

Preliminary Environmental Impact Assessment and
Environmental Management Plan –
Western Turner Syncline Road Upgrade Project

8 April 2010

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1.0 INTRODUCTION

The Western Turner Syncline road upgrade project involves upgrading a section of the Nanutarra-Munjina road, to provide a safe intersection with roads servicing the Western Turner Syncline Section 10 (**WTS**) iron ore mine. The location of the road upgrade project is approximately 20km west of Tom Price in the shire of Ashburton, and approximately 6km south of the intersection between the Nanutarra-Munjina road and Nameless Valley road.

2.0 DESCRIPTION OF THE PROJECT

The overall project requires upgrading a 1.2km section of the Nanutarra-Munjina road, including adjustment in road level, road sealing, upgrading road shoulders and drainage infrastructure, and construction of two intersections. However only two sections of the project are the subject of this Preliminary Environmental Impact Assessment (**PEIA**); a 250m section at the western end of the project area, and a 40m section at the eastern end of the project area (Figure 1). These sections of the overall project require the use of Clearing Permit CPS 818/4, held by the Commissioner of Main Roads. Clearing for the remainder of the project is authorised under Ministerial Statement 807 (see background section for detail). Clearing will be confined to a 50m width corridor along the existing Nanutarra-Munjina road, and consequently the road upgrade project will require clearing of up to 1.4ha of native vegetation.

Proposed commencement of the road upgrade project is April-May 2010.

2.1 Background

The WTS iron ore mine was assessed by the Environmental Protection Authority (**EPA**) at the level of Environmental Protection Statement (**EPS**), and was approved by the Minister for Environment on 17 September 2009 in Ministerial Statement 807 (**MS 807**). This approval included establishment of an open pit mine at the section 10 deposit, and construction of support infrastructure, including an infrastructure corridor to link the mine to existing facilities at Tom Price. A haul road to Tom Price, and a site access road, will intersect the Nanutarra-Munjina road. To ensure public safety, the Nanutarra-Munjina road in the vicinity of the proposed intersections will be upgraded to the requirements of Main Roads Western Australia (**MRWA**). Consultation with MRWA on the proposed project has been ongoing since the 4th quarter of 2009.

The majority of the road upgrade project is within the WTS Proposal Area approved under Ministerial Statement 807, and is exempt from the requirement for a clearing permit under Schedule 6 clause 2 of the *Environmental Protection Act 1986* (**EP Act**). A 250m section at the western end of the project, and a 40m section at the eastern end of the project, are outside the approved WTS Proposal Area (Figure 1). Clearing of native vegetation in these areas will be undertaken in accordance with Clearing Permit CPS 818/4, held by the Commissioner of Main Roads.

The mine is owned by Rio Tinto Pty Ltd (**the Company**), and will be constructed by NRW Eastern Guruma. The proposed road upgrade will be implemented by NRW Eastern Guruma on behalf of the Company, under the authority of Main Roads Western Australia (**MRWA**).

The construction of the WTS iron ore mine will be managed in accordance with the NRW Eastern Guruma Environmental Management Plan (**EMP**). This EMP will be utilised during construction of the road upgrade project.

2.2 Project area

An overview of the Project area is provided in Figure 1, indicating the extent of potential disturbance under CPS 818/4, the proposed sealed road surface, and road batters (e.g. areas where cut and fill will be required).

3.1.6 Heritage

Non-indigenous heritage was assessed via the Australian Heritage Places Inventory (<http://www.heritage.gov.au>) and the Heritage Council of Western Australia Database (<http://register.heritage.wa.gov.au/>) (Appendix B).

3.1.7 Aboriginal heritage

The WTS Proposal Area was subject to two heritage surveys during 2008 (Jackson et al. 2008, McDonald 2008). Sites that were subsequently registered by the Department of Indigenous Affairs (DIA) in the vicinity of the road upgrade project area are displayed on the DIA database at <http://www.dia.wa.gov.au/AHIS/default.aspx> (Appendix C). An additional heritage survey covering the road upgrade project area is scheduled for mid April 2010.

3.1.8 Sensitive water resources

The potential for any significant lakes, rivers or wetlands, Public Drinking Water Source Areas or Water Reserves within the vicinity of the WTS Proposal area was assessed as part of the EPS, utilising Commonwealth and State government datasets.

3.1.9 Contaminated sites

The DEC contaminated sites database was searched for any known contaminated sites in the vicinity of the road upgrade project area <http://www.dec.wa.gov.au/content/view/5627/2295/> (Appendix D).

3.1.10 Acid sulfate soils

The Western Australian Planning Commissions acid sulfate soils ASSRM dataset (Pilbara Coast) and Planning bulletin 64/2009 were reviewed.

3.1.11 Weeds

The presence of weeds was assessed during the vegetation and flora survey conducted between August and October 2007 (Biota 2007), and in a targeted DRF and Priority flora survey conducted during May 2008 (Pilbara Iron 2008).

3.1.12 Dieback

The project area receives <400 mm of average annual rainfall and is north of the 26th parallel, so dieback was not considered to be an issue.

3.2 Commonwealth referral

The WTS Proposal was not referred under the EPBC Act, as it was considered unlikely to impact a matter of national environmental significance. A further consideration of whether the road upgrade project warranted referral under the EPBC Act was undertaken for this PEIA, including a search of the project area utilising the Department of Environment, Water, Heritage and the Arts protected matters search tool <http://www.environment.gov.au/erin/ert/epbc/index.html> (Appendix E).

4.0 EXISTING ENVIRONMENT

4.1 Land systems

The eastern road upgrade project area is within the Newman Land system, described as rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (van Vreeswyk *et al.* 2004). The western road upgrade project area is within the Table land system, described as low calcrete plateaux, mesas and lower plains supporting mulga and cassia shrublands and minor spinifex grasslands (van Vreeswyk *et al.* 2004).

4.2 Surface hydrology

The project is located within the catchment of the Hardey River. The existing road in the western road upgrade project area intersects a minor ephemeral drainage line, that flow in a

The two vegetation types recorded in the road upgrade project area were considered to be of low conservation significance, representing units that are likely to be widely distributed and relatively well represented in the locality (Biota 2007).

4.4.3 Declared rare flora and Priority flora

No DRF or Priority flora were recorded within the road upgrade project by Biota (2007), or by Pilbara Iron (2008).

The targeted survey undertaken by Pilbara Iron recorded several occurrences of the Priority 3 species *Goodenia* sp. East Pilbara within 120m of the western project area (note these occurrences were originally recorded as *Goodenia* sp. Pilbara calcrete, Florabase indicates this taxon has subsequently been revised to *Goodenia* sp. East Pilbara). This species occurred on a calcrete formation to the south and east of the western project area, that was extensively searched by Pilbara Iron botanists for occurrences of this species. Conditions were considered ideal for recording the species (individuals recorded were flowering and fruiting, and in excellent condition), and determining the extent of habitat. The calcrete formation is bordered by a mixed calcrete/ironstone area (including the western road upgrade project area), which did not yield any occurrences of the species and was considered unlikely to comprise suitable habitat for the species.

4.4.4 Introduced flora

No introduced flora were recorded in the road upgrade project area by Biota (2007), or by Pilbara Iron (2008).

4.4.5 Fauna

A total of 96 terrestrial fauna species were recorded during the Biota (2009a) survey. Three species of conservation significance were recorded, comprising the Rainbow Bee-eater (*Merops ornatus*), the Western Pebble-mound Mouse (*Pseudomys chapmani*), and the Pilbara Olive Python (*Liasis olivaceus barroni*). None of these Threatened Fauna species were recorded within the road upgrade project area.

Based on known fauna distributions and habitat preferences, a total of 21 species of conservation significance (Schedule, Priority, or Migratory species), could potentially occur within the area surveyed by Biota (2009a).

The potential for significant impact to conservation significant fauna due to the WTS Proposal was considered low (Biota 2009a).

5.0 CLEARING OF NATIVE VEGETATION

The road upgrade project requires clearing of up to 1.4ha of vegetation, of which approximately 0.7ha would be permanently cleared for the purpose of road infrastructure. An additional 0.7ha of vegetation may require clearing to allow access during construction. Any areas of temporary disturbance will be rehabilitated following completion of construction.

5.1 Assessment against Clearing Principles.

Assessment against the "10 Clearing Principles" determined that clearing within the project area is not at variance with any of the clearing principles, as detailed in Appendix F.

5.2 Environmentally Sensitive Areas

The area to be cleared does not intersect any Environmentally Sensitive Areas.

6.0 ASSESSMENT OF ASPECTS AND IMPACTS

Table 1: Aspects and Impacts – WTS road upgrade project

	be avoided, or authorisation to disturb will be sought under the <i>Aboriginal Heritage Act 1972</i> .
Surface water/drainage	<ul style="list-style-type: none"> • A minor ephemeral drainage line is intersected by the existing road in the western section of the project area. • The project will have minimal impact to surface water flow.
Wetlands	No wetlands will be impacted by the project.
Groundwater	No dewatering or impact to groundwater is required by the project.
Noise and vibration	No sensitive receivers in vicinity of project.
Visual amenity	<ul style="list-style-type: none"> • The project will cause minor and short term visual impacts during construction.
Public safety and risk	<ul style="list-style-type: none"> • The project is not expected to pose any risk to public safety. • Traffic management protocols will be implemented to MRWA requirements during construction.
Hazardous substances	<ul style="list-style-type: none"> • Bulk fuel storage is not required within the project area. • Hydrocarbons and chemicals will be managed in accordance with the NRW Eastern Guruma EMP. • Potential for environmental impact due to hydrocarbons or chemicals is considered minimal.
Contamination	<ul style="list-style-type: none"> • Hydrocarbons and chemicals will be managed in accordance with the NRW Eastern Guruma EMP. • Potential for environmental impact due to hydrocarbons or chemicals is considered minimal.
Salinity	The project will not lead to salinisation of land or waters.
Acid Sulfate Soils	<ul style="list-style-type: none"> • The ASSRM (Pilbara Coast) is the only dataset available for the Pilbara region, but does not extend inland as far as the project area. • As the project does not require dewatering of groundwater, and is not located within a major drainage line (generally categorised as moderate to low risk in the ASSRM Pilbara Coast dataset), the likelihood of acid sulfate soils being intercepted is minimal.
Statutory land use planning	The Project will be undertaken within the Nanutarra-Munjina road reserve and is not considered to require development approval.

7.0 DECISION TO REFER

Given the scale of the project, the low significance of its impacts to the surrounding environment and the environmental management measures proposed, the project does not require referral under the EP Act or the EPBC Act.

8.0 STAKEHOLDER CONSULTATION

During development of the EPS for the WTS Proposal, extensive consultation was undertaken that included DEC, Department of Water, EPA Service Unit, Eastern Guruma people, Shire of Ashburton, Department of Mines and Petroleum, Conservation Council of WA and the Tom Price Community Advisory Group.

12.0 REFERENCES

Beard, J. S. 1975a, Pilbara Explanatory Notes and Map Sheet, 1:1,000,000 Series, Vegetation Survey of Western Australia, University of Western Australia Press, Nedlands.

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Biota Environmental Sciences (Biota) 2007, A Vegetation and Flora Survey of the West Turner Section 10 Area and Infrastructure Corridor, unpublished report prepared for Pilbara Iron, December 2007.

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Kendrick, P. 2001, 'Pilbara 3 (PIL3 – Hamersley subregion)', in May, J. E. and McKenzie, N. L. (Eds.) 2003, A Biodiversity Audit of Western Australia's Biogeographical Subregions in 2002, Department of Conservation and Land Management, Western Australia.

MWH Australia Pty Ltd (MWH) 2007, Mt Lionel Groundwater Model, unpublished report prepared for Rio Tinto Iron Ore Expansion Projects, December 2007.

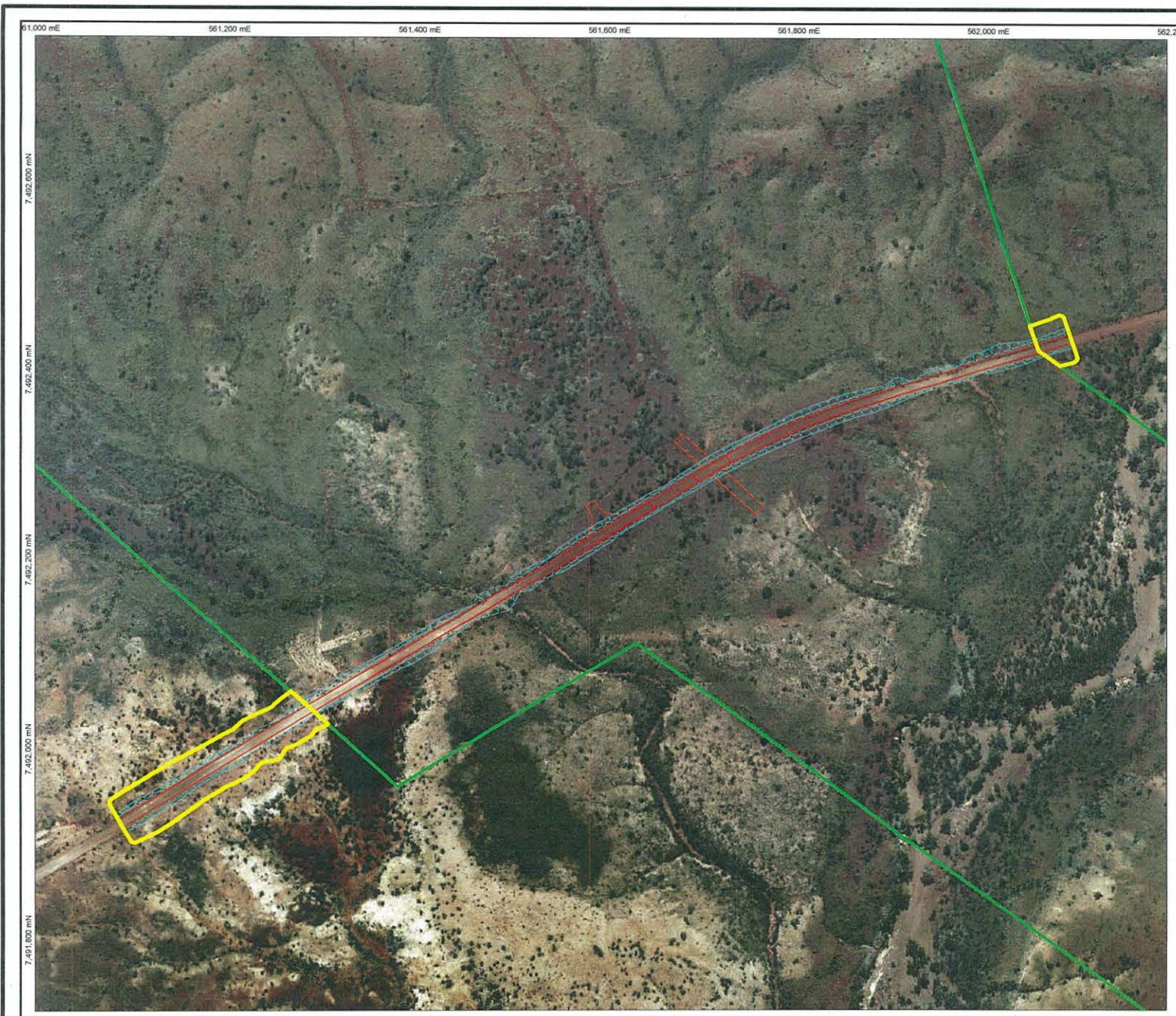
MWH Australia Pty Ltd (MWH) 2008, Mt Lionel Groundwater Modelling: Section 10 Mt Lionel Groundwater Modelling Simulations, unpublished report prepared for Rio Tinto Iron Ore Expansion Projects, May 2008.

McDonald 2008, Report on an Ethnographic Survey and Consultation Regarding Archaeological Sites with the Eastern Guruma Native Title Holders on the Proposed Western Turner Syncline Conveyor and Infrastructure, Pilbara, Western Australia.

Pilbara Iron 2008, Botanical Survey Work for Western Turner Section 10 and Infrastructure Corridor, Document No. 2008/0007, unpublished report.

van Vreeswyk, A. M. E., Payne, A. L., Leighton, K. A. and Hennig, P. 2004, An Inventory and Condition Survey of the Pilbara Region, Western Australia, Department of Agriculture Technical Bulletin No. 92.

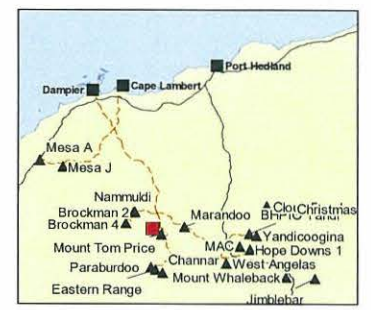
13.0 FIGURES



LEGEND

- ROAD UPGRADE PROJECT AREA
(CLEARING UNDER CPS 818/4)
- WTS PROPOSAL AREA
(CLEARING UNDER MS 807)
- ROAD UPGRADE BATTERS
(CUT AND FILL)
- ROAD UPGRADE SEALED SURFACE

LOCATION MAP



SCALE
1:6000 @ A4

Rio Tinto

STRATEGIC ASSETS - PERTH

**WESTERN TURNER SYNCLINE
ROAD UPGRADE PROJECT
FIGURE 1**

DRAWN: JE
DATE: 7-4-2010
PROJ: MGA ZONE 50 (GDA 94)

Appendix A
Low Impact Environmental Screening Checklist

Checklist - Low Impact Screening Checklist

The Low Impact Screening Checklist is part of the environmental assessment and approval process, refer to in Figure 2 in the Main Roads environmental guideline Environment Assessment and Approvals. It should be noted that the checklist does not address Aboriginal heritage issues. Please refer to Main Roads guideline *Aboriginal Heritage* for the heritage assessment process.

All projects are to be screened to identify those that are Low Impact.

Projects that have "No" to all items are classed as Low Impact and should be implemented using standard contract clauses in the Tender Document Process.

Projects that have "Yes" to any item will require further environmental assessment and will be implemented using an Environmental Management Plan.

Tick "Yes" or "No" for every item.

Project Name Road upgrade at Western Turner Syncline

ITEM NO.	ITEM	Y	N
1	New road or road reserve to be created or expansion of existing road reserve.		<input checked="" type="checkbox"/>
2	Works require clearing of native vegetation outside the maintenance zone.	<input checked="" type="checkbox"/>	
3	Works require clearing of native vegetation that is older than 10 years old within the maintenance zone.	<input checked="" type="checkbox"/>	
4	Works to occur outside normal working hours.	<input checked="" type="checkbox"/>	
5	Passes over, adjoins or drains directly into a wetland or sensitive watercourse.		<input checked="" type="checkbox"/>
6	Local natural drainage regime / hydrology will be changed.		<input checked="" type="checkbox"/>
7	Dewatering, or a new water bore required.		<input checked="" type="checkbox"/>
8	Known potential source of hazardous materials within or adjoining project area. e.g. Acid Sulphate Soils, existing petrol station, industrial site or waste disposal site (landfill)		<input checked="" type="checkbox"/>
9	Buildings will require demolition.		<input checked="" type="checkbox"/>

Completed By:

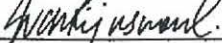
Signature 

Date 30/3/2010

Name Jeremy English

Title Advisor - Government Approvals

To be reviewed by
a Main Roads
Environment Officer

Signature 

Date 30/03/2010

Name Fiona van Rijnsward

Title Environment officer

Comments: Assessed points 2 & 3 on basis "maintenance zone" is area that is ordinarily cleared to maintain the road.

works will be conducted by Rio Tinto under MRWA's clearing permit CPS 818/4.

Appendix B
Australian Heritage Places Inventory Search

- Environment home
- Heritage
- About heritage
- Heritage places
- Heritage in Western Australia
- Full heritage list
- Heritage organisations
- Grants and funding
- Nominating a heritage place
- Managing a heritage place
- Laws and notices
- Publications and resources

You are here: Environment home - Heritage - Heritage places - Heritage in Western Australia

Heritage places in WA

Australian heritage places are included on different heritage lists. On this page you can use a map to find places on the World and National heritage lists; or you can search for places on World, National, State & Territory lists.

Map: World and National heritage places

The map below shows places in WA that are on the World and National heritage lists. If you can't use the interactive map below, see the [list of world and national heritage places in WA](#).

Zoom to a Heritage place on the map

Map Satellite Hybrid

Map data ©2010 MapData Sciences Pty Ltd, PSMA - Terms of Use

Search for heritage in Western Australia

Appendix C
Department of Indigenous Affairs Register of Aboriginal Sites Search



Search Criteria

4 sites in a search box. The box is formed by these diagonally opposed corner points:

MGA Zone 50	
Northing	Easting
7491597	560943
7492592	562140

Disclaimer

Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist. Consultation with Aboriginal communities is on-going to identify additional sites. The AHA protects all Aboriginal sites in Western Australia whether or not they are registered.

Copyright

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Legend

Restriction	Access	Coordinate Accuracy
N No restriction	C Closed	Accuracy is shown as a code in brackets following the site coordinates.
M Male access only	O Open	[Reliable] The spatial information recorded in the site file is deemed to be reliable, due to methods of capture.
F Female access	V Vulnerable	[Unreliable] The spatial information recorded in the site file is deemed to be unreliable due to errors of spatial data capture and/or quality of spatial information reported.

Status

L Lodged	IR Insufficient Information (as assessed by Site Assessment Group)	Site Assessment Group (SAG) Sites lodged with the Department are assessed under the direction of the Registrar of Aboriginal Sites. These are not to be considered the final assessment. Final assessment will be determined by the Aboriginal Cultural Material Committee (ACMC).
I Insufficient Information	PR Permanent register (as assessed by Site Assessment Group)	
P Permanent register	SR Stored data (as assessed by Site Assessment Group)	
S Stored data		

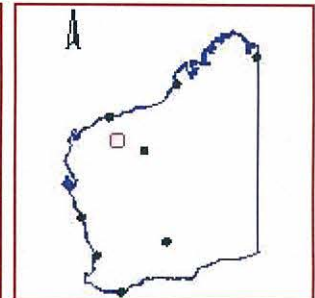
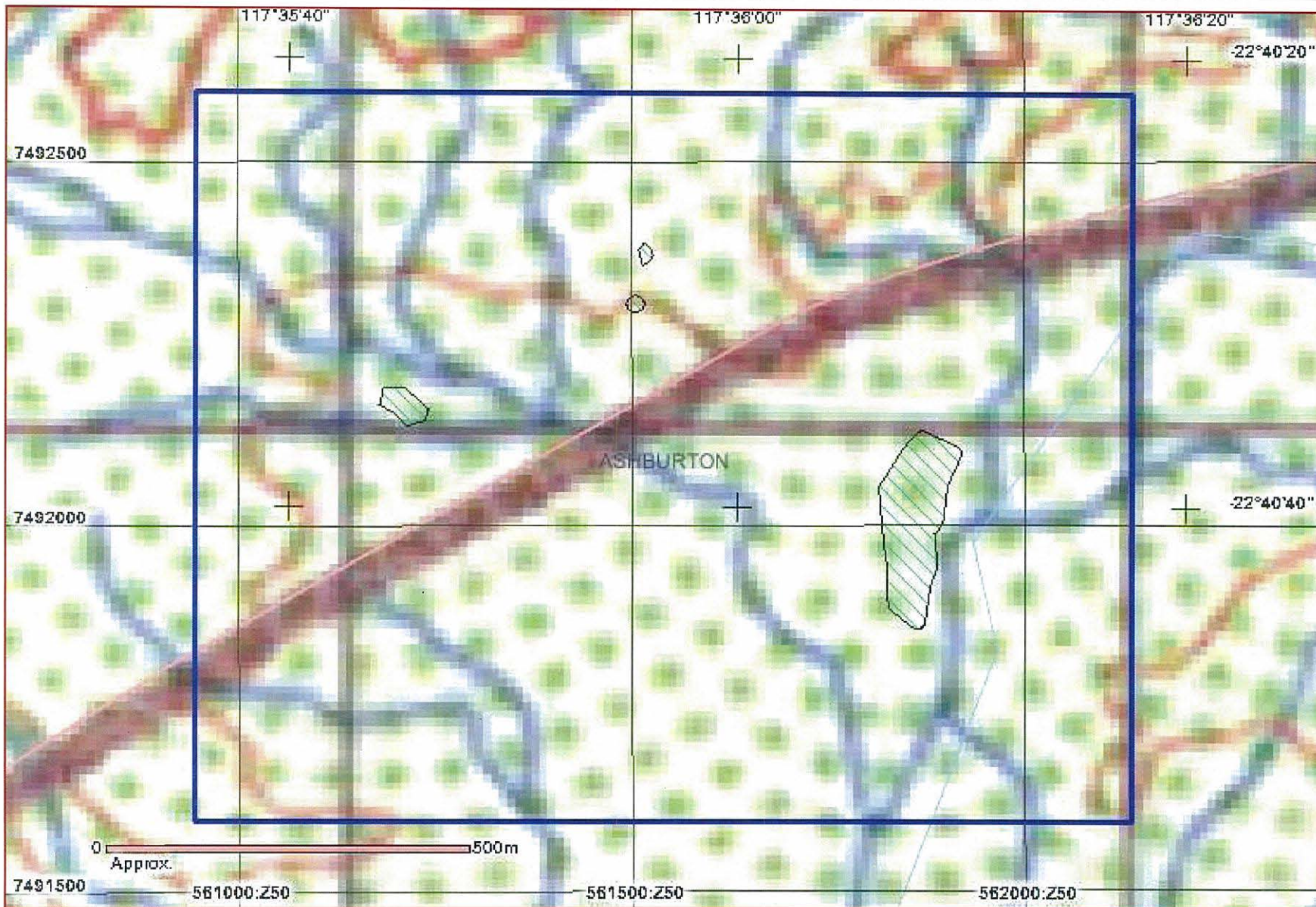
Spatial Accuracy

Index coordinates are indicative locations and may not necessarily represent the centre of sites, especially for sites with an access code "closed" or "vulnerable". Map coordinates (Lat/Long) and (Easting/Northing) are based on the GDA 94 datum. The Easting / Northing map grid can be across one or more zones. The zone is indicated for each Easting on the map, i.e. '5000000:Z50' means Easting=5000000, Zone=50.



Aboriginal Heritage Inquiry System

Register of Aboriginal Sites



Legend

- Highlighted Area
- Town
- Map Area
- Search Area

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Copyright for Native Title Land Claim, Local Government Authority, Mining Tenement boundaries shall at all times remain the property of the State of Western Australia, All rights reserved.

For further important information on using this information please see the Department of Indigenous Affairs' Terms of Use statement at <http://www.dia.wa.gov.au/Terms-Of-Use/>

Appendix D
Department of Environment and Conservation Contaminated Sites Database
Search

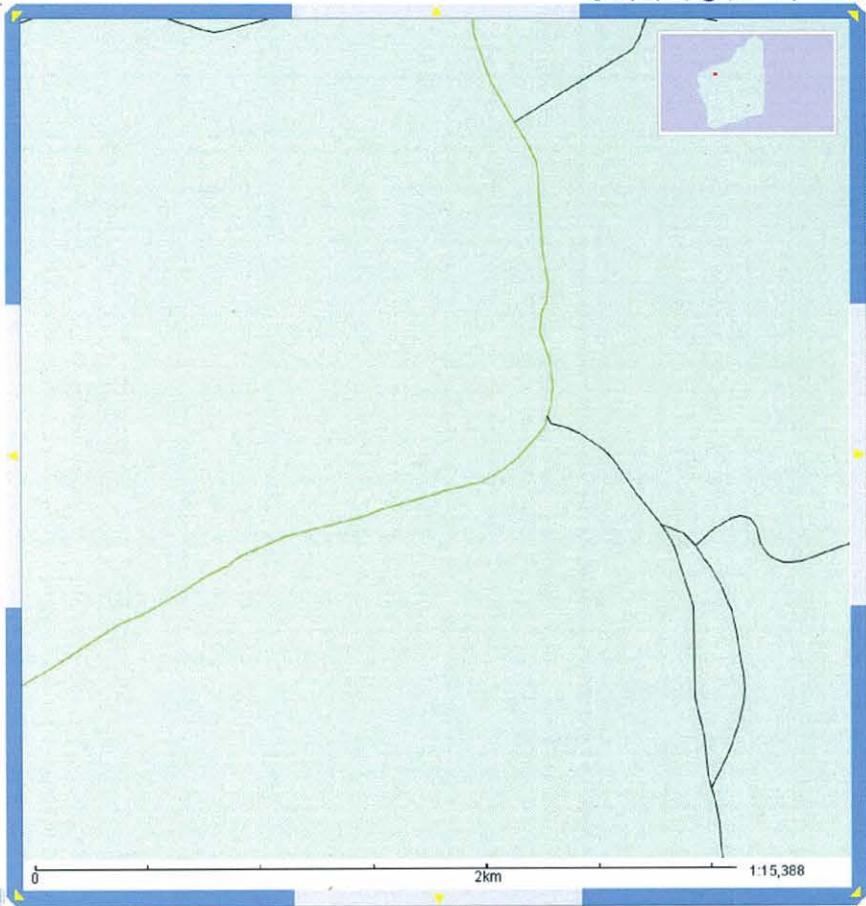


Contaminated Sites Database



[New Search](#) [Find Suburb/Town](#) [Metadata](#) [Map Help](#)

- Coastline
- Boundaries
- Suburbs
- Contaminated Sites
- Transportation
- State Roads
- Roads major
- Roads local
- Society
- Major Towns
- Minor Towns



Search for Known Contaminated Sites

[Switch to Advanced Search](#)

Search Criteria

Street/Lot No.:

Street Name:

Suburb/Town:

Title (Volume/Folio):

Crown Land Reserve No.:

Please enter at least one of the following:
Street Name, Suburb/Town, Title or Crown Land Reserve Number.

Zoom in tool. Click and drag a rectangle

Error on page.

Disclaimer

Internet

100%

Appendix E
Department of Environment, Water, Heritage and the Arts Protected Matters
Database Search



Protected Matters Search Tool

You are here: [Environment Home](#) > [EPBC Act](#) > [Search](#)

1 April 2010 17:48

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Information on the coverage of this report and qualifications on data supporting this report are contained in the [caveat](#) at the end of the report.

You may wish to print this report for reference before moving to other pages or websites.

The Australian Natural Resources Atlas at <http://www.environment.gov.au/atlas> may provide further environmental information relevant to your selected area. Information about the EPBC Act including significance guidelines, forms and application process details can be found at

<http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>

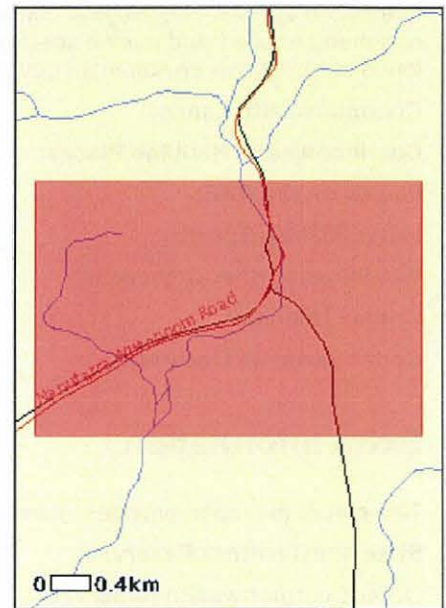
Search Type: Area
Buffer: 0 km
Coordinates: -22.659104,117.589884, -22.684349,117.589884, -22.684349,117.628234, -22.659104,117.628234



Report Contents: [Summary](#)
[Details](#)

- [Matters of NES](#)
- [Other matters protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)
[Acknowledgments](#)



This map may contain data which are
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Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see

<http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance: (Ramsar Sites)	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	None
Threatened Species:	4

Migratory Terrestrial Species**Birds**

[Merops ornatus](#)
Rainbow Bee-eater

Migratory Species or species habitat may occur within area

Migratory Wetland Species**Birds**

[Ardea alba](#)
Great Egret, White Egret

Migratory Species or species habitat may occur within area

[Ardea ibis](#)
Cattle Egret

Migratory Species or species habitat may occur within area

[Charadrius veredus](#)
Oriental Plover, Oriental Dotterel

Migratory Species or species habitat may occur within area

Migratory Marine Birds

[Apus pacificus](#)
Fork-tailed Swift

Migratory Species or species habitat may occur within area

[Ardea alba](#)
Great Egret, White Egret

Migratory Species or species habitat may occur within area

[Ardea ibis](#)
Cattle Egret

Migratory Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [[Dataset Information](#)]

Status Type of Presence

Birds

[Apus pacificus](#)
Fork-tailed Swift

Listed - overfly marine area Species or species habitat may occur within area

[Ardea alba](#)
Great Egret, White Egret

Listed - overfly marine area Species or species habitat may occur within area

[Ardea ibis](#)
Cattle Egret

Listed - overfly marine area Species or species habitat may occur within area

[Charadrius veredus](#)
Oriental Plover, Oriental Dotterel

Listed - overfly marine area Species or species habitat may occur within area

[Merops ornatus](#)
Rainbow Bee-eater

Listed - overfly marine area Species or species habitat may occur within area

Caveat

The information presented in this report has been provided by a range of data sources as [acknowledged](#) at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the *Environment Protection and Biodiversity Conservation Act 1999*. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

[Department of the Environment, Water, Heritage and the Arts](#)

GPO Box 787 Canberra ACT 2601 Australia

Telephone: +61 (0)2 6274 1111

Last updated: Thursday, 20-Nov-2008 14:17:56 EST

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Appendix F
Assessment of Project against 10 Clearing Principles

Assessment of the Western Turner Syncline road upgrade project against the 10 clearing principles.

The western and eastern sections of the road upgrade project, comprising an area of 1.4ha, were assessed against the 10 principles for clearing native vegetation defined in Schedule 5 of the *Environmental Protection Act 1986*. The assessment was undertaken by Jeremy Naaykens, Rio Tinto Botanical Advisor.

This assessment determined that clearing within the project area is not at variance with any of the clearing principles, as detailed below.

Biological information relating to the road upgrade project was sourced from three surveys and their respective reports, that were prepared to support the Environmental Protection Statement for the WTS Proposal. The main Flora report used was 'A Vegetation and Flora Survey of the West Turner section 10 area, and infrastructure corridor' (Biota, 2007). The second report was a targeted Rare and Priority Flora search of various parts of the Western Turner Syncline 10 Project area ('Botanical Survey Work for Western Turner Section 10 and Infrastructure Corridor' (Pilbara Iron, 2008). The third report, from which fauna information was sourced, was the 'Western Turner Syncline Section 10 Development Two-Phase Fauna Survey' (Biota, 2009).

Principle (a) "Native vegetation should not be cleared if it comprises a high level of biological diversity"

Project is not at variance to this Principle.

Two relatively intact vegetation units were recorded in and around the road upgrade project area, both of which are relatively typical of such habitats in the locality. The number of vegetation types encountered when considering the size of the project area is considered to represent an average level of ecosystem diversity. Within the wider WTS Proposal Area, it appears that the range of habitats present supports an average to slightly below average species richness (Biota 2007).

No Rare or Priority flora has been recorded from the project area, and as such the area is not perceived to be a refuge for threatened flora. Four populations of the Priority 3 Flora species, *Goodenia* sp. East Pilbara were recorded to the south and east of the project area; however, as these populations were a minimum of 120m from the project area, they will not be impacted. Further detail on this species is provided below in the assessment of principle (c).

Vegetation units associated with watercourses often exhibit a high level of species richness. However no vegetation units associated with watercourses occur within the road upgrade project area.

Given that the proposed clearing will not impact any vegetation units of high diversity, it can be concluded that it is not at variance with this clearing principle.

Principle (b) "Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia."

Project is not likely to be at variance to this Principle.

No Threatened Ecological Communities (TEC) or Priority Ecological Communities (PEC) occur within the road upgrade project area. The nearest TEC occurs approximately 35 km to the north of the project area (Themeda Grasslands TEC).

None of the vegetation communities identified in the application area are representative of a TEC, PEC or an 'Ecosystem at Risk'.

Principle (e) "Native vegetation should not be cleared if it is significant as remnant vegetation in an area that has been extensively cleared."

Project is not likely to be at variance to this Principle.

The road upgrade project area falls within the IBRA Pilbara Bioregion, in which approximately 99.9% of the pre-European vegetation still exists (Shepherd *et al.* 2001). The majority of the Pilbara Bioregion, including the Hamersley subregion, has never been extensively cleared, however grazing, inappropriate fire regimes and weed invasion have greatly altered the vegetation in some areas.

The vegetation in the application area is recorded as Beards (1975) Vegetation Association: "Hamersley Plateau 567", which comprises Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex & *Triodia basedowii*.

According to Shepherd *et al.* (2001) there is approximately 100% of the "Hamersley Plateau 567" vegetation type remaining. The road upgrade project would not result in the extent of any of the Beard (1975) mapping units falling below 30% of pre-European extent. The vegetation types identified within the project area thus do not represent remnant stands of extensively cleared vegetation units.

Principle (f) "Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."

Project is not likely to be at variance to this Principle.

No permanent watercourses or wetlands are found within the road upgrade project area. One minor ephemeral drainage line traverses the project area, however the vegetation in the vicinity of the drainage line did not differ from the surrounding vegetation type. Clearing within the project area will not impact any vegetation type dependent on a watercourse.

Principle (g) "Native vegetation should not be cleared if the clearing of vegetation is likely to cause appreciable land degradation."

Project is not likely to be at variance to this Principle.

The western road upgrade project area occurs within the Table Land System, while the eastern project area is within the Newman Land System. According to van Vreeswyk *et al.* (2004), these land systems are generally not susceptible to degradation or soil erosion. Any temporary clearing will be rehabilitated and revegetated as soon as practical, minimising the potential for erosion to occur.

Principle (h) "Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."

Project is not likely to be at variance to this Principle.

Pilbara Iron 2008, Botanical Survey Work for Western Turner Section 10 and Infrastructure Corridor, Document No. 2008/0007, unpublished report.

Shepherd, D.P., Beeston, G.R, and Hopkins, A.J.M. 2001, Native Vegetation in Western Australia, Technical Report 249. Agriculture Western Australia, South Perth.

van Vreeswyk, A. M. E., Payne, A. L., Leighton, K. A. and Hennig, P. 2004, An Inventory and Condition Survey of the Pilbara Region, Western Australia, Department of Agriculture Technical Bulletin No. 92.

Appendix G
NRW Eastern Guruma Environmental Management Plan



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PROJECT: Western Turner Syncline

CONTRACT NO: WTSC-C-CC-1001

CLIENT: Rio Tinto

TITLE: Environmental Management Plan

DOCUMENT No: WTS-PLN-ENV-001

REVISION: 2

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2.0 INTRODUCTION

2.1 PURPOSE

NRW Eastern Guruma (the JV) is a specialist civil construction contractor and mining services provider. This Environmental Management Plan (EMP) is to provide a reference document to the JV employees to assist in delivering our environmental objectives and our Client's environmental objectives. The JV will commit to the Client's contractual documentation and where conflict exists between the JV's EMP and the Clients' contractual documentation, the later shall prevail.

2.2 PROJECT OVERVIEW

The Scope of Works is to complete earthworks, drainage and mining at Western Turner Syncline (Section 10) and establish ancillary infrastructure.

2.3 STRUCTURE AND SCOPE

This EMP defines the JV's commitments and responsibilities to environmental management on the project site. It incorporates legal and other compliance requirements and best practice techniques (where practicable) into procedures for managing environmental aspects.

The environmental aspects included in the EMP include the following:

- Waste Management;
- Hydrocarbons and Chemicals Management;
- Water Management;
- Noise Management;
- Dust Management;
- Greenhouse Gas Management;
- Vegetation Clearance, Topsoil Management;
- Borrow Pit Management;
- Rehabilitation and Decommissioning;
- Fire Management;
- Sewage Management;
- Indigenous and Heritage Site Management;
- Fauna Management;
- Weed Management;
- Fibrous Material Management; and
- Emergency Preparedness and Response.

4.0 LEGAL AND OTHER REQUIREMENTS

The JV will comply with all relevant federal, state and local legal requirements. Personnel working for and on behalf of the JV will be made aware of Company, Client, legal, and other compliance requirements through inductions, specific training and regular communication.

4.1 LEGISLATION

The key environmental legislation relevant to the nature of project works includes, but not limited to:

Western Australian Legislation (including subsidiary regulations):

- Aboriginal Heritage Act 1972;
- Agricultural and Related Resources Protection Act 1976;
- Dangerous Goods Safety Act 2004;
- Conservation and Land Management Act 1984;
- Contaminated Sites Act 2003;
- Environmental Protection Act 1986;
- Explosives and Dangerous Goods Act 1961;
- Mining Act 1978;
- Mines Safety & Inspection Act 1995;
- Rights in Water and Irrigation Act 1914;
- Soil & Land Conservation Act 1945; and
- Wildlife Conservation Act 1950;

Commonwealth Legislation:

- Aboriginal and Torres Strait Islander Heritage Protection Act 1984;
- Environment Protection and Biodiversity Conservation Act 1999;
- National Greenhouse and Energy Reporting System Act 2007; and
- Ozone Protection and Synthetic Greenhouse Gas Management Act 1989

A copy (hard or electronic) of relevant Environmental Acts and Regulations for the project shall be available through the JV Project Manager.

4.2 WORKS APPROVALS, LICENCES AND PERMITS

The JV will ensure that all approvals, licences and permits are in place before commencing works. The JV will obtain the necessary approvals as stated in the contract. Confirmation shall be received from the Client that all other relevant approvals have been obtained and a copy received. The JV will comply with conditions of approvals, licenses and permits and monitor this compliance on a regular basis. Where conflict exists between this EMP and any conditions in approvals, licences or permits, the later requirements shall prevail.

and sensible action, if it is safe to do so. The appropriate supervisor or manager shall investigate hazards to ensure that remedial action is taken and that the particular hazard no longer presents a risk to the environment.

The table below details the JV positions and personnel associated with the project. Please note that positions and personnel are subject to change. Perth-based positions provide off-site support from Perth and on site as required.

JV Key HSE Project Personnel

Position	Name	Location
Project Manager	Brian Bailey	Site
General Manager - HSET	Bob McNair	Perth
HSE Superintendent and Environmental Representative	Brian Russ	Site
Environmental Coordinator	Clyde Stotzer	Perth

5.2 TRAINING AND AWARENESS

The training needs of employees will be identified and documented prior to project mobilisation. Required training will be provided and training records maintained and submitted to the Client.

As a minimum, all JV employees and sub-contractors will receive an induction prior to commencing work on the project site. The induction will include relevant environmental aspects including (but not limited to);

- Incident Management;
- Flora and fauna (including significant/priority species);
- Clearing and ground disturbance;
- Aboriginal heritage;
- Waste management;
- Hydrocarbon and chemical management; and
- Water management.

Toolbox topics during the course of the project will be utilised to raise awareness about such items as:

- JV Environmental Policy;
- Legislative, contractual and other compliance requirements;
- Inspections;
- Incident Management;
- EMP requirements for managing project aspects and impacts;
- Spill Management;
- Fire Management; and
- Emergency Response Procedures

5.4.3 Waste Management

The types of waste generated from the JV's activities may include mineral wastes, hydrocarbon wastes and putrescible wastes. Inadequate waste management may result in pollution that is non-compliant with legislation, windblown litter, and safety and health hazards.

To minimise the impacts of waste on the environment, the JV will:

- Reduce, reuse and recycle where ever possible;
- Segregate waste into hydrocarbon waste, recyclable waste, putrescible waste and inert waste;
- Organise for controlled waste to be removed from site by licensed operators on a regular basis (NB: tyres may be disposed off within the waste dumps, provided Client approval has been received);
- Dispose of uncontrolled waste at an off-site land-fill facility;
- Not dispose of any waste materials by fire;
- Ensure that temporary waste laydown areas are neat and clearly sign posted;
- Secure waste to prevent wind-blown litter;
- Provide adequate and appropriate waste containment facilities at work areas; and
- Keep work areas free of litter (including cigarette butts);

Reporting and records

- Report and maintain information as required on the volume and type of wastes removed from site each month by the JV or JV contractors, to the Client; and
- Retain copies of all waste disposal receipts and controlled waste tracking information.

5.4.4 Hydrocarbons and Chemicals Management

The hydrocarbons and chemicals used on the projects are primarily fuels and lubricants for equipment fuel and maintenance. If improperly managed, these materials may be unintentionally released into the environment resulting in pollution of soil, surface water and ground water.

To minimise the risk of pollution from hydrocarbons and chemicals, the JV will:

- Request approval from the Client to bring chemicals onto site;
- Maintain a list of hydrocarbons and chemicals, including copies of their Material Safety Data Sheets (MSDS) on site;
- Ensure that relevant MSDS are available at the work area;
- Ensure that primary containers are correctly labelled;
- Provide secondary containment (100% containment of trajectory, 110% capacity of largest container and 25% of total capacity of materials) for hydrocarbons and chemicals;
- Where possible, not store hydrocarbons within 100m of natural drainage lines;
- Only store hydrocarbons and chemicals and conduct equipment maintenance in designated/approved areas;

- Where practicable, put in place appropriate temporary drainage to prevent erosion and impacts on rehabilitation and vegetated areas;
- Minimise usage of water and minimise temporary impacts on local drainage patterns;
- Implement control measures so as to minimise the risk of contamination entering surface water features;
- Construct sumps in appropriate locations to contain water run-off from project activities;
- Only wash vehicles and equipment in designated and approved locations; and
- Install and maintain wash bays which treat water used for washing vehicles on site in locations designated by the Client.

Groundwater

- Comply with conditions of the Ground Water Licenses; and

Reporting and records

- Record and report the volume of water abstraction in the Client monthly environmental report;
- Use a water meter approved by the company to meet requirements of the Client's Ground Water Licenses; and
- Pollution and erosion events, hazards and 'near miss' situations will be reported as per incident and hazard reporting requirements.

5.4.6 Noise and Vibration Management

Given the remote location of the works, nuisance noise and vibration is unlikely to present an issue. In the event that equipment noise is raised as an issue, noise tests will be carried out to determine the extent of the problem and remedial action taken. The JV will also ensure that:

- Statutory Requirements and Management Limits for noise abatement are adhered to. In particular, noise monitoring at residences adjacent to the mine shall not exceed the ambient noise levels by more than 7dB LA;
- All machinery and equipment complies with relevant standards and is maintained in good working order; and
- Public complaints related to noise events are reported as incidents, documented, investigated and addressed.

Whilst environmental noise is unlikely to present an issue, noise has the potential to impact individuals on site. Please refer to the JV Safety Management Plan for the management of noise from a health and safety perspective.

5.4.7 Dust Management

Excessive dust may be emitted from earthwork activities when working in hot and dry environments. Dusty conditions may lead to reduced visibility and can be a source of discomfort for workers. When working near communities, excessive dust has the potential to impact on the amenity of the area and may become a source of nuisance.

- Supervision is to double check the clearance area marked out on the ground, against the area indicated on the Clearing Permit before any clearing commences, signing off that this has been carried out; and
- High-risk clearing will be supervised.

Clearing

- Not strip top soil during very wet or dry conditions, to prevent breakdown of soil structure and excessive dust generation, respectively.
- Stockpile or windrow topsoil and vegetation cover away from water courses;
- Ensure topsoil and subsoil, as defined by the Client are stockpiled separately;
- Ensure that where possible, topsoil and subsoil stockpiles are placed on areas that are already disturbed;
- Ensure topsoil stockpiles do not exceed one dump load in height;
- Ensure that windrows are broken to allow drainage;
- Ensure that stockpiled material is not used for any purposes other than revegetation;
- Signpost topsoil and subsoil stockpiles and identify them on mine plan maps;
- Avoid clearing of large trees wherever possible;
- Stockpile felled timber and logs for use in rehabilitation;
- Only use designated tracks/roads. Off-road traversing is prohibited. In the event of an occurrence it will be reported as an incident of unauthorised land disturbance; and
- Highlight specific management requirements to employees prior to clearing in close proximity to a sensitive area or exclusion zone;

Reporting and records

- Record and report information on areas disturbed and volume of topsoil stripped and stockpiled in the Client Soil Data Sheet.

5.4.10 Borrow Pit Management

Borrow pits created for raw earth resources require special management consideration due to the degree to which they alter the original landscape. The JV will develop a Borrow Pit Management Plan including a checklist before borrow pit creation (or the Client plan and checklist if required), to consider the following factors:

- Relevant excavation and vegetation clearance permits must be obtained;
- Clearance boundary must be demarked in the field by a surveyor team and double checked by supervision;
- Consideration is given to any heritage or rare flora and fauna concerns in the area, in particular conditions stated in Ministerial Statement 807;
- Water courses, heritage sites and priority flora are avoided by 50m;
- Vegetation and topsoil stockpiles locations are predetermined; and
- The borrow pit remaining will be free draining and appropriately revegetated.

- Equip hydrocarbon and chemical storage facilities with approved fire extinguishers;
- Equip light vehicles with 1 x 4.5kg capacity extinguishers;
- Equip mobile plant with 1 x 9kg capacity extinguisher;
- Equip fixed plant with portable fire extinguishers;
- Ensure that personnel are trained in the use of fire extinguishing equipment;
- Obtain hot work permits for work that has the potential to create ignition sources;
- Ensure Oxy/welding activities have a 3m radius area around them cleared of combustibles;
- Ensure that material does not build-up on the underside of vehicles by regular pre-start checks (eg around the exhaust manifold);
- Make available adequate fire suppression equipment for hot works within 3 meters of vegetation;
- Ensure project personnel are aware of fire prevention measures in work areas;
- Ensure no fires or burning occurs in the JV work area.
- Dispose of cigarettes in an approved and controlled manner; and
- Use of water trucks with water cannons by trained personnel.

Reporting and records

- Report fires as incidents.

5.4.13 Sewage Management

Sewage facilities need to be managed to prevent pollution of the environment and minimise the risk of health issues related to inadequate hygiene management.

To manage sewage and grey water, the JV will:

- Provide approved portable toilets on site;
- Ensure portable toilets are adequately secured;
- Organise a licensed contractor to maintain and handle portable toilets in a safe manner to reduce odour and prevent unhygienic situations;
- Ensure that sewage tanks are emptied at a frequency that ensures that such a tank does not reach capacity and overflow; and
- Ensure that toilet cisterns are in good repair.

Reporting and records

- Report any sewage tank overflow and incorrect sewage disposal as an incident.

5.4.14 Indigenous and Heritage Site Management

The JV respects the beliefs and culture of traditional land owners. As such, it is important that Heritage Sites are not impacted by project activities unless approval under the Aboriginal Heritage Act has been obtained to do so.

Western Turner Syncline is free from Ruby Dock, whereas Tom Price has Ruby Dock infestations. Ministerial Conditions set for the project stipulates that no new weed species shall be introduced to the area as a result of project works.

To prevent the spread of weeds during project activities, the JV will:

- Clean down earthmoving equipment prior to arrival on site and prior to leaving site;
- Check that equipment is free of soil and plant material, and complete Weed Hygiene Certificates for all equipment; and
- Minimise the disturbance to natural vegetation to limit invasion by introduced species.

Reporting and records

- Maintain Weed Hygiene Certificates on site;
- Report new outbreaks of weeds in the project area as an environmental incident; and
- Report incidents relating to a failure in weed hygiene procedures.

5.4.17 Fibrous Material Management

Fibrous materials including asbestos occur naturally in the geology of the Pilbara. Please refer to the JV's Safety Management Plan for the management of fibrous materials.

6.0 EMERGENCY PREPAREDNESS RESPONSE

The identified potential emergency events are significant spills, cyclone and major storm events, fires, and unauthorised activities. A site specific Emergency Contact List will include details of emergency response personnel, responsibilities, contact details of emergency services and site specific maps. Emergency response procedures will be communicated to all personnel (refer to Project OHSMP for emergency response procedures). The JV shall comply with the Client's site Emergency Response Plan/s so as to ensure the safety of personnel and minimum adverse impact to the environment. JV personnel will join the site Emergency Response Team and participate in training and emergency exercises.

Emergency response drills will be performed in conjunction with the Client to test the effectiveness of Emergency Response Plans. After an emergency event or drill exercise, the Emergency Response Plans will be reviewed and revised to include improvements necessary for effective environmental management. Emergency response plans will be revised whenever an inadequacy is identified through audits, inspections or general observation. Any changes to the Emergency Response Plans will be communicated to all project personnel.

7.2 COMPLAINTS

The JV recognises that project activities may temporarily impact on the comfort and convenience of others. All complaints will be recorded as an incident. To ensure complaints are addressed satisfactorily and do not re-occur, the JV will prepare a report which shall include:

- Full details of the complaint, including relevant operations and weather conditions at the time;
- An assessment on the validity of the complaint;
- Details of any controls that were in place at the time of the complaint; and
- Details of corrective actions taken to prevent re-occurrence.

The report shall be submitted to the Client within 24 hours of the complaint.

7.3 ENVIRONMENTAL INCIDENT REPORTING AND INVESTIGATION

The JV views an environmental incident as any one of the following:

- A situation that is non-compliant with the EMP, company, legislative, contractual or other requirements;
- Any event that results in unplanned adverse environmental impact or pollution; or
- Any unauthorised activity.

Examples of environmental incidents include impacts on:

- Land (spill, disturbance, fire, erosion, acid rock drainage);
- Flora (vegetation disturbance, weed infestation);
- Fauna (death, disturbance, injury);
- Air (noise, dust, odour, other emission);
- Waste (incorrect disposal, contamination);
- Water – ground (contamination, unauthorised abstraction);
- Water – surface (spill, uncontrolled discharge, sedimentation);
- Non-compliance with JV, Client, government or other regulatory requirements; or
- Community complaint.

To manage incidents and reduce the risk of recurrence, the JV will:

- Utilise pre-job planning and job hazard analysis tools (JHA and Take 5);
- Communicate to project personnel the need to report environmental incidents to the Work Area Supervisor and Site Environmental Representative;
- Ensure incidents are recorded on the JV Incident Report Form and Investigation Form or Client Incident Report Form;
- Implement immediate corrective actions to minimise the extent of environmental impact;
- Promptly notify the Client of an environmental incident occurrence;
- Ensure that the JV Head Office and the Client are immediately informed of any incident and receive a copy of the completed Incident Report Form including details of any investigation and actions within 24 hours wherever possible; and



8.0 REVIEW AND IMPROVEMENT

8.1 ACTION REGISTER

An Action Register will be maintained for each project to document and track corrective and preventative actions, as well as proactive initiatives to improve environmental performance.

The JV will maintain an Action Register which documents:

- Actions required;
- Schedule for completion; and
- Nomination of responsibilities.

The Site Environmental Representative will be responsible for the management of the Action Register and will:

- Review outstanding action items on a weekly basis with project management;
- Review the effectiveness of corrective and preventative actions;
- Assist project management/supervision to organise resources to complete action items;
- Check that action items are completed within the nominated time frame; and
- Assist project management/supervision to verify that action items are completed satisfactorily.



Rio Tinto Management Plans

Western Turner Syncline Section 10 Iron Ore Project – Environmental Management Plan (*Strategen 2009*)

RTIO-HSE-0013504 Weed Management Plan

RTIO-HSE-0017342 Tom Price Ground Water Operating Strategy

RTIO-HSE-0011596 Soil Resource Management

RTIO-HSE-0015216 Borrow Pit Management

Rio Tinto Procedures

RTIO-HSE-0043075 Clearing Procedure

RTIO-HSE-0013703 Refrigeration and Air Conditioning Gas Management

RTIO-HSE-0010867 Spill Response

Rio Tinto Guidance Notes

RTIO-HSE-0072682 NGER Reporting Guidance Note

Rio Tinto Reports

RTIO-HSE-0015107 NGER Reporting Format

Rio Tinto Forms

RTIO-HSE-0043306 Clearing Permit Form

Rio Tinto Standards

E2-E10RT Environmental Standards

Rio Tinto Specifications

DC - N001 Environmental Design Principals-Permanent Facilities

DC - N001 Environmental Design Principals-Temporary Facilities

Rio Tinto Guidelines

RTIO-HSE-0012439 Controlled Waste Guidelines

Appendix H
Main Roads WA – Revegetation Plan for Pastoral Areas

Main Roads WA – Revegetation Plan for Pastoral Areas

Condition 14(e), CPS 818

Date:	30 August 2010	Project:	Western Turner Syncline Nanutarra-Munjina Rd Upgrade Project.
Manager:	Main Roads WA / Rio Tinto Iron Ore (RTIO)		
Location and size of clearing:	For project areas located within the pastoral / rangelands region north of the agricultural area as described in the Environmental Protection Authority's Position Statement No.2.		
Location and size of revegetation:	Primarily for areas that were cleared for searching and extracting road building materials (e.g. borrow pits, etc.), and other project related temporary clearing.		
Clearing description:	Machine clearing.		
Revegetation description:	Replacement of topsoil material regeneration.		
Reason for revegetation:	Revegetation of temporary cleared areas, in accordance with condition 14 of clearing permit CPS 818.		
Revegetation / rehabilitation requirements:			
Site preparation:	<p>All vegetation will be cleared from the works area and non-weed infested vegetation is stockpiled. Stockpiled vegetation will be placed in a manner that will prevent damage to adjacent vegetation by machinery. Weed infested vegetation will be disposed of at an appropriate site and not used for revegetation purposes. Burning of the cleared vegetation will not be permitted.</p> <p>Topsoil will be stripped to a maximum depth of 100mm, and will be stored in a weed free (as far as possible) area, as close as possible to the area to be rehabilitated. Topsoil will be placed in windrows of less than 1.5m in height and reinstated as soon as practicable to maintain viability of in-situ seeds.</p>		
Weed control:	<p>Appropriate weed control will be carried out when weeds are present, both prior to topsoil stripping and where weeds become established on or between the stockpiled materials. Weed control will take place prior to the respreading of topsoil to ensure weeds are killed and not transported to other areas.</p> <p>Control measures include the removal of weeds to an approved dumpsite, or treatment of weeds such as by using herbicides mixed in accordance with manufacturer's instructions and applied by a licensed operator. Where practicable, weeds will be removed prior to or when they are in flower, and prior to seeding.</p> <p>All machinery will be cleared of soil build up and vegetative material before entering and leaving the site to help minimise the transportation of weeds and their seeds.</p> <p>Exposed areas such as bare batters and borrow pits shall be promptly rehabilitated to reduce the potential for weed establishment. Where works are adjacent to good quality vegetation, where weeds from within the project area are likely to spread to and result in environmental harm to the adjacent area, those weeds will be controlled annually until 12 Dec 2012.</p>		