

# **ZZ EXPLORATION<sub>Pty Ltd</sub>**

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**EXPLORATION LICENCE 20/2002**

**ANNUAL REPORT**

**JANUARY 2006 – DECEMBER 2006**

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February 2007

## **FOREWORD**

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### **Function of the Annual Report**

This Annual Report has been prepared as a public document for submission to Mineral Resources Tasmania (MRT). The report provides a summary of the exploration activities undertaken by ZZ Exploration Pty Ltd (ZZ Exploration) over the Exploration Licence EL 20/2002 (EL 20/2002) during January 2006 - December 2006.

### **Role in the Regulation Process**

This document fulfils the role of an Annual Report for EL 20/2002 during January 2006-December 2006, as required under Section 28 of the *Mineral Resources Development Act 1995*.

## **EXECUTIVE SUMMARY**

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ZZ Exploration Pty Ltd (ZZ Exploration) currently hold Exploration Licence EL 20/2002 (EL20/2002), which contains a number of known mineral deposits and the potential for new economic mineral deposits to be discovered. This document fulfils the role of an Annual Report for the period January 2006 – December 2006.

During January 2006 – Dec 2006, ZZ Exploration have focused on the exploration of small to large-scale (<0.5Mt to >100Mt) economic resources, based on extensive exploration of previously identified mineral deposits. During this, exploration efforts by ZZ Exploration have focused on the Oceana and Mariposa prospects, located within EL 20/2002. A summary of exploration activities undertaken is presented below.

### *Regional Exploration*

- Gravity Survey – approximately 18 km of on ground gravity surveying, at 25m spacing has been undertaken by Solo Geophysics Pty Ltd under the supervision of David Leaman; and
- Initiation of a study into the possibility of other outcrops (e.g. Gordon Limestone, Oonah Formation, Bell Shale) hosting small scale lead-zinc deposits, nickel mineralization (e.g. Avebury of Melba Flats style deposits), and the potential for iron-magnetite resources proximal to the Heemskirk Granite.
- Desktop study into previous mines, maps and assay data containing nickel and associated mineralogy within ZZ Exploration licence boundaries;
- Development of a 3D model presentation of geological models and proposed processing by Construction Modelling Australia;
- Construction of detailed maps of Oceana, Mariposa and areas with enhanced magnetic anomalies with relationships to known nickel deposits.

### *Oceana Prospect*

- Bond paid in July for Mining Lease 2M/2005 to encompass 48ha for the Oceana Mine situated within EL20/2002. Approval granted 4 September 2006, for 2 years;
- Development of a mine plan, including pit design and mine layout;
- Carrying out a detailed gravity survey over the Oceana prospect;
- The reinstallation of the original AMOCO grid;
- Detailed GPS surveying of grid pegs and old drillhole collars;
- Collection of rock density measurements from existing drill core, and amassing core photography to assess previous core recoveries;
- Amdel petrological report completed containing thin section and hand specimen analysis of 26 specimens from the Oceana Mine site;
- Initiation of investigation into the carbon content of the pug profile at the Oceana Mine site;
- Geological interpretation and block model for the Oceana deposit;
- Creation of a geological database for the Oceana prospect;
- Completion of a valuation of the minerals and production assets of the company's Zeehan projects for inclusion in a public document ;

- A JORC Resource Statement for the Oceana lead-zinc deposit. The completed report includes a block model creation (to JORC Standard) based on a proposed open pit operation to a depth of 175m (SMG Consultants Consulting Pty Ltd);
- Flora and fauna survey of the Oceana prospect;
- A survey for Aboriginal heritage at the Oceana prospect, Zeehan;
- Archaeological study of the Oceana prospect;
- Expansion of the water monitoring program with the addition of one new site;
- Analytical desktop historical cultural heritage assessment of the Tasmanian Smelter Company Smelter Site Zeehan;
- Submission and approval of a drilling program;
- Completion of 665.5m of RC drilling of the Oceana deposit within the Indicated Resource area; and
- Initiation of geochemical analysis of 665.5 samples collected during RC drilling operations.
- Commissioned consulting geologist for proposed drilling and investigation of potential targets in the north of EL 20/2002

*Mariposa Prospect*

- A survey for Aboriginal heritage at the Mariposa prospect;
- Initial flora and fauna survey of the Mariposa prospect;
- Geological interpretation and block model report for the Mariposa prospect;
- Conceptual open pit optimisation of Mariposa West Lode;
- Conceptual underground mine design – Mariposa West Lode;
- Initial archaeological study of the Mariposa prospect;
- Submission and approval of a drilling program;
- Application for a mining lease over the Mariposa prospect;
- The reinstatement of the original 'Local Grid';
- Investigations into the geological mode of deposit formation; and
- Undertaking resource estimation and definition.

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## **ABBREVIATIONS**

Ag	silver
AMOCO	American Oil Company
ANC	Acid Neutralising Capacity
Anderson and Schwab	Anderson and Schwab Australia Ltd
Coffey Geosciences	Coffey Geosciences Pty Ltd
DIER	Department of Infrastructure, Energy, and Resources
DRP	Decommissioning and Rehabilitation Plan
DTAE	Department of Tourism, Arts, and the Environment
gms/cc	grams per cubic centimetre
GPS	Global Positioning System
ha	hectares
JORC	Joint Ore Resource Committee
km	kilometre

m	metre
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre
MRT	Mineral Resources Tasmania
NAG	Net Acid Generation
NAPP	Net Acid Producing Potential
Pb	lead
ppm	parts per million
RL	Relative Level
ROM	Run Of Mine
S	sulphur
SEMF	SEMF Pty Ltd
SMG Consultants	SMG Consultants Pty Ltd
TALSC	Tasmanian Aboriginal Land and Sea Council
TASI	Tasmanian Aboriginal Site Index
Zeehan Zinc	Zeehan Zinc Ltd
ZZ Exploration	ZZ Exploration Ltd
Zn	zinc

## **1 INTRODUCTION**

### **1.1 PURPOSE OF THIS DOCUMENT**

ZZ Exploration Pty Ltd (ZZ Exploration) currently hold Exploration Licence EL 20/2002 (EL20/2002), which contains a number of known mineral deposits and the potential for new economic mineral deposits to be discovered.

This document fulfils the role of an Annual Report for EL 20/2002 during January 2006 – December 2006, as required under Section 28 of the *Mineral Resources Development Act 1995*, and as requested of ZZ Exploration by Mineral Resources Tasmania (MRT) on the 2<sup>nd</sup> November, 2006.

### **1.2 THE PROPONENT**

ZZ Exploration is a wholly owned subsidiary of Zeehan Zinc Ltd (Zeehan Zinc). ZZ Exploration currently holds Exploration Licence EL 20/2002, which includes several known mineral deposits, including the Oceana and Mariposa prospects. ZZ Exploration's long term objective is to be one of the leading mineral exploration companies for Category 1 mineral deposits within the Zeehan area.

ZZ Exploration has recently acquired mining lease 2M/2005 over the Oceana mine, covering approximately 48ha. An application has been submitted for mining lease 4M/2005 over the Mariposa mine, covering approximately 98ha.

Through the continued exploration for mineral deposits, ZZ Exploration aim to provide Zeehan Zinc's gravity separation plant at the Comstock mine with mineral resources for further processing over the medium to long-term period.

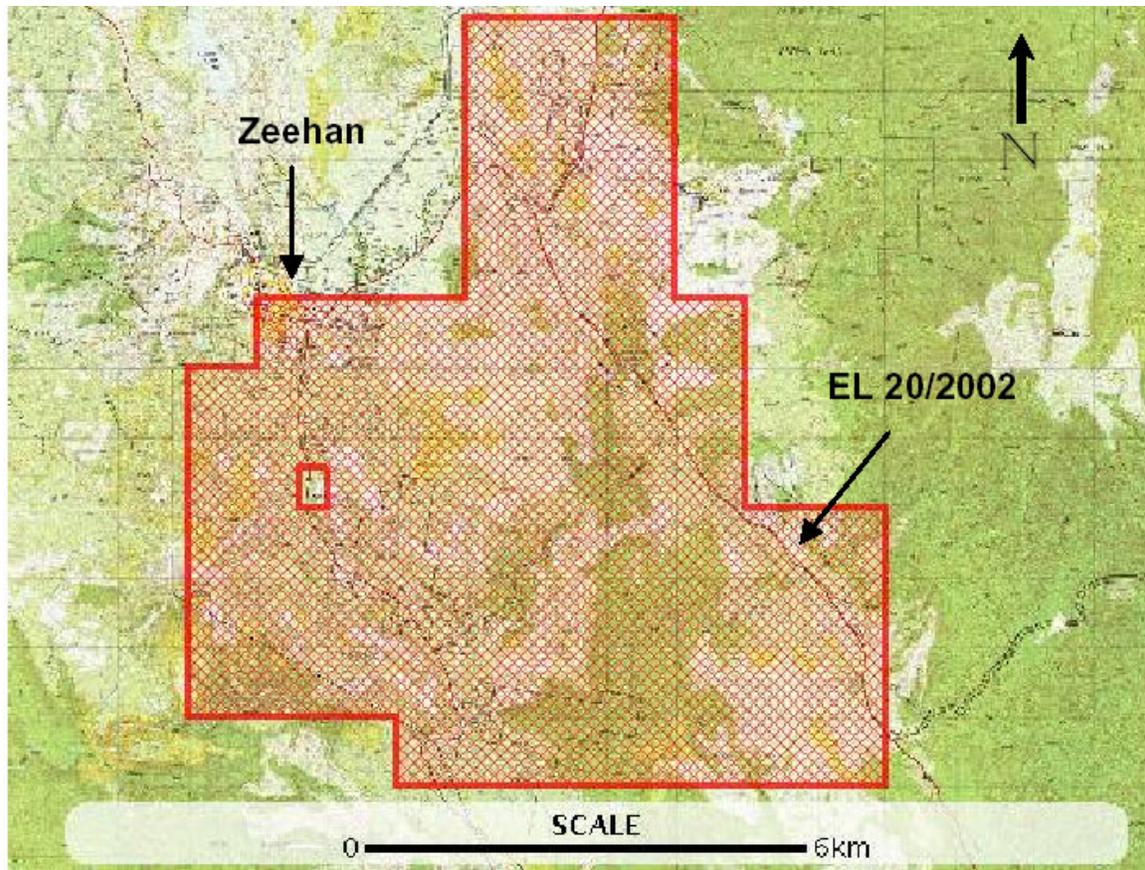
### **1.3 EXPLORATION LICENCE SCHEDULE**

Details of EL 20/2002, including grid coordinates, are provided in Appendix A.

### **1.4 EXPLORATION LICENCE LOCATION AND OPERATIONS**

#### **1.4.1 SITE LOCATION AND MINERAL EXPLORTION AREA**

EL 20/2002 covers approximately 71km<sup>2</sup>, and is located 1km southeast from Zeehan, western Tasmania (Figure 1). The Murchison Hwy, Zeehan Hwy, and Henty Rd provide road access to EL 20/2002. The Emu Bay Railway and the Murchison Hwy connect the township of Zeehan with the Port of Burnie, located approximately 140km to the north.



**Figure 1:** Location of EL 20/2002 relative to Zeehan.

Vegetation cover is generally sparse over EL 20/2002, dominated by button grass on ridges and in valleys, with dense tea-tree and eucalypt scrub occurring along creek lines. Exploration activities undertaken by ZZ Exploration during the reporting period have included regional explorations, with prospect focused exploration undertaken at the Oceana and Mariposa prospects.

#### **1.4.2 Exploration Lease Tenure**

EL 20/2002 was granted to ZZ Exploration on February 7, 2003 for a period of 5 years, and applies to all Category 1 minerals. The licence covers approximately 71km<sup>2</sup>, with excluded areas including:

- Retention Licence 3/1996;
- Any land owned or leased by the Commonwealth of Australia;
- Mining Leases; and
- Crown reservations.

The current land tenure in and around EL 20/2002 is provided in Figure 2.

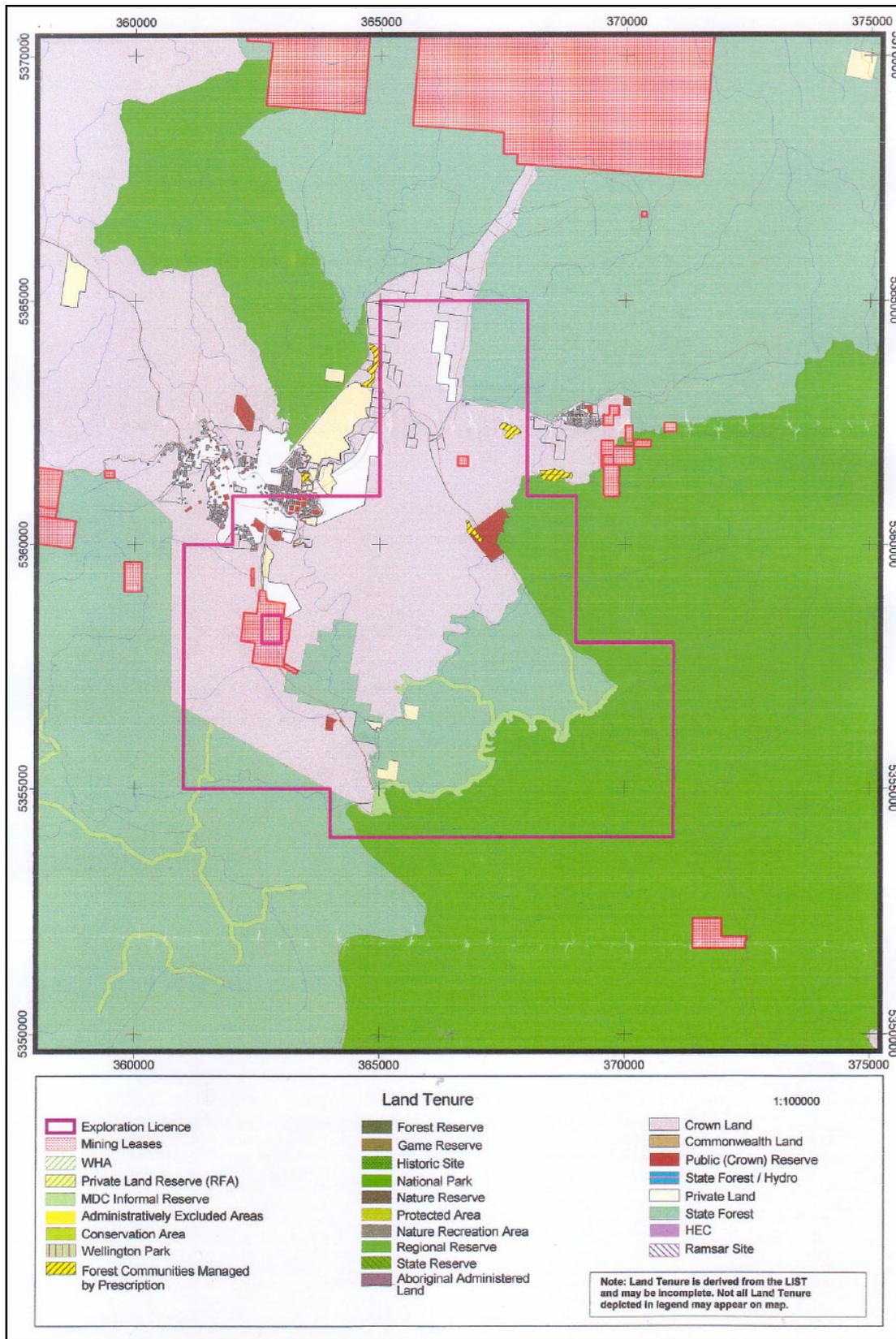


Figure 2: Land tenure for EL 20/2002.

## **1.5 STRUCTURE OF THIS DOCUMENT**

A brief description of the structure of this report is provided in Table 1.

**Table 1:** Brief description of the report structure

<b>Section Heading</b>	<b>Brief Description of the Information Provided</b>
Executive Summary	A summary of the exploration activities undertaken within Exploration Licence 20/2002.
1.0 Introduction	Brief description of the proponent, the exploration licence location and tenure.
2.0 Summary of Previous Work	Summary of geological exploration previously undertaken with the area covered by EL 20/2002.
3.0 Regional Exploration Undertaken during 2005-2006	Description of exploration activities by ZZ Exploration on a regional scale within EL 20/2002 during the reporting period.
4.0 Exploration at the Oceana Prospect 2005-2006	Details of exploration activities by ZZ Exploration at the Oceana prospect during the reporting period.
5.0 Exploration at the Mariposa Prospect 2005-2006	Summary of exploration activities by ZZ Exploration at the Mariposa prospect during the reporting period.
6.0 Exploration Expenditure	Summary of exploration expenditure by ZZ Exploration over EL 20/2002 during the reporting period.
7.0 Proposed Work Program	Description of the proposed exploration program within EL 20/2002 during 2006.

## **2 SUMMARY OF PREVIOUS WORK**

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### **2.1 PREVIOUS MINING AND EXPLORATION WITHIN EL 20/2002**

#### **2.1.1 Regional Exploration Activities**

A series of limestone-hosted base metal prospects are located around Zeehan and have been subjected to substantial previous mineral exploration. The Oceana lead/zinc deposit/mine provided much of the impetus for such exploration to be undertaken over all the outcropping areas of the Gordon Limestone in the general Zeehan area (SMG Consultants 2005).

The known mineral deposits within EL 20/2002 have been subjected to various phases of mineral exploration which date back to the 19<sup>th</sup> century (Appendix B). The regional geology of the area has been described in Blissett (1962), Taylor (1983), Jones (1988), and McGilvray (2003), and also provided in previous Annual Reports for EL 20/2002.

#### **2.1.2 Prospect Based Exploration Activities**

A brief summary of the history of mining exploration at the Oceana and Mariposa prospects, which were the focus of ZZ Exploration's activities during the reporting period, are provided below.

##### *Oceana Prospect*

The Oceana prospect has been the subject of several phases of mining during the past 2 century's:

- Open-cut mining at Oceana commenced in 1887;
- Underground mining commenced in 1892;
- Mine idle and leases surrendered in 1895;
- Mine reopened in 1896 and underground mine extended;
- Mine abandoned in 1899 after collapse of the main shaft;
- Small scale mining operated from 1909 -1925; and
- Mine reopened in 1954 and operated until 1960 (Kostoglou 2006a).

Details of the local geology and mineralisation of the Oceana prospect are described in detail Chapters 3 and 4 of McGilvray (2003).

##### *Mariposa Prospect*

Similarly, the Mariposa prospect has also been subjected to discontinuous phases of mining and mineral exploration:

- Underground mining commenced in the 1890's;
- Various attempts at re-opening the mine during the early 1950's;
- Further exploration of the mine during the 1970's;
- Extensive surface exploration over the main Mariposa Lode during the 1980's; and
- Detailed drilling program conducted during the mid 1990's (Tear 2006b)

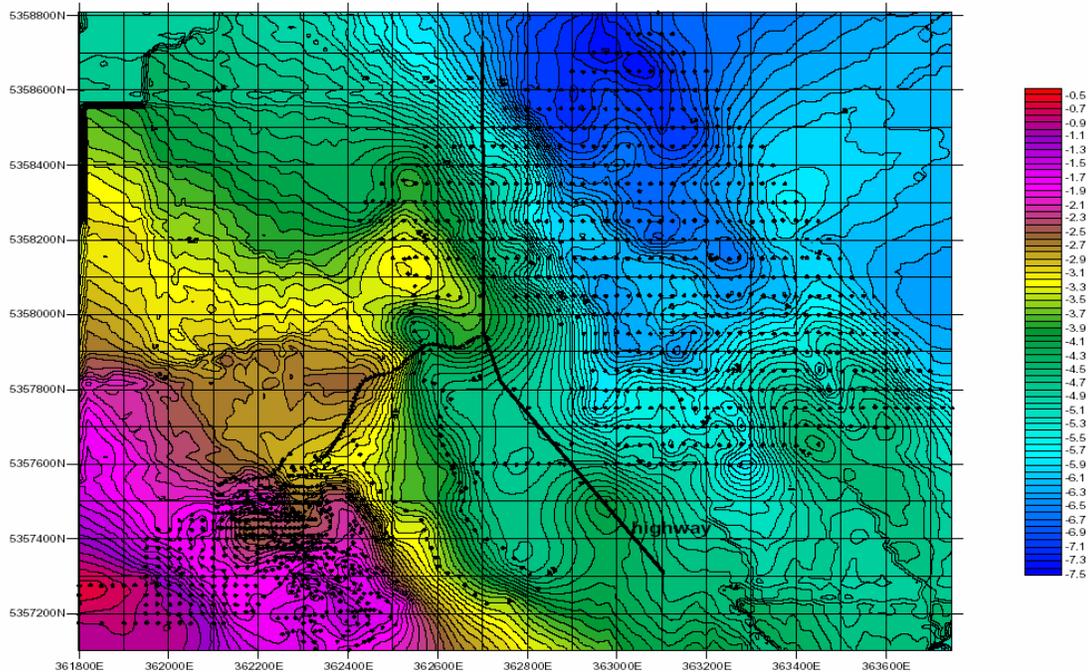
Details of the episodes of mining and exploration are provided in Tear (2006b).

### 3 REGIONAL EXPLORATION UNDERTAKEN DURING 2005-2006

ZZ Exploration has undertaken regional and prospect based exploration activities within EL 20/2002, during January 2006 – Dec 2006. Prospect based exploration activities are discussed in detail in subsequent sections.

As part of the regional exploration of EL 20/2002, ZZ Exploration undertook a detailed gravity survey across the Oceana mine and the Austral valley (Figure 3) (Plates 1 and 2).

Details of the gravity survey are provided in Appendix C.



**Figure 3:** Combined Oceana and the Austral Valley gravity survey results (at 2.67 gms/cc) (Solo Geophysics 2006).

**Plate 1: Surveying at the Oceana Mine.**



**Plate 2: Surveying the Austral Valley.**



Photos courtesy of Solo Geophysics (2006).

ZZ Exploration have also initiated a detailed regional study within EL 20/2002 (Appendix D), focussing on:

- The possibility of other outcrops (e.g. Gordon Limestone, Oonah Formation, Bell Shale) hosting small scale lead-zinc deposits (e.g. Mariposa style deposits);
  - The possibility of nickel mineralization (e.g. Avebury of Melba Flats style deposits);
- and
- The potential for iron-magnetite resources proximal to the Heemskirk Granite.

As part of extending mineral exploration, ZZ Exploration have expanded investigations into potential and known nickel deposits within the exploration licences of EL 30/2002, EL 20/2002 and EL 18/2003 (Appendix E).

Of the eleven prospects located within ZZ Exploration licences, seven exist within the boundry of EL 20/2002.

These include;

**Maxim Mine**

**Location: Easting 361650  
Northing 5359350**

**Leslie**

**Location: Easting 366800  
Northing 5363600**

**Farrell Rivulet Upper**

**Location: Easting 370730  
Northing 5355430**

**Farrell Rivulet Deep Lead**

**Location: Easting 366360  
Northing 5354740**

**Westerway ck**

**Location: Easting 369700  
Northing 5356900**

**Unnamed**

**Location: Easting 366400  
Northing 5364500**

**Unnamed**

**Location: Easting 366500  
Northing 5363500**

Drilling these target areas will include both diamond and RC drilling as outlined in the work programs section 6.

Investigations into mineral resources other than lead- silver- zinc deposits within ZZ Exploration licences have resulted in the construction of detailed maps for all licences. Potential nickel deposits have been identified using the known location of old workings and aeromagnetic data obtained from Mineral Resources Tasmania.

The aeromagnetic survey identified a number of large magnetic anomalies within ZZ Exploration Licences. The combination of the magnetic anomalies old workings and drilling results assisted in establishing detailed maps for planning drilling programs to commence in 2007 (Appendix F).

ZZ Exploration in conjunction with Construction Modelling Australia have developed a 3D model presentation of simplified known geological forms that exist within ZZ exploration licences. The 3 D model was developed as a tool to assist understanding of the known deposits as well as demonstrate future processing plans (Appendix G).

## 4 EXPLORATION AT THE OCEANA PROSPECT, 2005-2006

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### 4.1 GEOLOGY

#### 4.1.1 Deposit Type

The Oceana mine is primarily a lead (Pb), zinc (Zn) and silver (Ag) deposit, and is considered to be an Irish Type deposit, located along the Henty Road, near Zeehan. The ore is a stratabound massive sulphide deposit, hosted by steeply dipping calc-siltites and calcarenites of the Ordovician Gordon Limestone (SMG Consultants 2005, Appendix H). The mineralisation is split into two sections by the cross cutting Oceana mine Fault with the northern limit of mineralisation truncated by the cross cutting Oceana Fault (SMG Consultants 2005) (Figure 4). The deposit consists of two parallel bodies of galena/sphalerite mineralisation, generally more lead dominant with localised massive pyrite. There are areas of substantial siderite alteration attributed to the mineral system (SMG Consultants 2005).

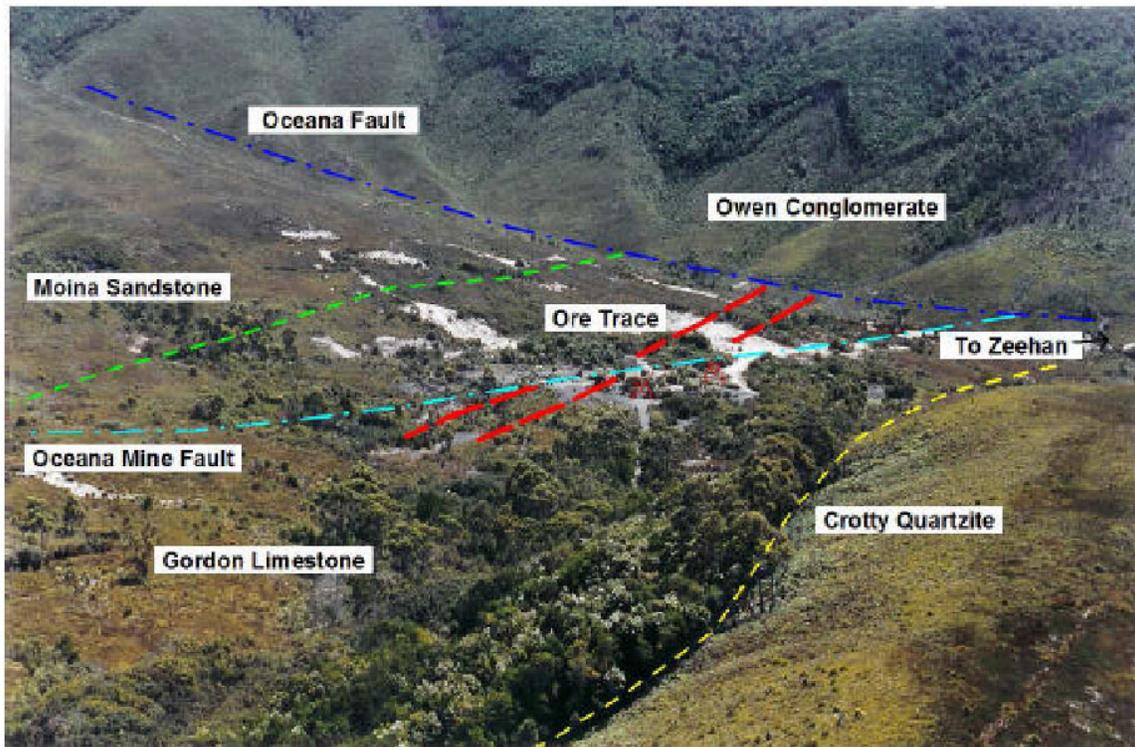


Figure 4: Local geology of the Oceana prospect (looking west) (SMG Consultants 2005).

#### 4.1.2 Reinstallation of the AMOCO Local Grid

To assist in drilling operations and resource estimation, ZZ Exploration reinstalled the previous American Oil Company (AMOCO) local grid (Findlay 2006, Appendix I). Regridding was undertaken using a topolite, a handheld compass, a Global Positioning System (GPS), existing maps, and the remaining pegs from the previous AMOCO local grid (Findlay 2006). Following the installation of the AMOCO local grid, drill sites were located using the local grid, and then marked using a GPS.

**4.1.3 Drilling Program**

*Approvals*

ZZ Exploration submitted a proposed drilling program for approval from MRT on 21 February, 2006 (Appendix J). Further information was subsequently provided by ZZ Exploration on the 16 March 2006. On 21 April, confirmation of approval for the Oceana drilling program was received by ZZ Exploration from MRT.

*Reverse Circulation Drilling*

During February – April 2006, ZZ Exploration conducted an extensive RC drilling program over the Oceana Prospect. In total 665.5m was drilled, spanning 20 holes. Table 2 provides a summary of the results of geochemical analysis of RC samples collected during drilling. Figure 5 identifies the locations of the drill holes within the Oceana mine area, and Plates 3 and 4 illustrate drilling operations at the Oceana prospect during 2006.

Selected samples were sent to the SGS Welshpool laboratories in Western Australia for analysis. Complete analysis of the samples has included re-assaying of selected samples. This has been due to partial damage of selected samples at the laboratory and is considered necessary to achieve a quality result from analysis.

All samples have been forwarded to ALS Chemex laboratories in Western Australia for duplicate analysis as per quality control conditions.

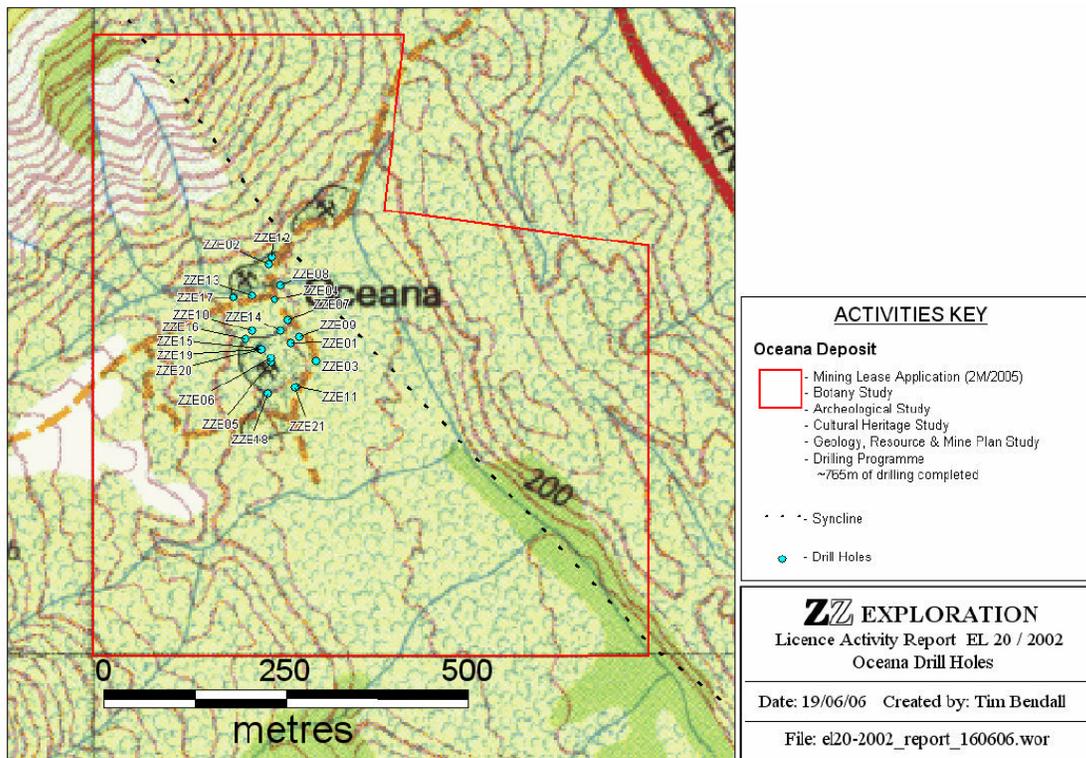
A complete report detailing the drilling and sampling method, drill hole location, and geochemical analysis results will be submitted to MRT once ZZ Exploration have received the complete geochemical results for the Oceana mine drilling program.

**Table 2:** Summary of geochemical analysis of samples collected during the RC drilling program at the Oceana mine.

<b>HOLE ID</b>	<b>EASTING</b>	<b>NORTHING</b>	<b>FROM(m)</b>	<b>TO(m)</b>	<b>INTERCEPT</b>	<b>Lead%</b>	<b>Zinc%</b>	<b>Silver(ppm)</b>
<b>Exploration Licence 20/2002</b>								
<i>Oceana</i>								
<b>ZZE04</b>	362251.929	5357473.119	0	31	31	1.9	0.8	19.5
<i>Including</i>			6	12	6	2.48	0.8	32.3
<b>ZZE05</b>	362246.948	5357386.246	9	18	9	2.7	1.8	48.13
<i>Including</i>			10	12	2	6.9	4.0	150
			10	11	1	12.1	6.3	100
<b>ZZE06</b>	362247.218	5357392.492	8	15	7	4.7	1.13	34.4
<i>Including</i>			10	14	4	6.1	1.5	42
<b>ZZE07</b>	362270.321	5357444.48	2	32	30	0.82	3.10	13.25
<i>Including</i>			24	25	1	7.71	4.32	73
<b>ZZE08(A)</b>	362260.265	5357492.551	3	5	2	1.61	1.52	25
<b>ZZE08</b>	362258.265	5357493.551	2	7	5	2.2	1.9	29
			11	21	10	0.5	1.8	10.2
<b>ZZE09</b>	362285.426	5357421.913	4	15	11	0.65	3	23.1
<i>Including</i>			4	9	5	1.2	3.1	37

**Table 2: Continued**

<b>ZZE10</b>	362221.416	5357429.44	24	28	4	1.11	3.15	10
<i>Including</i>			26	27	1	2.6	5.57	20
<b>ZZE11</b>	362281.011	5357353.21	11	13	2	1.21	0.29	6
<b>ZZE13</b>	362222	5357478	38	41	3	6.2	2.7	35
<b>ZZE14</b>	362260.628	5357429.115	2	14	12	4.4	1.85	35
<i>Including</i>			6	10	4	7	1.35	48
<b>ZZE15</b>	362231.680	5357405.672	2	28	26	2.9	1.4	22
<i>Including</i>			20	24	4	6.7	4.0	62
<b>ZZE19</b>	362232.886	5357404.183	3	36	33	4.5	1.3	25.5
<i>Including</i>			6	9	3	11.5	1.67	55
<b>ZZE20</b>	362233.756	5357405.178	1	23	22	3.64	1.57	22
<i>Including</i>			11	15	4	8.47	2.32	48
<b>ZZE21</b>	362279.929	5357351.843	0	13	13	1.7	0.2	21.7
<i>including</i>			0	2	2	6.7	0.3	98



**Figure 5:** Location of RC drill holes at the Oceana prospect.

**Plates 3 & 4: Drilling at the Oceana mine.**



**4.1.4 Petrology**

In June 2006 twenty six rock samples from Oceana were sent to AMDEL for petrographic and mineragraphic descriptions. In addition, twenty of those samples were submitted for hand specimen description.

Petrology results confirmed the original sedimentary sequence had been pervasively altered to siderite. Sulphide mineralization present consists mainly of sphalerite and galena with minor chalcopyrite. Pyrite is also present (AMDEL 2006).

Further investigations into the carbon content and upper profile of the Oceana Prospect has been initiated as a result of the AMDEL report.

For the complete report refer to Appendix K.

In February 2006 over 200 bulk density measurements were recorded on old AMOCO drill core. A section from each rock type was selected to achieve a variety of density measurements. Core samples selected were from ZT 79-2, ZT 80-9, ZT 80-6, ZT 82-13, ZT 80-8 and ZT 80-5. As part of the report the drill core was inspected and photographed (SMG Consultants 2006c). Results are included in appendix L.

**4.1.5 Waste Rock Characterisation**

As part of the initial planning process, ZZ Exploration has undertaken preliminary testing on rock material (collected from RC drill chips drilled in early 2005) that will be removed during mining operations to begin the waste characterisation process. Table 3 presents the results of the sampling program that has occurred to date. For the complete sampling report, refer to Appendix M. The initial waste characterisation tests have indicated that the rock types sampled are generally considered to be non-acid producing

**Table 3:** Summary of the waste characterisation results from Oceana mine drill core (SEMF 2006a).

Sample	NAPP	NAG	NAG pH	ANC	Total %S	Overall Classification*
	kg H <sub>2</sub> SO <sub>4</sub> / tonne					
ZZE 2 (0-1m)	-1.25	1.96	6.11	0.22	2.1 x 10 <sup>-4</sup>	NAF
ZZE 2 (1-2m)	-1.25	0.98	6.15	0.15	2.2 x10 <sup>-4</sup>	NAF
ZZE 3 (2-3m)	-77	34.3	4.07	0.28	5.35 x 10 <sup>-6</sup>	UC (NAF)
ZZE 3 (8-9m)	-51.2	43.1	2.88	0.24	1.34	UC (NAF)
ZZE 3 (15-16m)	-89.5	<0.50	8.95	14.6	1.48	NAF

• Where NAF = Non-Acid Forming, and UC = Uncertain

The Oceana deposit is hosted within the Ordovician Gordon Limestone, and MRT has noted that the Oceana mine is a significant source of acid mine drainage (Gurung, 2005).

Throughout the mine development and operation, ZZ Exploration will continue to undertake waste characterisation tests on waste rock and tailings material, to ensure that

the materials can be disposed of suitably and avoid adverse environmental impacts.

It has been suggested that the underlying Gordon Limestone provides little acid buffering capacity for acid mine drainage, which is believed to be related to a restricted ability for neutralisation and the relatively high NAPP of the ore material (Gurung, 2005).

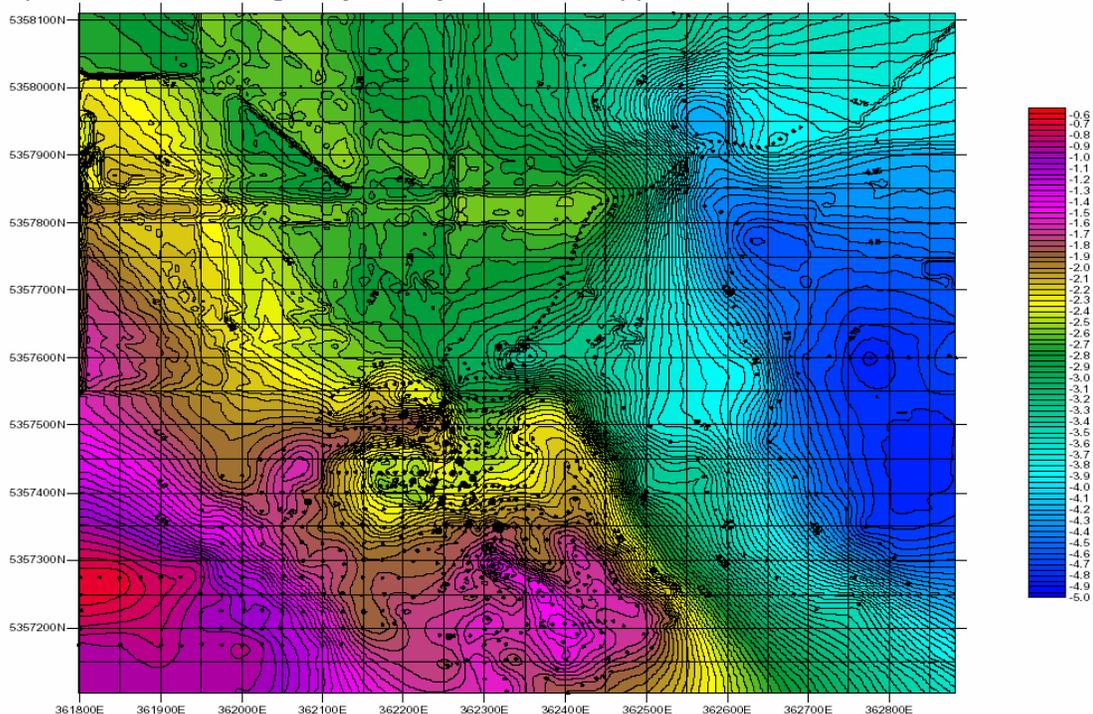
## 4.2 GEOPHYSICS

During March – May 2006, a combined GPS and gravity survey was conducted over the Oceana prospect (Solo Geophysics 2006). Survey lines were at 25m intervals, with the grid located in a valley where Mt Zeehan forms the western slopes, and sandstone and quartz ridges form the eastern slopes.

Some sections of the gravity survey were not completed at the Oceana prospect due to the presence of:

- Steep slopes;
- Existing open, water filled shafts;
- Sinkholes hidden in the local vegetation;
- Thick vegetation; or
- Flooded creeks (Solo Geophysics 2006).

Figure 6 provides the results of the gravity survey for the Oceana prospect, with the complete results of the gravity survey detailed in Appendix C.



**Figure 6:** Oceana gravity survey results (at 2.67 gms/cc) (Solo Geophysics 2006).

**4.3 MINERAL RESOURCE**

**4.3.1 Resource Estimation**

ZZ Exploration has undertaken several activities to assist in resource calculations at the Oceana mine including:

- The reinstallation of the original AMOCO grid;
- Detailed GPS surveying of grid pegs and old drillhole collars;
- Collection of rock density measurements from existing drill core;
- Amassing core photography to assess core recoveries;
- Development of a block model; and
- Investigations into the geological mode of deposit formation.

ZZ Exploration has subsequently commissioned two independent ‘competent’ geologists (SMG Consultants Pty Ltd (SMG Consultants) and Cotlco Pty Ltd) to undertake resource estimations following the Joint Ore Resources Committee (JORC) Code (Appendices N and O). SMG Consultants reviewed the initial resource calculation during based on open pit optimisation and the results of more geological data. A summary of the resource estimates at the Oceana deposit are presented in Table 4.

As part of the resource estimation, a block model for the Oceana prospect was also developed (Appendix P).

**Table 4:** Summary of the resource estimate for the Oceana mine (Anderson and Schwab 2006).

	<b>Tonnes</b>	<b>Pb (%)</b>	<b>Zn (%)</b>	<b>Ag (ppm)</b>	<b>Source</b>
<b>Indicated</b>	665,531	5.2	2.3	29.8	SMG Consultants (2006c)
<b>Inferred</b>	938,147	2.6	1.2	16.3	
<b>Indicated (open pit to 120m)</b>	665,531	5.2	2.3	29.8	SMG Consultants (2006e)
<b>Indicated and Inferred (open pit to 120m)</b>	1,386,991	3.8	1.7	22.5	
<b>Inferred</b>	2,100,000	9.2	2.6	88	Cotlco (2005)
<b>Inferred (open pit to 50m)</b>	208,100	7.5	1.7	57	

SMG Consultants have also investigated the resource to reserve conversion factors for the Oceana deposit, based on the Oceana pit resource review (Appendix L) and the optimisation of the Oceana resource (Appendix Q). The resource to reserve calculation factor is estimated to be 77.6% for the in pit resource (Table 5, Appendix R).

**Table 5:** Resource to reserve conversion factor estimate (SMG Consultants 2006g)

	<b>Tonnes</b>	<b>Pb (%)</b>	<b>Zn (%)</b>	<b>Ag (ppm)</b>
Planned mineable resource to 1070mRL	1,076,491	4.6	2.0	27.0
Resource down to pit floor at 1070mRL	1,386,991	3.8	1.7	22.5
Total resource to 1000mRL	1,603,678	3.7	1.7	21.9
<b>Likely in pit resource to reserve conversion (%)</b>	77.6			
<b>Likely total resource to reserve conversion (%)</b>	67.1			

### 4.3.2 Resource Valuation

ZZ Exploration commissioned Anderson and Schwab Pty Ltd (Anderson and Schwab) in 2005 to undertake a review of the mineral assets of Zeehan Zinc Ltd (Zeehan Zinc), which includes the Oceana prospect (Appendix S). In May 2006, Anderson and Schwab reviewed the resource valuations, following further exploration activities by Zeehan Zinc (and associated companies). The valuation of the mineral assets of Zeehan Zinc are provided in Table 6.

**Table 6:** Estimated resource valuations of the mineral assets of Zeehan Zinc Ltd (Anderson and Schwab 2006).

Asset	Valuation Method	Value		
		Low	Market	High
Comstock mine (Allison's Lode, Balstrup Fault, Main Lode including West Lode) and <b>Oceana deposit</b>	NPV of discounted future cash flows	\$93.5m	\$267 m	\$316.0m

### 4.3.3 Mining Lease Application and Approval

On 2 March, 2005, ZZ Exploration applied for a mining lease over the Oceana mine (ML 2M/2005) (Appendix T). MRT requested on 12 January, 2006 that further information was required before the mining lease could continue to be processed. ZZ Exploration provided the necessary information on May, 2006 (Appendix U). On 4 September, 2006 2M/2005 was approved for the period of 2 years.

### 4.3.4 Business Plan

In 2003, Zeehan Zinc Ltd (the parent company of ZZ Exploration) developed a business plan. In October 2005, the business plan was subsequently reviewed to reflect current changes to metals prices and exchange rates. In consideration of the significant increases in metal prices since October 2005, the business plan was reviewed in January 2006 (Appendix V).

**4.4 PROPOSED MINE PLAN**

ZZ Exploration commissioned SMG Consultants and Coffey Geosciences Pty Ltd (Coffey Geosciences) to develop conceptual open pit designs for the Oceana mine. Coffey Geosciences was commissioned in February 2006 to develop conceptual open pit mine designs for the Oceana mine. The conceptual pit designs indicate and quantify materials within the pits and detail the geometry of excavations in terms of access, prominent topography and ore extraction extents (Coffey Geosciences 2006). The pit designs are not optimised in terms of economics or grade, but present concepts for ore extraction based on reasonable strip ratios and practical mining parameters (Coffey Geosciences 2006).

Three pit designs were investigated based on ore recovery requirements. Details of the Coffey Geosciences pit designs and the parameters used to define the framework for each design are provided in Appendix W.

Table 7 provides an inventory and ore resource tonnage for each of the three designs, with Appendix W illustrating the three pit design options.

**Table 7:** Pit design option volumes and ore tonnages for the Oceana mine (Coffey Geosciences 2006).

<b>Pit Design Option</b>	<b>Total Volume (m<sup>3</sup>)</b>	<b>Volume of Waste (m<sup>3</sup>)</b>	<b>Volume of Ore (m<sup>3</sup>)</b>	<b>Tonnes of Ore</b>
Option #1	1,640,500	1,416,187	224,313	605,644
Option #2	2,905,267	2,567,952	337,315	910,745
Option #3	4,723,689	4,326,249	397,440	1,073,082

SMG Consultants were commissioned in March 2006 to develop an optimised open pit design for the Oceana deposit, following recent revisions of the Oceana ore resource. Pit designs were varied based on the pit wall angle. Table 8 provides an inventory and ore resource, for the optimised pit designs developed by SMG Consultants.

**Table 8:** Pit design option volumes and ore tonnages for the Oceana mine (SMG Consultants 2006e).

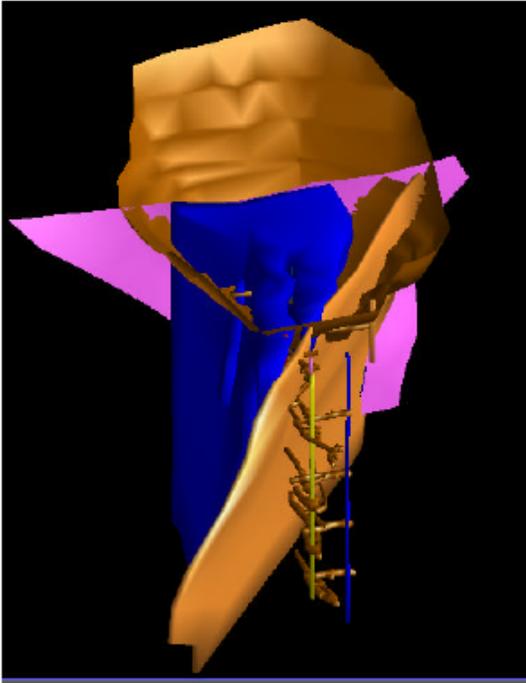
<b>Pit Design Option</b>	<b>Total Volume</b>	<b>Volume of Waste</b>	<b>Volume of Ore</b>	<b>Tonnes of Ore</b>
60° Pit Wall	1,540,938	931,188	609,750	1,859,738
50° Pit Wall	1,559,938	931,188	628,750	1,917,688
65° Pit North Wall Only	1,432,751	931,188	501,563	1,531,586

Note that in the pit optimisation the volume of waste remains constant despite changes to the pit design. This is because the pit optimisation is based on a block model with optimisation aimed at improving the amount of ore extracted only.

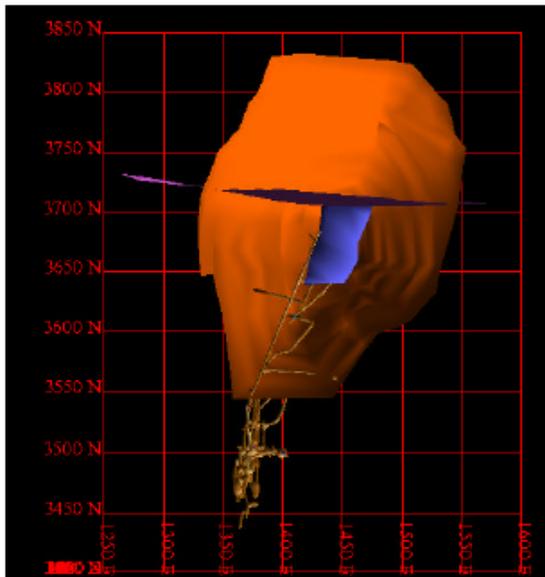
The final optimised pit design is for the mining of the total mineable resource of 1,386,991 tonnes, including the indicated resource of 660,000 tonnes (SMG Consultants 2006e).

Details of the pit designs and the parameters used to define the framework for each of the SMG Consultants designs are provided in Appendix X.

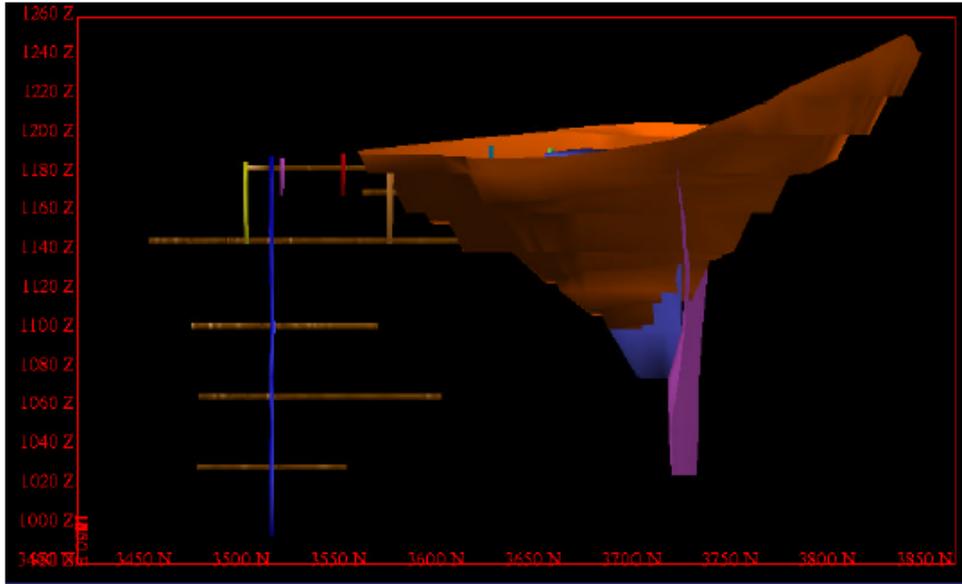
Figure 7 presents geological models with the optimised pit design, total resource, Indicated resource, the local faults and the old workings.



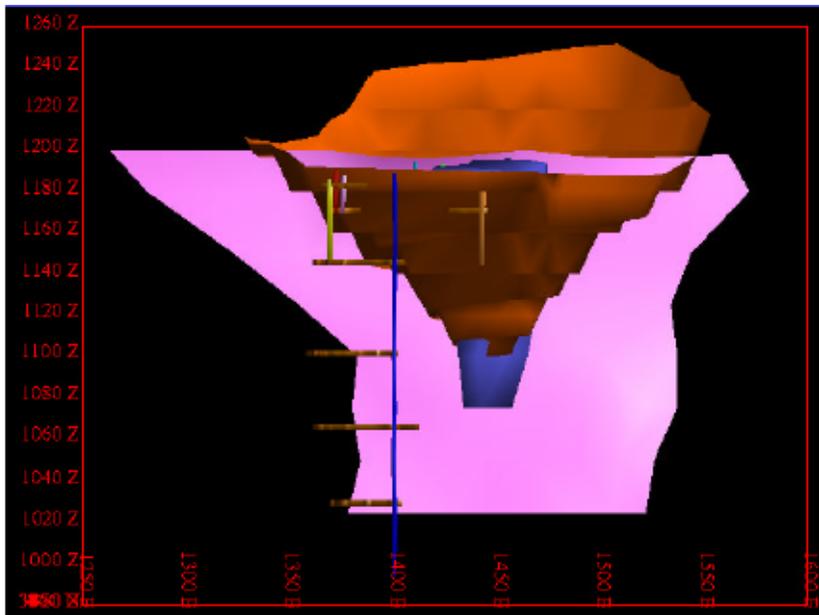
a) The proposed pit, old workings and local geology, with the Oceana Fault in pink, Oceana mine Fault in yellow, and total resource in blue.



b) Plan view of proposed pit, old workings and local geology, with the Oceana Fault in pink (Indicated resource shown in blue).



c) Side view of proposed pit, old mine workings and local geology, with the Oceana Fault in pink (Indicated resource shown in blue).



d) Front view of proposed pit, old workings and local geology, with the Oceana Fault in pink (Indicated resource shown in blue).

**Figure 7:** Proposed open pit design and local geology at the Oceana mine.

The proposed location of the open pit, tailings and waste rock co-disposal facility, ROM stockpiles, mill infrastructure (including a small gravity pre-concentration plant and associated site buildings) is illustrated in Figure 8.

Site access will utilise the existing tracks, as illustrated in Figure 8, with some upgrading of the tracks required prior to mine development.

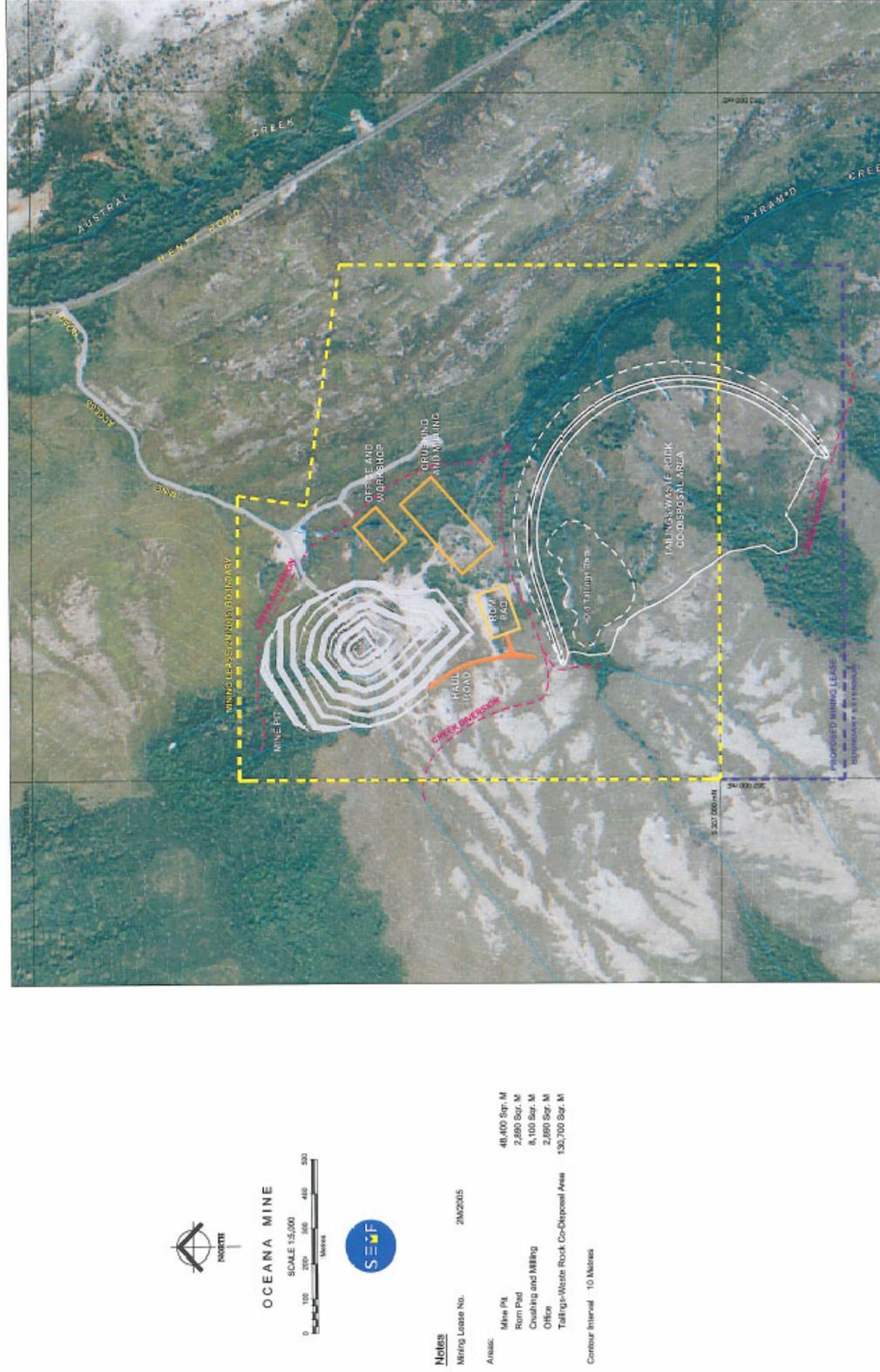


Figure 8: Proposed Oceana mine layout

**4.5 EXISTING ENVIRONMENT AT THE OCEANA MINE**

As part of the mine planning process, during the report period, ZZ Exploration has undertaken an extensive research program into the existing natural environment at the Oceana mine and the immediate surrounds. The results of the research program are summarised below.

**4.5.1 Flora**

In February 2006, a comprehensive flora and fauna survey was undertaken at the Oceana mine site. Ninety vascular plants were recorded within the Oceana lease area, and of the ninety species recorded, seven species were endemic to Tasmania, and twelve species were introduced species (French 2006a, Appendix Y).

Six distinct vegetation communities were recorded within the lease area. The plant communities identified were a factor of the past fire regimes and disturbance associated with mining (French 2006a). The vegetation communities were mapped considering the current floristic composition and what it would equate to under natural regimes (French 2006a). A summary of the plant communities recorded is provided in Table 9.

**Table 9 :** Summary of plant communities and their conservation status (French 2006a).

<b>TASVEG Community</b>	<b>RFA Community</b>	<b>Conservation Status</b>
<i>Eucalyptus nitida</i> forest over <i>Leptospermum</i> (WNL)	Tall <i>E. nitida</i> forest (NT)	Non-priority
Moorland and sedgeland with emergent shrubs (MBS)	Not covered by RFA mapping	Non-priority
Buttongrass moorland (undifferentiated) (MBU)	Not covered by RFA mapping	Non-priority
<i>Acacia melanoxylon</i> on rises (NAR)	<i>Acacia melanoxylon</i> forest on rises (BR)	Non-priority
Queenstown regrowth mosaic (SQR)	Not covered by RFA mapping	Non-priority

A database search (GTSpot) indicated the possible presence of the rare grass *Agrostis thompsoniae* (southern bent), which was previously recorded within the lease area. However, an extensive search of the area did not locate the species (French 2006a).

**4.5.2 Introduced Flora**

A weed survey undertaken in February 2006 identified several weed species, with the weeds of major importance including gorse (*Ulex europaeus*), blackberry (*Rubus fruticosus* agg.), and himalayan honeysuckle (*Leycesteria formosa*) (Gray 2006, Appendix Z). Other weed species identified include common centaury (*Centaureum erythraea*), thistles (e.g. spear thistle (*Cirsium vulgare*), dandelion (*Taraxacum officinale*), cat's ear (*Hypochaeris radicata*), and hawkbit (*Leontodon taraxacoides*). Species identified which will be the primary target of a weed management plan include gorse, blackberry, himalayan honeysuckle and thistles.

A further weed survey in late spring 2006 is recommended to identify emerging species

and species in active growth or flower phases that may have been missed during the initial survey.

ZZ Exploration is committed to undertaking mining operations in an environmentally safe and conscientious manner. As part of this commitment, a preliminary Weed Management Plan has been developed and is provided in Appendix Z, and this plan will be further developed during the commencement of mine development operations.

**4.5.3 Fauna**

As part of the flora survey conducted in February 2006, a fauna survey was also undertaken (French 2006a, Appendix Y).

A database search (GTSpot) indicated the presences of the Grey goshawk (*Accipiter novae-hollandiae*), Hydrobiid snails (*Beddomeia zeehanensis* and *Phrantela conica*), and the Spotted-tailed quoll (*Dasyurus maculatus*) recorded as occurring near the Oceana mine (French 2006a). The Wedge-tailed eagle (*Aquila audux fleayi*) and the Orange bellied parrot (*Neophema chrysogaster*) have also been identified by the Tasmanian Threatened Fauna Handbook (1999) as potentially occurring within the area. During the fauna survey, no sightings of the above species were recorded (French 2006a). The habitat is considered to be suitable for the Grey goshawk, though no nests or the species were observed during the survey.

**4.5.4 European Heritage**

A European heritage survey was undertaken by Parry Kostoglou in February 2006. The overall cultural significance of the surviving resident mine scape is considered to be low based on the historical, social and technological significance of the mining operations that occurred in the past (Kostoglou 2006a, Appendix AA). As a result of the overall low significance attributed to the site, the Oceana mine is not therefore deemed to require any collective protection or proscription regime, although there are several items of mid 20<sup>th</sup> century infrastructure and surviving 19<sup>th</sup> century features that are considered worthy of protection. It is recommended that these two different aged sets of features be protected from development related impacts, rather than seeking to protect all of the resident features. A summary of the features considered worthy of protection is provided in Table 10.

**Table 10:** Summary of European archaeological sites of significance (Kostoglou 2006a).

<b>Feature No. (refer to Kostoglou 2006)</b>	<b>Feature Name</b>	<b>Significance</b>	<b>Recommendations</b>
01	Number 6 shaft	Medium	Protect from impacts
02	Winding shed	Medium	Protect from impacts
03	Slimes drain	Medium	Protect from impacts
04	Collapsed shaft	Medium	Protect from impacts
05	Slime box drain	Medium	Protect from impacts
07	Crushing shed	Medium	Protect from impacts
09	Tailings dam No. 2	Medium	Protect upper most level from impacts
12	Trackside steel frame sections	Low	Features can be removed to another location if required
14	Trackside conical plant footings	Low	Features can be removed to another location if required
18	Hillside adit	Medium	Protect from impacts

The European cultural heritage site assessment was centred over the main mine area, which is most likely to be disturbed during future mine developments. In the event that future development work at the mine site extend into the more peripheral sections of the lease, it is recommended that ZZ Exploration seek to avoid impact on any newly discovered historic cultural heritage sites or features until they have sought advice from a qualified archaeologist.

#### **4.5.5 Aboriginal Heritage**

An Aboriginal heritage survey was undertaken by Rocky Sainty in March 2006. As part of the survey, the Tasmanian Aboriginal Site Index (TASI) at the Aboriginal Heritage Office was inspected to identify if any Aboriginal heritage sites had previously been recorded within the Oceana mine area (Sainty 2006a). The search indicated that to date, no sites had been recorded within the mine area (Sainty 2006a).

A field survey indicated that the Aboriginal landscape had been heavily impacted by previous mining operations (Sainty 2006a, Appendix BB). Although no Aboriginal sites were located within the survey area, it is recommended that if any shell material is unearthed when mine redevelopment commences, then the works should cease immediately and the Tasmanian Aboriginal Land and Sea Council (TALSC) or the Aboriginal Heritage Office be contacted immediately (Sainty 2006a).

#### **4.5.6 Water Quality**

ZZ Exploration has commenced a background water monitoring program for the Oceana mine site, with sampling commencing in October 2005. Collection of samples from the nearby Austral Creek commenced in December 2004. The results are provided in Appendix CC.

Further development of the water monitoring program commenced in March 2006 with the addition of the site No. 6 Shaft.

In 1997, samples were collected at the Oceana mine by Tim Parr as part of an Honours project investigating acid mine drainage in the Zeehan district. The results from the samples collected in 1997 are also provided in the ZZ Exploration water monitoring report as a comparison.

From the water monitoring that has occurred to date, there are clear indications that acid mine drainage is present in the Pyramid Creek (upstream and downstream), the underground water (No. 6 Shaft) and the nearby Austral Creek. In some cases the pH of the water samples is near neutral or slightly alkaline. However, in all cases the metal concentrations are elevated (SEMF 2006b).

It has been noted by ZZ Exploration that the old tailings dam is an active source of acid mine drainage, as the tails are exposed to the air and subject to extensive water infiltration from local drainage patterns.

As part of the planning process and development of the mine, ZZ Exploration will develop a conceptual water management plan to manage acid mine drainage and minimise the potential for continued acid mine drainage generation. Furthermore, as previously mentioned, the development of a tailings and waste rock co-disposal facility

will effectively cover the existing tailings dam site and assist in remediation of the historical acid mine drainage at the Oceana mine site.

#### **4.6 REHABILITATION OF THE OCEANA PROSPECT**

##### **4.6.1 Proposed Mine Rehabilitation Approach**

Open-cut mining operations and the associated removal and disposal of overburden and waste-rock can lead to significant changes to the topography and stability of the landscape. ZZ Exploration is committed to ensuring that any future mining operations at the Oceana mine do not have detrimental environmental impacts and that when mining operations are completed, the mine site is left in an environmentally safe manner. As part of this commitment, prior to commencement of mining operations at the Oceana prospect, ZZ Exploration will prepare a Decommissioning and Rehabilitation Plan (DRP).

The preparation of a DRP will ensure that rehabilitation activities achieve environmental stability, maintain public safety, provide compatible land use and aim towards the establishment of sustainable ecosystems as a long-term goal.

Progressive rehabilitation can be an important tool in minimising and managing environmental impacts associated with mining operations. ZZ Exploration will undertake progressive rehabilitation wherever practical, and will list these activities in annual reports submitted to MRT and DTAE. Furthermore, the establishment of progressive rehabilitation targets by ZZ Exploration and assessing the success of rehabilitation operations against these targets will ensure that the company is committed to rehabilitation works during and after mining operations.

Based on the preliminary mine design plans that ZZ Exploration have developed (refer to Figure 8), it is estimated that during mining and associated processing operations, approximately 19.3ha would be disturbed and consequently require rehabilitation following mine closure.

##### **4.6.2 Provision of an Environmental Bond**

In August 2005, ZZ Exploration provided a bond of \$9,600.00 to MRT for the exploration activities that ZZ Exploration were planning to undertake. During the exploration activities undertaken in 2005 and 2006 by ZZ Exploration at the Oceana mine site, any environmental impacts that have occurred are likely to be shortlived and transitory. Drilling operations were carefully managed to avoid adverse environmental impacts and all exploration activities followed the Mineral Exploration Code of Practice (1999).

## 5 EXPLORATION AT THE MARIPOSA PROSPECT, 2005-2006

### 5.1 GEOLOGY

#### 5.1.1 Deposit Type

The Mariposa prospect is part of a series of limestone-hosted mineral prospects located around Zeehan that have been subjected to substantial previous mineral exploration. The Oceana lead-zinc deposit is considered to have provided much of the impetus for such exploration to be undertaken over all the outcropping areas of the Gordon Limestone in the general Zeehan area (SMG Consultants 2005).

Similar to the Oceana prospect, the mineralisation that occurs at Mariposa is hosted by calcarenites and calcilitites of the Ordovician-aged Gordon Limestone. The sequence is steeply dipping to the west with the Crotty Quartzite overlying the limestone, forming a distinct topographic high, possibly as a faulted contact (SMG Consultants 2006b) (Figure 9).

For the main Mariposa Lode, now called the Western Lode, the lead-zinc mineralisation is associated with a seemingly strata-parallel, siderite replacement unit. Galena is the dominant sulphide species in conjunction with lesser amounts of sphalerite (SMG Consultants 2006b). This lode has been the subject to the majority of previous diamond drilling operations. The eastern lodges are weakly defined due to limited shallow drilling, but they are perceived to be steeply dipping and strata-parallel (SMG Consultants 2006b).

Further details of the Mariposa deposit are provided in SMG Consultants (2006b) (Appendix DD).

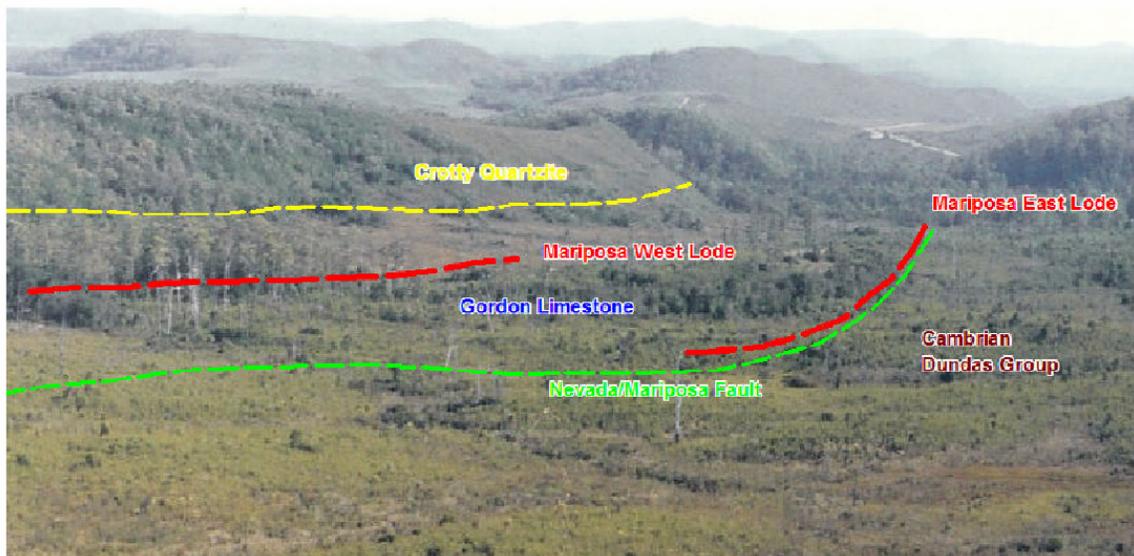


Figure 9: Local geology of the Mariposa prospect (looking north) (SMG Consultants 2006b).

### **5.1.2 Reinstallation of the Local Grid**

To assist in drilling operations and resource estimation, ZZ Exploration reinstalled the previous local grid (Findlay 2006, Appendix I). Re-gridding was undertaken using a topolite, a handheld compass, a GPS, existing maps, and the remaining pegs from the previous local grid (Findlay 2006).

Following the installation of the local grid, prospective drill sites were located using the local grid.

### **5.1.3 Proposed Drilling Program**

#### *Approvals*

ZZ Exploration submitted a proposed drilling program for approval from MRT on 21 February, 2006 (Appendix J). Further information was subsequently provided by ZZ Exploration on the 16 March 2006. On 21 April, confirmation of approval for the proposed Mariposa drilling program was received by ZZ Exploration from MRT.

#### *Reverse Circulation Drilling*

ZZ Exploration has developed an extensive drilling program for the Mariposa prospect, consisting of 40 drill holes, targeting the sulphide deposit approximately 45-135m below the surface. Details of the drill hole locations are provided in Appendix J.

ZZ Exploration plans to commence drilling operations in January 2007.

## **5.2 MINERAL RESOURCE**

### **5.2.1 Resource Calculation**

ZZ Exploration has undertaken several activities to assist in resource calculations at the Oceana mine including:

- The reinstallation of the previous local grid;
- Detailed GPS surveying of grid pegs;
- Development of a geological database containing all previous drilling results;
- Development of a block model; and
- Investigations into the geological mode of deposit formation.

ZZ Exploration has subsequently commissioned an independent 'competent' geologist to undertake resource estimations following the JORC Code (SMG Consultants) (Appendix DD). Resource estimates at the Mariposa deposit are presented in Table 11. For further information regarding resource calculations, refer to Appendix DD.

**Table 11:** Summary of the resource estimate for the Mariposa mine (Anderson and Schwab 2006).

	<b>Tonnes</b>	<b>Pb (%)</b>	<b>Zn (%)</b>	<b>Ag (ppm)</b>	<b>Source</b>
<b>Inferred</b>	537, 737	5.09	2.02	62	SMG Consultants (2006b)
<b>Inferred (underground)</b>	276,347	10.52	2.79	57	
<b>Inferred (open pit)</b>	73,767	8.3	1.06	55	

**5.2.2 Resource Valuation**

ZZ Exploration commissioned Anderson and Schwab in 2005 to undertake a review of the mineral assets of Zeehan Zinc, which includes the Mariposa prospect. In May 2006, Anderson and Schwab reviewed the resource valuations in April 2006, following further exploration activities by Zeehan Zinc (and associated companies) (Appendix S). The valuation of the mineral assets of Zeehan Zinc are provided in Table 12.

**Table 12:** Estimated resource valuations of the mineral assets of Zeehan Zinc (Anderson and Schwab 2006).

Asset	Valuation Method	Value		
		Low	Market	High
EL 20/2002 (includes <b>Mariposa deposit</b> ), EL 30/2002, EL 18/2003	Multiple of Exploration Expenditure	\$18.9m	\$23.6 m	\$28.4m

**5.2.3 Mining Lease Application**

On 22 March, 2006, ZZ Exploration applied for a mining lease (4M/2006) over the Mariposa mine (Appendix AA). MRT subsequently advised ZZ Exploration on 21 April, 2006 that it was considered that there was insufficient information to grant a mining lease over the resource defined at the Mariposa mine. However, an application for a retention licence for 2 years would be received favourably by MRT (Appendix EE).

**5.3 PROPOSED MINE PLAN**

ZZ Exploration has commissioned SMG Consultants to develop conceptual open pit and underground mine designs for the Mariposa prospect (Appendices FF and GG). The quantity and grade of resource estimated to be extracted through open cut mining and underground mining are presented in Table 13. Refer to Appendices FF and GG for further details.

**Table 13:** Resource quantity and grade extraction estimates (SMG Consultants 2006d, f).

	Tonnes	Pb (%)	Zinc (%)	Ag (ppm)
<b>Open cut mining</b>				
45° pit wall	6,1012	8.53	1.08	56.35
50° pit wall	73,767	8.32	1.06	55.19
<b>Underground mining</b>				
Total stoping tonnes (150,130,110m levels)	194,851	12.64	2.95	53.86
Crown pillar resource	37,586	7.05	3.86	55.04
Below 110m level	43,909	4.08	1.17	72.89

**5.4 EXISTING ENVIRONMENT AT THE MARIPOSA MINE**

As part of the mine planning process, during the report period, ZZ Exploration has undertaken an extensive research program into the existing natural environment at the Mariposa mine and the immediate surrounds. The results of the research program are summarised below.

**5.4.1 Flora**

In February 2006, a comprehensive flora and fauna survey was undertaken at the Mariposa mine site. Fifty-seven vascular plants were recorded within the Mariposa mine area, and of the fifty-seven species recorded, one species was endemic to Tasmania, and four species were introduced species (French 2006b, Appendix HH).

Three distinct vegetation communities were recorded within the mine area. The plant communities identified were a factor of the past fire regimes and disturbance associated with mining (French 2006b). The vegetation communities were mapped considering the current floristic composition and what it would equate to under natural regimes (French 2006b). A summary of the plant communities recorded is provided in Table 14.

**Table 14:** Summary of plant communities and their conservation status (French 2006b).

<b>TASVEG Community</b>	<b>RFA Community</b>	<b>Conservation Status</b>
<i>Eucalyptus nitida</i> forest over <i>Leptospermum</i> (WNL)	Tall <i>E. nitida</i> forest (NT)	Non-priority
Moorland and sedgeland with emergent shrubs (MBS)	Not covered by RFA mapping	Non-priority
<i>Leptospermum scoparium</i> – <i>Acacia mucronata</i> forest (NLA)	Not covered by RFA	mapping Non-priority

**5.4.2 Introduced Flora**

Four introduced species were recorded within the Mariposa mine area (French 2006b):

- *Ulex europaeus* (gorse);
- *Centaureum erythraea* (common centauray);
- *Anthoxanthum odoratum* (sweet vernalgrass); and
- *Dactylis glomerata* (english broom).

Small infestations of the noxious weed, gorse, were recorded along the tracks within the Mariposa mine area. Due to presence of this species and english broom, weed management guidelines will be implemented by ZZ Exploration during further exploration activities at the mine site, and prior to any mine development.

A further weed survey to be coordinated first quarter 2007 recommended to identify emerging species and species in active growth or flower phases that may have been missed during the initial survey.

Prior to any mine development activities, ZZ Exploration will conduct an extensive survey during spring to identify any weed species that were not recorded during the initial flora survey. A Weed Management Plan will also be developed.

During the proposed drilling program at the Mariposa prospect, ZZ Exploration will ensure that all drilling operations follow weed prevention measures, as outlined in the Mineral Exploration Code of Practice (1999).

**5.4.3 Fauna**

As part of the flora survey conducted in February 2006, a fauna survey was also

undertaken (French 2006b, Appendix II).

A database search (GTSpot) indicated the presences of the Grey goshawk (*Accipiter novae-hollandiae*), Hydrobiid snails (*Beddomeia zeehanensis* and *Phrantela conica*), and the Spotted-tailed quoll (*Dasyurus maculatus*) recorded as occurring near the Mariposa mine (French 2006b).

During the fauna survey, no sightings of the above species were recorded (French 2006b). The habitat is considered to be suitable for the Grey goshawk, though no nests or the species were observed during the survey. Further assessments are recommended if vegetation clearance is required, to identify the potential impacts on the Grey goshawk (French 2006b).

#### **5.4.4 European Heritage**

A European heritage survey was undertaken by Parry Kostoglou in March 2006 to assess the Mariposa mine site heritage values, with regards to possible impacts from the proposed drilling program (Appendix JJ). The following observations were made following the site inspection (Kostoglou 2006b):

- The resident cultural heritage appears to be of modest scale and significance;
- Most mine associated features such as the former tramline have already been reused and heavily modified by the AMOCO drilling program undertaken during the 1990's; and
- The surviving *in situ* remains such as brick and machinery scatter relating to historic 19<sup>th</sup> century mining are considered to be incidental features that can be readily avoided by drilling operators.

The proposed drilling program will therefore not have any impacts on the European heritage values at the Mariposa mine site.

Prior to any mine developments, a complete European heritage survey will be undertaken at the site.

#### **5.4.5 Aboriginal Heritage**

An Aboriginal heritage survey was undertaken by Rocky Sainty in February 2006. As part of the survey, the Tasmanian Aboriginal Site Index (TASI) at the Aboriginal Heritage Office was inspected to identify if any Aboriginal heritage sites had previously been recorded within the Mariposa mine area (Sainty 2006b). The search indicated that to date, no sites had been recorded within the mine area (Sainty 2006b).

A field survey indicated that the Aboriginal landscape had been heavily impacted by previous mining operations (Sainty 2006b, Appendix KK). At the time of the survey, ground visibility was considered to be poor, with dense vegetation limiting the survey (Sainty 2006b).

Although no Aboriginal sites were located within the survey area, it is recommended that if any shell material is unearthed when mine redevelopment commences, then the works should cease immediately and the Tasmanian Land and Sea Council (TALSC) or the Aboriginal Heritage Office be contacted immediately (Sainty 2006b).

## 6 EXPLORATION EXPENDITURE

### 6.1 EXPENDITURE DURING THIS REPORTING PERIOD

Table 15 summarises the expenditure by ZZ Exploration over EL 20/2002 during the reporting period.

**Table 15:** Summary of expenditure over EL 20/2002 during 2006 - 2007.

Expenditure Statement	2006				2006-2007
	March Quarter	June Quarter	September Quarter	December Quarter	Category Total
Geology	119,625.43	75,848.47	41,239.81	17,953.50	<b>254,667.21</b>
Geochemistry	3,287.89	24,148.45	3,872.91	702.40	<b>32,011.65</b>
Geophysics–Air					
Geophysics – Ground	21,270.55	57,700.06	1,244.16		<b>80,214.77</b>
Feasibility Studies	79,695.04	18,000.65	7,087.24		<b>104,782.93</b>
Rehabilitation					
Drilling (m)	70,904.14	12,972.35		265.78	<b>84,142.27</b>
Gridding line (km)					
Administration	9,426.03	6,129.42	233.07	1,305.23	<b>17,093.75</b>
Other	121,842.55	42,248.04	32,934.70	20,724.23	<b>217,749.52</b>
<b>Grand Total</b>	<b>426,051.63</b>	<b>237,047.44</b>	<b>86,601.89</b>	<b>40,951.14</b>	<b>790,652.10</b>

### 6.2 EXPENDITURE COMMITMENTS

EL20/2002 was granted on 7 February 2003 with an attaching expenditure commitment of \$750,000 for the first two years. As the period covered in this report is January 2006 to December 2006 the expenditure commitments included cover the March to December quarters for 2006 (Table 16).

**Table 16:** Expenditure commitments by ZZ Exploration over EL 20/2002.

Expenditure required (minimum)	EL20/2002 (71km <sup>2</sup> )
Years 1 & 2	\$750,000
Year 3	\$1000 per km <sup>2</sup> per annum
Year 4	\$2000 per km <sup>2</sup> per annum
Year 5	\$5000 per km <sup>2</sup> per annum
<b>Total minimum expenditure up to March quarter 2006 ( including years 1, 2 &amp; 3)</b>	<b>\$821,000</b>

Information supplied by ZZ Exploration indicates that the actual expenditure for each exploration licence, for the first three year term of EL 20/2002 was \$827,963 (Table 17).

This expenditure is in excess of the required commitment for EL 20/2002.

**Table 17:** Expenditure over EL 20/2002 by ZZ Exploration during 2003 - 2006.

<b>Expenditure Statement</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2003-2006</b>
<b>Category</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Category Total</b>
Geology	\$87,948.07	\$26,772.54	\$79,893.62	254,667.21	\$449,281.44
Geochemistry	-	\$200.00	\$3,560.63	32,011.65	\$35,772.28
Geophysics – Air	\$2,200.00	-	-		\$2,200.00
Geophysics – Ground	-	-	-	80,214.77	80,214.77
Feasibility Studies	\$5,488.00	\$3,549.05	\$12,641.14	104,782.93	\$126,461.12
Rehabilitation	-	-	-		
Drilling (m)	-	-	\$13,934.16	84,142.27	\$98,076.43
Gridding line (km)	-	-	-		
Administration	\$9,992.11	\$497.00	\$1,420.74	17,093.75	\$29,003.60
Other	\$4,285.00	\$20,516.50	\$129,212.88	217,749.52	\$371,763.90
GST Error		-\$200.00			
<b>Grand Total</b>	<b>\$109,913.18</b>	<b>\$51,335.09</b>	<b>\$240,663.17</b>	<b>790,652.10</b>	<b>\$1,192,563.54</b>

ZZ Exploration was advised by the Minister for Infrastructure, Energy and Resources (DIER), in a letter dated 7 July 2005, that his decision to revoke EL 20/2002 under Section 34(1) of the Mineral Resources Development Act 1995, would stand. The Minister had convened a meeting with the ZZ Exploration on 8 June 2005 regarding the issue of proceeding to revoke EL 20/2002.

ZZ Exploration has advised the Minister in a letter dated 13 April 2005 that expenditure on EL 20/2002 for the first two year period was a total of \$477,731 and that ZZ Exploration would commit to spend an additional \$492,412 on EL20/2002 to cover the shortfall of actual expenditure compared to commitments.

ZZ Exploration advised the Minister, in a letter dated 4 August 2005, that it would appeal against the decision to revoke EL 20/2002. Subsequently, the first hearing of the Mining Tribunal was held in Launceston on the 26 September 2005 and the discovery process initiated. A second hearing for 28 October 2005 was adjourned with the next hearing was set for 28 November 2006.

On 21 July 2006 the court ordered that the appeal be allowed. The decision of the Minister for Infrastructure, Energy and Resources dated 7 July 2005 to revoke Exploration Licences 20/2002 and 30/2002 was to be set aside.

## **7 PROPOSED WORK PROGRAM**

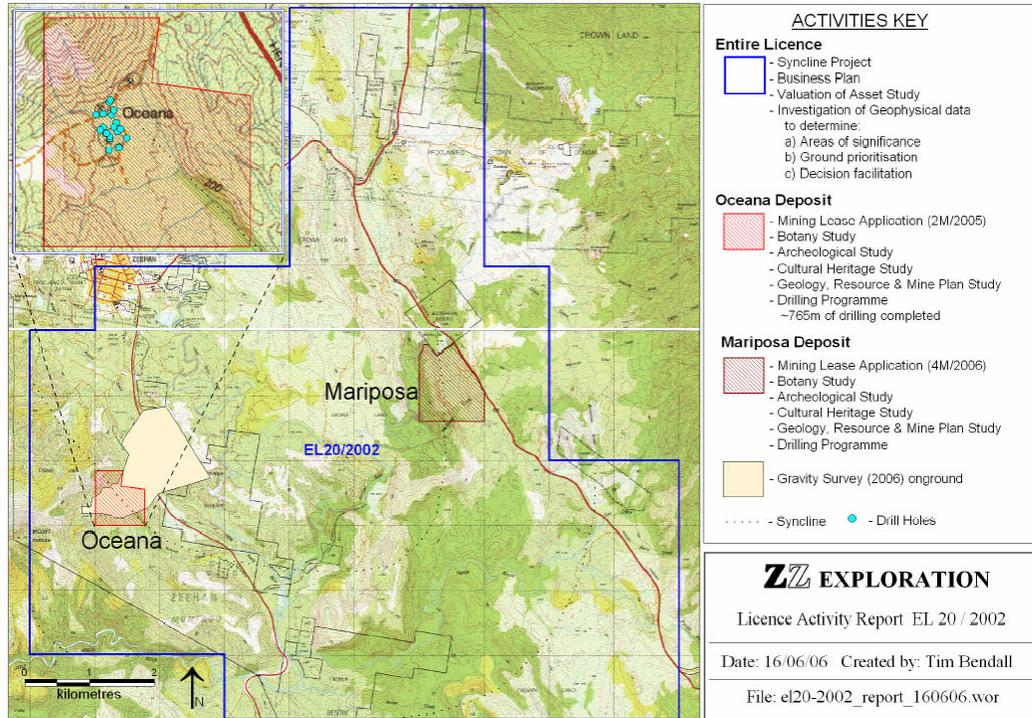
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Exploration proposed during 2006 over EL 20/2002 by ZZ Exploration included the following elements:

- Ground mapping of areas proposed for drilling in 2007;
- Re-pegging of local grids at the Oceana Mine, Mariposa Prospect and proposed drilling area in the north of EL20/2002;
- Undertake regional scale studies into the nature of mineral deposits and the possibility of the discovery of new deposits
- Further RC drilling program over the Oceana prospect expanding southward from holes drilled early 2006;
- Geochemical analysis of RC samples from Oceana;
- Initial resource estimation for the Mariposa prospect;
- Conceptual open pit and underground designs for the Mariposa prospect;
- RC drilling of the Mariposa prospect;
- Image the syncline between Oceana and Mariposa mine sites using 2D Seismic and possibly mapping of ore horizons directly within the limestone.

Several elements that fall under the 2006 work program have been completed. These include:

- Re-pegging of local grids at the Oceana and Mariposa prospects;
- RC drilling program over the Oceana prospect;
- Geochemical analysis of RC samples from Oceana (665.5m);
- Ground-based gravity survey over the Oceana prospect;
- Initial resource estimation for the Mariposa prospect; and
- Conceptual open pit and underground designs for the Mariposa prospect.



• **Figure 10:** Exploration activity map for EL 20/2002 during 2005.

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## **9 APPENDICES**

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**Appendix A:** *Schedule from Exploration Licence EL 20/2002*

**Appendix B:** *Location of Mineral Deposits within EL 20/2002*  
MIRLOCH Mineral Locations

**Appendix C:** *Gravity Surveys for the Zeehan Area, Tasmania*  
Solo Geophysics & Co, 2006

**Appendix D:** *Proposed Geological Investigations over EL 20/2002*  
Hellman & Schofield Pty Ltd, 2006

**Appendix E:** *Potential Nickel Deposits of the Zeehan Area.* Tear, 2006

**Appendix F:** *Aeromagnetic maps featuring magnetic anomaly and ZZ Exploration tenements.* Zeehan Zinc, 2006

**Appendix G:** *3D Model Presentation of Geological Models and Proposed Processing.* Construction Modeling Australia, 2006.

**Appendix H:** *Geological Interpretation for Allison's and Oceana Deposits*  
SMG Consultants Pty Ltd, 2005

**Appendix I:** *Work on Oceana and Mariposa Grids*  
R.H. Findlay, 2006

**Appendix J:** *Proposed Drilling Program for Oceana and Mariposa Deposits*  
ZZ Exploration Pty Ltd, 2006

**Appendix K:** *Oceana Samples Petrology Report.* AMDEL, 2006

**Appendix L:** *Bulk Density Results form the Oceana Deposit; Oceana Pit Resource Review, Zeehan, West Tasmania* SMG Consultants Pty Ltd, 2006

**Appendix M:** *Oceana Mine, Preliminary Waste Characterisation Results*  
SEMF Pty Ltd, 2006

**Appendix N:** *Oceana Pit: Resource Review, Zeehan, West Tasmania*  
SMG Consultants Pty Ltd, 2006

**Appendix O:** *Resources Estimation and Classification Update*  
Cotlco Pty Ltd, 2005

**Appendix P:** *Block Model Report for the Oceana Pit Resource*  
SMG Consultants Pty Ltd, 2006

**Appendix Q:** *Oceana Pit: Optimisation of the Oceana Indicated Resource*  
SMG Consultants Pty Ltd, 2006

**Appendix R:** *Resource to Reserve Conversion Factor*

SMG Consultants Pty Ltd, 2006

**Appendix S:** *Valuation of the Mineral Assets of Zeehan Zinc Limited*  
Anderson & Schwab Australia Ltd, 2006

**Appendix T:** *Application for a Mining Lease over the Oceana Deposit*  
ZZ Exploration Pty Ltd, 2005

**Appendix U:** *Supporting Documentation for the Application for Mining Lease 2M/2005*  
SEMF Pty Ltd, 2006

**Appendix V:** *Business Plan – Update of Financial Aspects, October 2005*  
BDR Consulting Pty Ltd, 2005

**Appendix W:** *Business Plan – Update of Financial Aspects, January 2006*  
BDR Consulting Pty Ltd, 2006

**Appendix X:** *Conceptual Pit Design, Oceana Mine, Zeehan*  
Coffey Geosciences Pty Ltd, 2006

**Appendix Y:** *Flora and Fauna of the Oceana Exploration Area*  
Environmental Consultants International Pty Ltd, 2006

**Appendix Z:** *Weed Status of the Oceana Mine*  
J. Gray, 2006

**Appendix AA:** *Historical Cultural Heritage Assessment, Oceana Mine*  
Archaeological Services Tasmania Pty Ltd, 2006

**Appendix BB:** *Survey for Aboriginal Heritage, Oceana Mine*  
R. Sainty, 2006

**Appendix CC:** *Oceana Mine, Preliminary Water Monitoring Results*  
SEMF Pty Ltd, 2006

**Appendix DD:** *Geological Interpretation and Block Model Report for the Mariposa Prospect*  
SMG Consultants Pty Ltd, 2006

**Appendix EE:** *Application for a Mining Lease over the Mariposa Deposit*  
ZZ Exploration Pty Ltd, 2006

**Appendix FF:** *Conceptual Open Pit Optimisation of Mariposa West Lode*  
SMG Consultants Pty Ltd, 2006

**Appendix GG:** *Conceptual Underground Mine Design, Mariposa West Lode*  
SMG Consultants Pty Ltd, 2006

**Appendix HH:** *Flora and Fauna of the Mariposa Exploration Area* Environmental  
Consultants International Pty Ltd, 2006

**Appendix II:** *Mariposa Mine*, Archaeological Services Tasmania Pty Ltd, 2006

**Appendix JJ:** *A Survey for Aboriginal Heritage at the Mariposa Mine*  
R. Sainty, 2006