

# Addendum

**To:** Helen Butterworth, Office of the Environmental Protection Authority  
**From:** Dean Carter, Macarthur Minerals Limited  
**Date:** 27 May 2013  
**Re:** Changes to MMS' Ularring Hematite Project Environmental Review Document (Rev2)

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## Introduction

Macarthur Minerals Limited (MMS) submitted the final version of the Environmental Review Document (ERD) for their Ularring Hematite Project (the Project) to the Office of the Environmental Protection Authority (EPA) on 14 March 2013. Following clarification of some Project details during their assessment, the EPA requested MMS provide an addendum to the ERD outlining some minor changes. This document has been provided to the EPA to confirm the discussed changes. A new revision of the ERD (Rev5) has also been provided, however, due to the size of the document, the changes stated in this addendum were not included and as such, both documents are required to be read in conjunction.

A total of four changes to the Project have occurred since the submission of the ERD (Rev2). These changes are:

- An amendment to the Project Development Area (PDA) due to the inclusion of an alternative haul route option between the Central and Banjo deposits
- Removal of two potential groundwater supply source options (Snark and Moonshine options)
- Inclusion of a water supply pipeline alignment and borefield at the Vector groundwater supply source option site
- Relocation of the magazine storage area, following a request by the EPA.

Each of these changes is detailed in the following sections. As these amendments have implications to the proposed extent of clearing for the Project, revised versions of the Key Proposal Characteristics table (refer to Table 1, page 1 of the ERD) and the Summary of Project Components table (refer to Table 5, page 6 of the ERD) have also been included.

## Change to Project Development Area

Figure 3 of the ERD shows the PDA boundary in relation to MMS mineral tenement holdings. Currently, a section of the haul road between the Central MOC and the Banjo deposit extends beyond the boundary of mining lease M30/251, into exploration license E30/321. As per the *Mining Act 1978*, mining related activities (excluding exploration and prospecting) cannot occur within exploration license areas. As such, MMS wish to include in the EPA assessment, the option to realign the section of haul road between the Central MOC and the Banjo deposit to be wholly within mining lease M30/251. This will be referred to as PDA Option 2. The two PDA options are shown on Figure 1 (attached).

The total area of the original PDA area was reported in the ERD as 2,818 hectares (ha) (refer to Table 1, page 1 of the ERD), with the total length of the original haul road between the Central MOC and the Banjo Deposit (Option 1) being approximately 7.6 km in length and 20 m in width (15.2 ha). Should PDA Option 2 be implemented, this would reduce the length of the haul road required between the Central MOC and the Banjo Deposit to approximately 4.7 km in length (9.3 ha). However, it is the EPA's preference to keep both options available during the assessment to minimise the possibility of amendments post-assessment. As such, MMS has not requested any change to the total area of the PDA.

Vegetation surveys have been completed for the entire PDA to the standard required for environmental impact assessment (EIA). A small portion of PDA Option 2 (approximately 0.8 km, being 1.6 ha of

disturbance) does not fall within the existing vegetation survey areas. This area has been shown on Figure 1 (attached). Discussions held with the EPA regarding this matter have indicated that due to the known presence of Priority flora species in the surrounding area, a targeted survey may be required in the un-surveyed area prior the commencement of any disturbance activity.

### Updates on groundwater supply options and required infrastructure

Following the final submission of the ERD, MMS undertook some further groundwater exploration work within tenements surrounding the Project area. Test-pumping was conducted for two bores, one drilled to the west of the Snark Deposit (LGWB016) and one in the Moonshine Deposit, south of the Banjo Deposit (LGWB009). The results of the pump tests estimated the maximum duty of each bore to be only 2-3 liters per second (L/s) and 1-2 L/s (respectively), providing a combined maximum of 5 L/s.

As detailed in the ERD, MMS estimates the Project requires approximately 10.4 L/s (or 0.9 megalitres per day; refer to Table 6 on page 7 of the ERD and Table 2 of this addendum). Given the low maximum duty rate of the Snark and Moonshine water supply sources, these were not considered a viable option for the Projects water source and have therefore been removed from the scope of the Project. MMS are now focusing on the Vector Resources water source located at their Gwendolyn Gold Project site, as discussed in Section 8.1 (page 58) of the ERD, and illustrated in Figure 2 of this addendum.

Due to the location of the Gwendolyn Gold Project site from MMS' Project (approximately 50 km to the west), a pipeline will be required to deliver water from the borefield to the Project area. The main pipeline will cover a total length of approximately 57 km from the borefield to the PDA. The construction width is proposed to be 5 m wide, to allow for both a pipeline and a maintenance track. The disturbance estimated for the main pipeline length is approximately 28.5 ha.

To allow for flexibility during engineering design and construction, MMS have designated a pipeline corridor in which to construct the main pipeline within. This corridor extends 20 m either side of the Evanston-Menzies Road, starting from the PDA to the existing track and airstrip within Vector's miscellaneous lease L77/1741 and into the Borefield Area. The overall pipeline corridor is 342 ha.

Until further groundwater exploration work has been conducted, the location of the borefield and the required pipeline connections within the tenement cannot be confirmed. As such, the entire tenement has been nominated as the Borefield Area, which covers 188 ha. The tenement is already heavily disturbed as a result of historical mining and recent exploration activity, and the Gwendolyn Gold Project is also planned to commence in the near future (refer to Figure 2 with aerial photography showing the extent of disturbance in this tenement). MMS will utilise existing disturbance within this tenement wherever possible.

Based on the latest results from the test-pump of the bore within Vector's tenement (as shown on Figure 2; also refer to Section 8.1, page 58 of the ERD), MMS have estimated that six bores will be required to provide enough water for the Project's operations. Each bore will be constructed on a 30 x 30 m pad, requiring disturbance of approximately 0.54 ha. An additional 3 km of pipeline and track (1.5 ha) is also required within the Borefield Area to allow for connections from each of the six bores to the main pipeline. The disturbance estimated for the Borefield Area is approximately 2.04 ha.

Pipelines will be constructed within MMS' PDA to service the various operational areas as required and will run along the length of internal haul roads to avoid additional disturbance. As such, pipeline corridors within the PDA have not been included in the calculations in this addendum.

Table 1 summarises the areas proposed for the Pipeline Corridor and Borefield Area.

**Table 1: Summary of Pipeline and Borefield Areas**

Element	Dimensions	Total Area (ha)	Comment
<b>Pipeline</b>			
Pipeline Corridor	57 km in length 60 m in width	342 ha	Corridor extends between the PDA to the Borefield Area
Actual Pipeline Disturbance	57 km in length 5 m in width	28.5	Main pipeline route, extending between the PDA and the Borefield Area
<b>Borefield Area</b>			
Borefield Area	188 ha	188 ha	Overlaps the majority of Vector Tenement M77/1263.
Actual Pipeline Disturbance	3 km in length 5 m in width	1.5 ha	Allowance for connections between bores and the main pipeline.
Bore Pads	6 pads, each 30 x 30 m	0.54 ha	Allowance for six bores within the Borefield Area.
<b>Total Calculations</b>			
<b>Pipeline Corridor and Borefield Area</b>		<b>530 ha</b>	
<b>Pipeline and Borefield Disturbance</b>		<b>30.54 ha</b>	

### Revised Table of Key Proposal Characteristics

Due to the changes described in the sections above, a number of small changes were required to Project summary tables presented in the ERD. Updated versions showing the original and updated information for each table are provided below.

**Table 2: Key Proposal Characteristics**

Summary of the Proposal			
Proposal Title	Ularring Hematite Project		
Proponent	Macarthur Minerals Limited		
Short Description	The proposal is to develop an open cut iron ore mine and associated infrastructure approximately 130 km west of Menzies and a rail siding approximately 8 km south of Menzies, in the Shire of Menzies.		
Physical Elements			
Element	Location	Proposed Extent Authorised (original reported in ERD)	Proposed Extent Authorised (revised as per this addendum)
Proposal Area*	Refer to Figure 1-3 in ERD and Figure 1 of this addendum for updated Project Development Area	Up to 2,818 ha	No change
Mine	Refer to Figure 3-6 in ERD	Clearing not more than 232 ha within the Project Development Area	No change
Infrastructure	Refer to Figure 3-6 in ERD and Figure 1 of this addendum for updated Project Development Area	Clearing not more than 154 ha within the Project Development Area	No change
Waste Rock Landform	Refer to Figure 3-6 in ERD	Clearing not more than 225 ha within the Project Development Area	No change
Rail Siding	Refer to Figure 7 in ERD	Clearing not more than 32 ha within tenement P29/1895	No change
Pipeline and Borefield	Refer to Figure 2 of this addendum	Not included in ERD	Clearing not more than 30.54 ha within the Pipeline Corridor & Borefield Area.

Operational Elements			
Element	Location	Proposed Extent Authorised (original reported in ERD)	Proposed Extent Authorised (revised as per this addendum)
Water Supply	Refer to Figure 2 of this addendum	Clearing for water supply will be subject to a separate Clearing Permit once the source area has been confirmed.	Pipeline not more than 30 ha within the Pipeline Corridor & Borefield Area.  Borefield not more than 0.54 ha within the Pipeline Corridor & Borefield Area.

**Table 3: Summary of Project Components**

Element	Description (original reported in ERD)	Description (revised as per this addendum)
<b>Project Overview</b>		
Components	Open pit, mine waste landforms, supporting infrastructure, rail siding	Same components with the inclusion of a pipeline and borefield.
Mineral Resource	Hematite / goethite – beneficiate ore	No change
Processing Type	Dry crushing and screening followed by beneficiation	No change
Commencement Date	Quarter Two 2013 (construction), 2014 (mining)	No change
Life of Project (mine production)	13 years	No change
<b>Mine and Support Infrastructure</b>		
Tenements	12 Mining Leases (11 live, one pending), one Prospecting License (live)	12 Mining Leases (live), one Prospecting License (live). Tenement M30/251 has now been granted.
Mineral Reserve	42.95 million tonnes (Mt) (probable) at 47% average grade (iron)	No change
Strip Ratio (waste:ore)	1.3 (average)	No change
Ore Mining Rate	2 million tonnes per annum (Mtpa)	No change
Depth of Mine Pit	Between 40 to 85 meters below ground level (mBGL) (including height of ironstone hills)	No change
Depth of Water Table	Ranges between approximately 410 to 466 m relative level (RL)	No change
Water Use	0.9 <sup>^</sup> megalitres per day (ML/day)	No change
Water Source	Gwendolyn Gold Project (Vector Resources) groundwater supply	No change
Road Haulage	130 km to rail siding, 112 tonne payload road trains	No change
Mine Operations	24 hours, 365 days	No change
Workforce	150	No change
Area of Disturbance	611 ha	Up to 611 ha Note: Disturbance may be less if PDA Option 2 is implemented.
<b>Water Supply</b>		
Components	Not included in ERD	Pipeline, maintenance track, borefield and supporting infrastructure.
Area of Disturbance	Not included in ERD	30.54 ha

Element	Description (original reported in ERD)	Description (revised as per this addendum)
<b>Rail Siding</b>		
Components	Ore stockpiles, loading facility, supporting infrastructure	No change
Area of Disturbance	32 ha	No change

^ Water use was incorrect in Section 8.1 of the ERD.

### Relocation of magazine area

Advice provided to MMS from the EPA's Terrestrial Ecosystems Branch requested that MMS relocate the magazine area, currently located to the south of the Snark Deposit, to an area within common vegetation communities and off the BIF. The original location of the magazine was primarily located on community S6, which is the third most dominant community recorded, however, it was located across known BIF outcropping areas. MMS has now relocated the proposed magazine area to a location to the south of the Central MOC area and adjacent to the PDA Option 2 haul road realignment (Refer to Figure 1). The new magazine area is now primarily located in community W9, which is listed as the seventh most dominant community recorded (refer to Table 16, page 42 of the ERD) and is not located within any known BIF outcrops.

The new magazine area results in a slight decrease of the total area of the PDA and the overall disturbance area, as the new magazine requires a shorter access track from the main internal haul roads. However, as the overall area change is minimal (<2 ha) the PDA area has not been amended.

MMS trusts that this information satisfies the EPA in order to complete their assessment of the Project. Should you have any further queries regarding this information, please do not hesitate to contact myself or Brooke How on (08) 9324 3344.

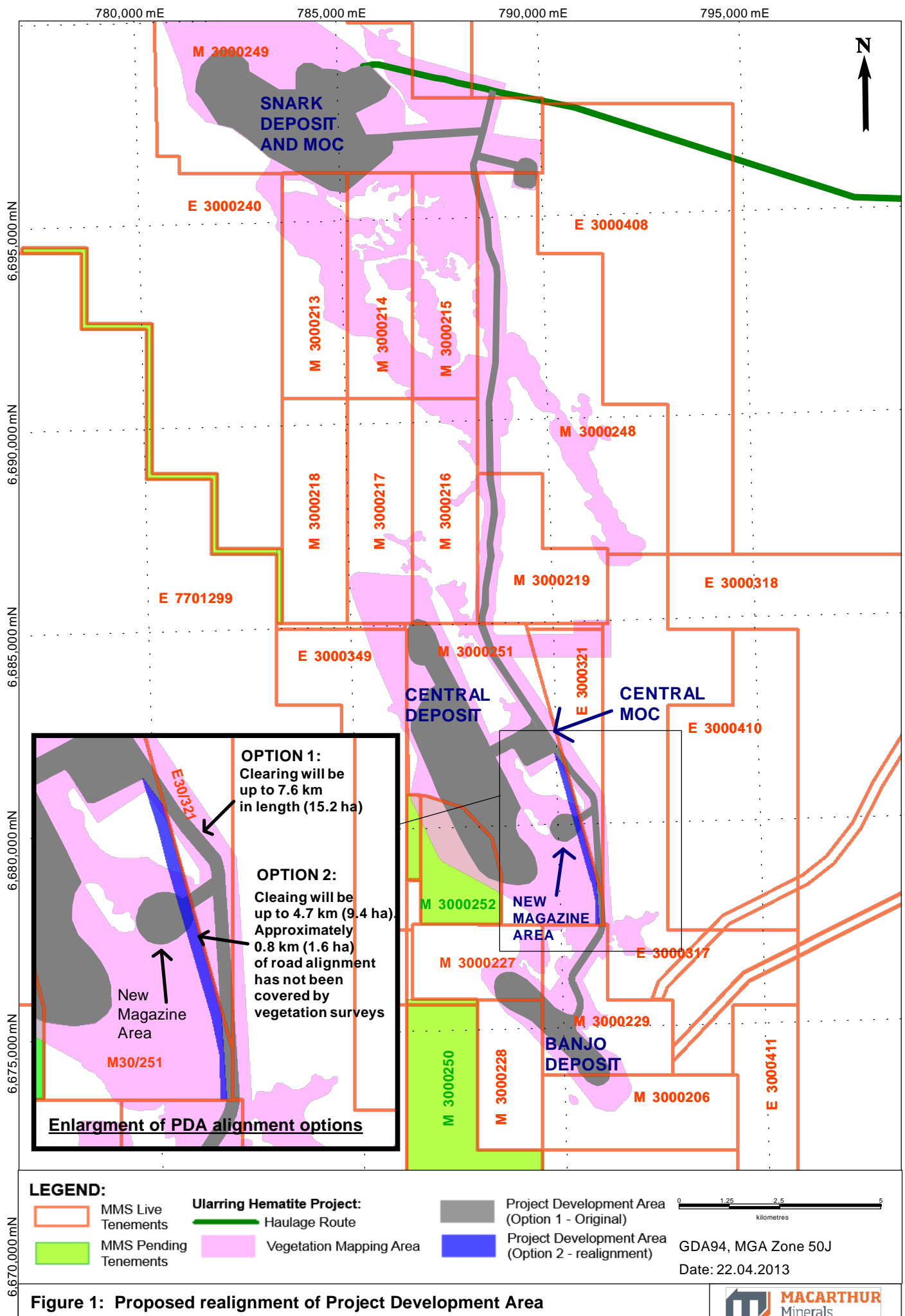
Yours sincerely,

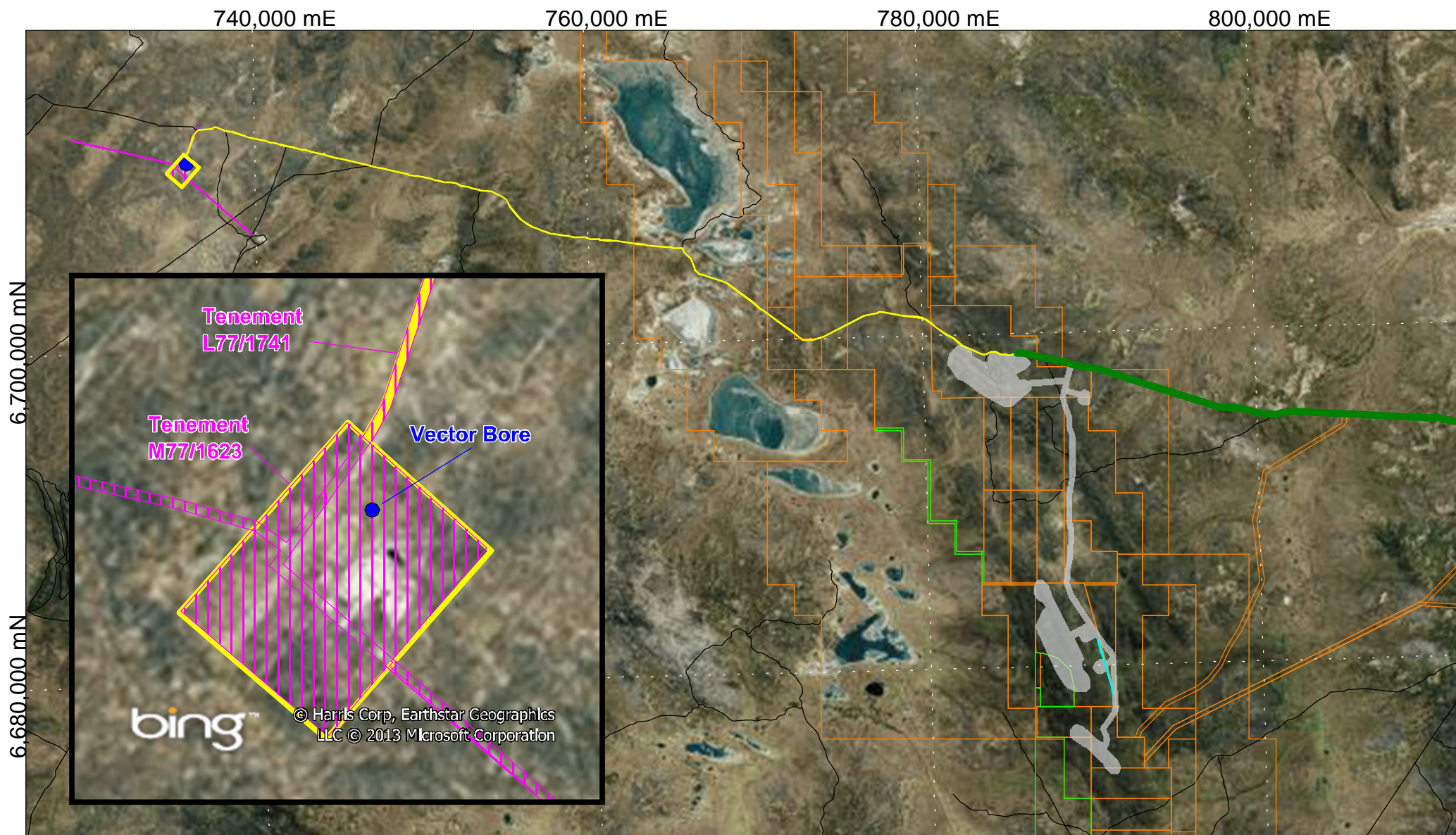


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### Attachments

- Figure 1: Proposed realignment of Project Development Area  
Figure 2: Groundwater Pipeline Route and Borefield Location





# **LEGEND:**

MMS Live Tenements



Vector Resources Live Tenement

MMS - Pending Tenements



Existing Regional Roads

## **Ularring Hematite Project:**

Project Development Area

Project Development Area Option 2 Alignment

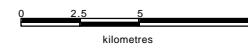
Haulage Route



Vector Bore

Pipeline Corridor

Borefield Area



Date: 04.06.2013

Projection: GDA94 MGA Zone 50J

**Figure 2: Groundwater Pipeline Route and Borefield Area**