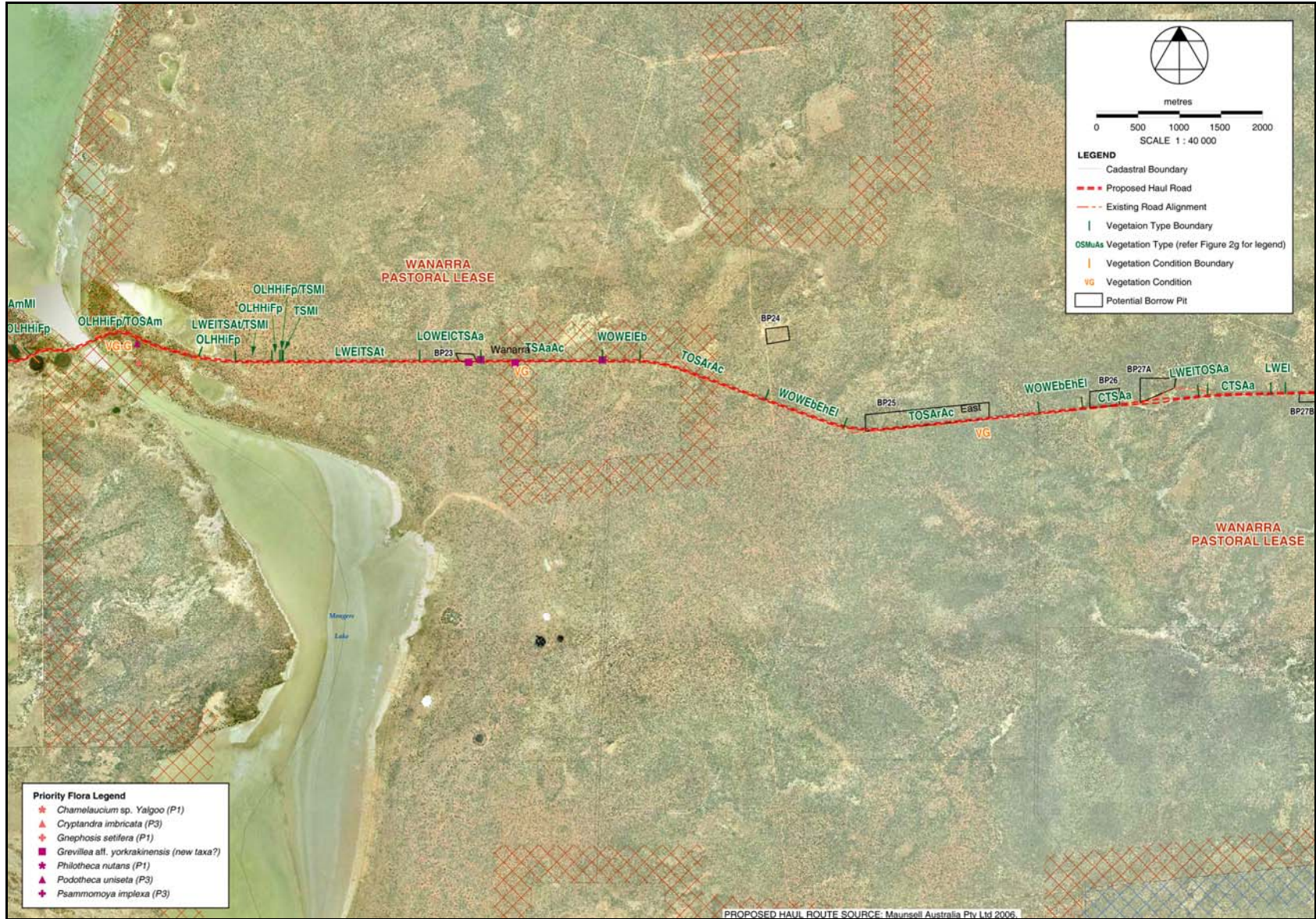


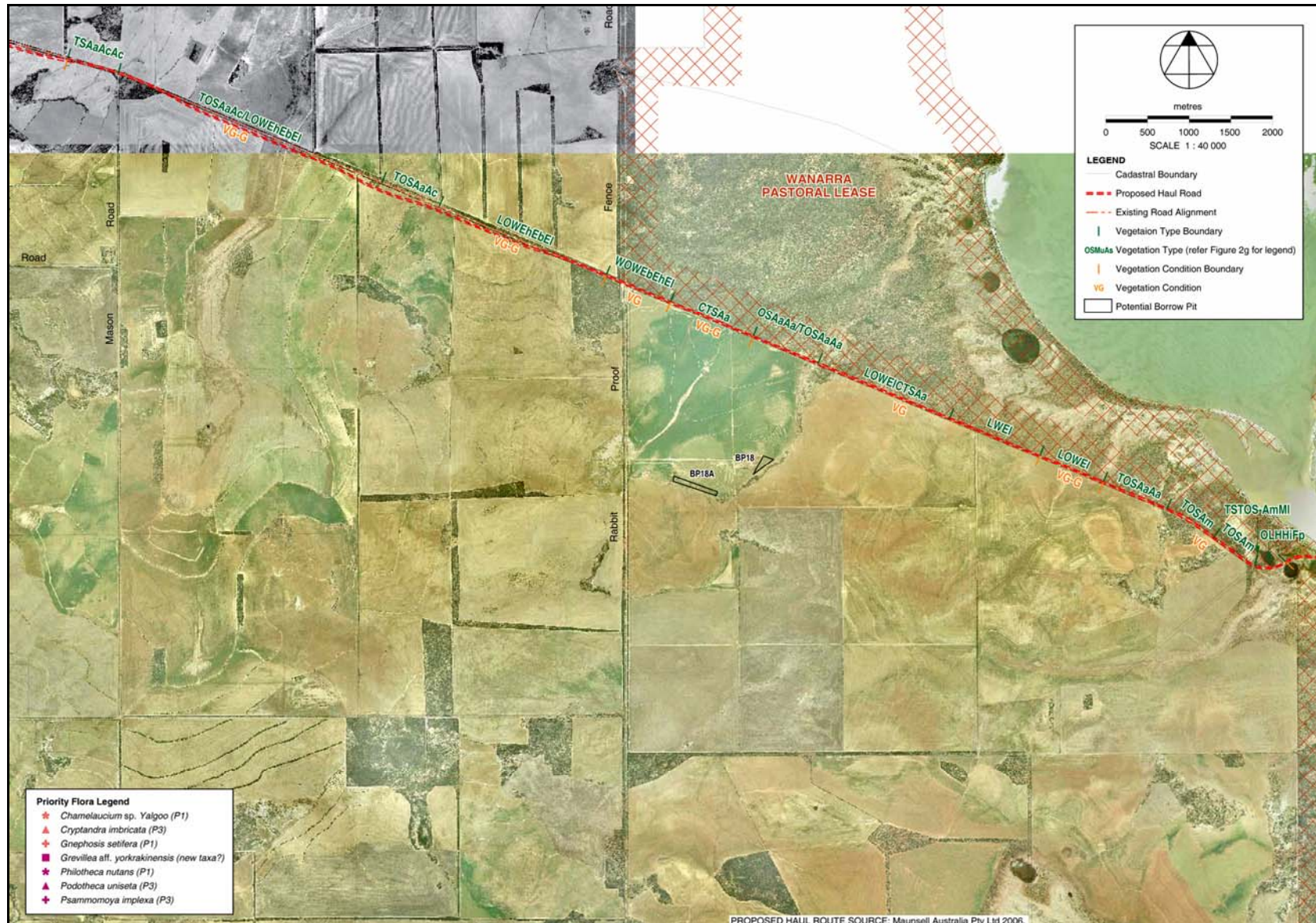
Figure 4a: Potential Borrow Pit Locations.



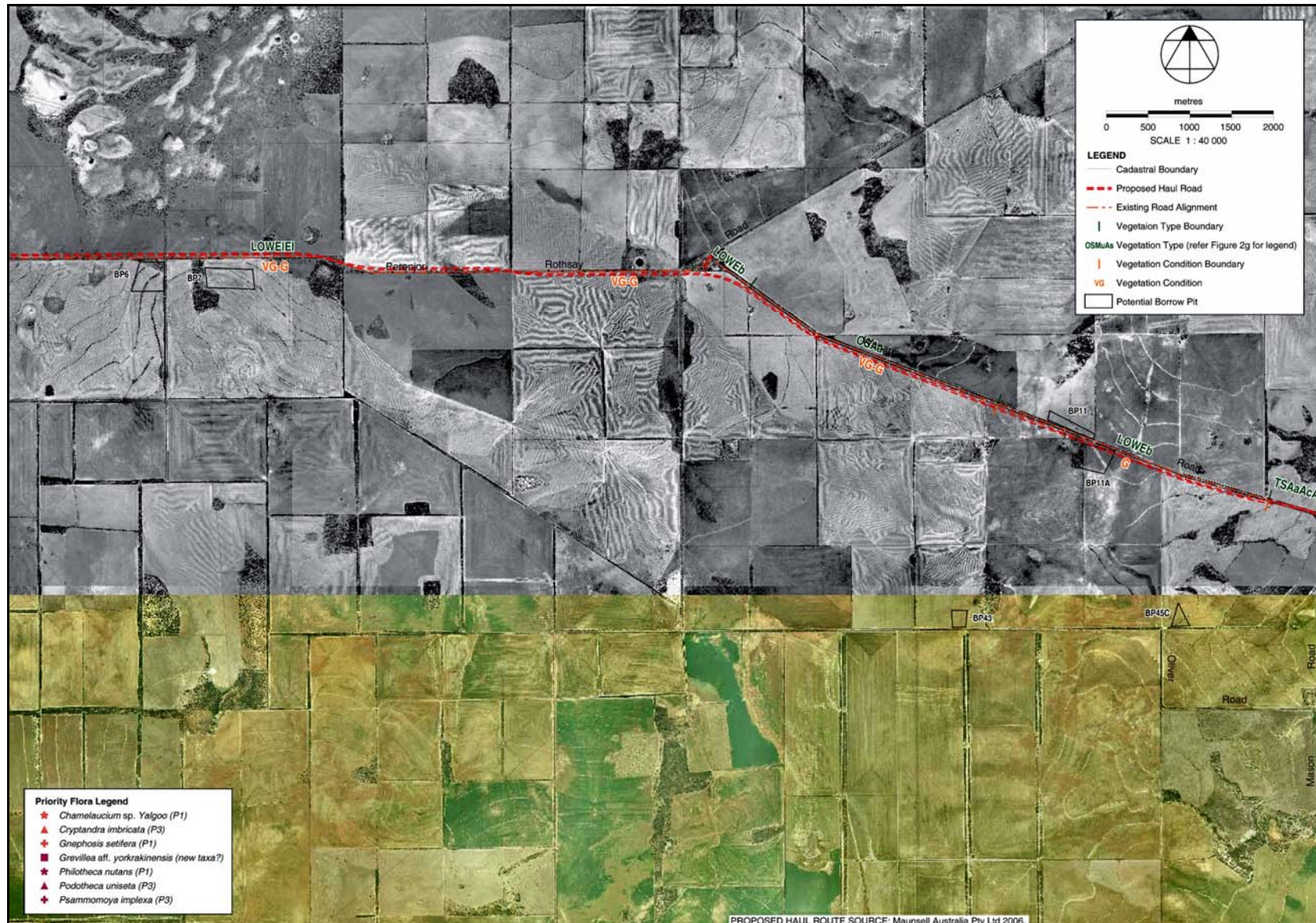
Figures 4b: Potential Borrow Pit Locations.



Figures 4c Potential Borrow Pit Locations.



Figures 4d: Potential Borrow Pit Locations.



Figures 4e: Potential Borrow Pit Locations.

Schedule 2

Extension Hill Hematite Haulage, Road & Rail Siding, Shires of Perenjori & Yalgoo
(Assessment No. 1747)

Table 2 – AMG coordinates for *Cryptandra imbricata* in areas of permitted removal delineated by Figures 3a and b.

Species	Easting (m)	Northing (m)
<i>Cryptandra imbricata</i>	500418	6728301
Location A	502126	6728301
	500418	6727474
	502126	6727530
<i>Cryptandra imbricata</i>	503684	6728206
Location B	504142	6728206
	503684	6727500
	504142	6727500
<i>Cryptandra imbricata</i>	497068	6728864
Location C	497785	6728864
	497068	6727899
	497785	6727899

Schedule 3

Extension Hill Hematite Haulage, Road & Rail Siding Shires of Perenjori & Yalgoo (Assessment No. 1747)

Potential borrow pit areas which are now excluded from borrow pit operations due to the presence of Declared Rare Flora or Priority Species:

BP23;
BP24;
BP29;
BP36;
BP43; and
BP42c