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**Appendix L**

*Proposed Seismic Survey*

*Zeehan Vacinity, Tasmania*

*Cultural Heritage Survey*

**Arc Tas Pty Ltd.**

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## PROPOSED SEISMIC PROGRAM

**ZEEHAN VICINITY, TASMANIA**

## CULTURAL HERITAGE SURVEY



Prepared by Parry Kostoglou  
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**For Z. Z. Exploration Ltd.  
February 2007**

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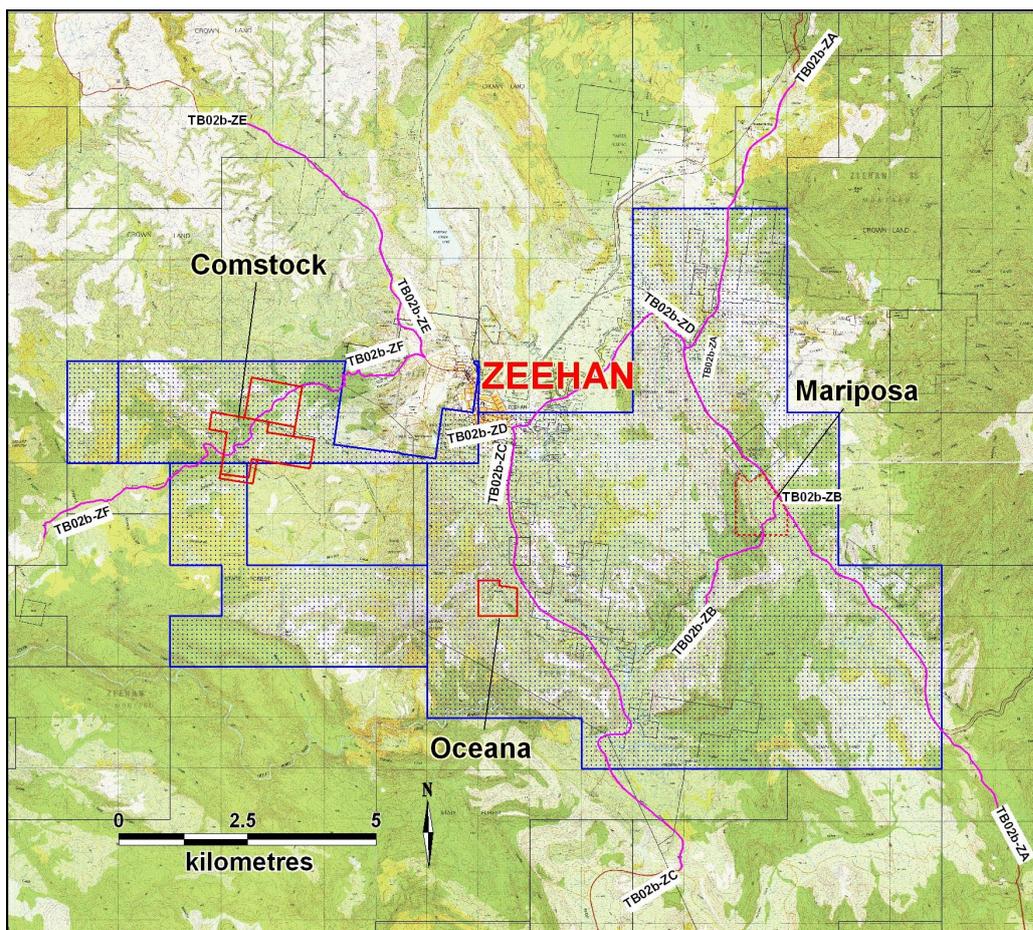
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## 1.0 BACKGROUND

As a part of its ongoing exploration program targeting the resident silver lead ore bodies in the vicinity of Zeehan Township, Zeehan Zinc Exploration Ltd. is currently seeking to undertake seismic testing alongside a number of arterial roadways in order to better clarify the extent of remaining silver/lead deposits in that vicinity. This assessment has accordingly been commissioned in order to identify cultural heritage sites that may be at risk from the seismic testing program.

## 2.0 LOCATION AND EXTENT OF SURVEY AREA

The current exploration program seeks to employ a truck mounted system to detect potential ore bodies. The truck will operate alongside five principal road lines which radiate from Zeehan Township (marked in purple on the map appearing below).



These five roads are:

- The Trial Harbour Road (10 kms)
- The Henty Road ( 11 kms)
- The Heemskirk Road (7 kms)
- The Murchison Highway (13 kms)
- The Zeehan Highway (14 kms)

A total of approximately 55 kilometres of road lines were accordingly examined remotely and by vehicle.

### **3.0 METHODOLOGY**

This assessment commenced with a review of the relevant historic mines data base (MIRLOC) managed by Mineral Resources Tasmania (MRT) in order to compile a map based overlay of known mine sites alongside the relevant sections of road line. A subsequent review of literature examined previous cultural heritage surveys undertaken previously in the area, the results of which appear in Section 5.0 overleaf. Fieldwork subsequently taken over a three day period involved the re-location of all mine sites occurring within 50 metres of the centre of the relevant roadway in addition to other features not appearing on the data base. These sites were then recorded locationally using a hand held GPS unit and descriptive notes entered on standard pro-forma site recording forms.

### **4.0 PREVIOUS WORK**

The following cultural heritage assessments are known to have been undertaken in the Zeehan vicinity.

1. (Townrow 1984) Although this was a thematic assessment of the mining industry throughout the entirety of Tasmania, this investigation did highlight the contribution of the Zeehan field to the state's industry and included some field assessment of sites along the Trial Harbour Road and the Zeehan Highway.

2. (Kostoglou 1998/1) This consultant undertook a field based assessment of the Five Mile (Cuni) copper nickel mine complex near Melba Siding on the Murchison Highway for MRT.
3. (Kostoglou 1998/2) This consultant undertook a field based assessment of the Queen Hill silver/lead mines beside the Trial Harbour road as part of a larger acid mine drainage remediation strategy being undertaken by MRT.
4. (Kostoglou 2006/1) This consultant undertook a field based assessment of the Oceana mining lease for Z.Z. Exploration as part of that company's application to undertake exploratory drilling on that lease.
5. (Kostoglou 2006/2) This consultant undertook a preliminary desk top assessment of the former Tasmanian Smelter Company smelter site situated beside the Zeehan Highway for Z. Z. Exploration in order to establish the site's relative cultural significance.

## 5.0 SUMMARY OF RESULTS

During this assessment a total of thirteen sites were located in the vicinity of the subject road lines. These were:

<b>Site No.</b>	<b>Site name</b>	<b>Significant Yes/no</b>	<b>Recommendations</b>
01	Roadside tunnel (No. 6 adit)	Yes	Protect
02	Unknown Concentrating mill (Zeehan Queen lease)	Yes	Protect
03	Silver Queen No. No. 4 shaft	No	None
04	Silver Queen No. 3 mullock dump	Yes	Protect
05	Unknown mullock dump 1	No	None made
06	North Comstock (adjacent unnamed working)	No	None made
07	Zeehan Western mill site	Yes	Protect

08	Montana mill site	Yes	Protect
09	Western Extended mullock dump	Yes	Protect
10	Unnamed silver lead mine (Rayna Flats vicinity)	Yes	Protect
11	Australian mine	No	None made
12	Black Jacks (adjacent unnamed working)	No	None made
13	Unnamed workings (Dundas River)	No	None made

## 6.0 RECOMMENDATIONS

As a result of this assessment, it is recommended that the following sites be avoided by the proposed works.

- Roadside tunnel (No. 6 adit)
- Unknown Concentrating mill (Zeehan Queen lease)
- Silver Queen No. 3 mullock dump
- Zeehan Western mill site
- Montana mill site
- Western Extended mullock dump
- Unnamed silver lead mine (Rayna Flats vicinity)

## 7.0 RESULTS OF FIELD WORK

The following thirteen sites were located during the field work component.

HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.		
<b>Site/Feature name:</b> Roadside tunnel (No. 6 adit, adit crosscut)		<b>Site number:</b> 01
<b>Location (AGD 1966)</b> E 0360574 N 5361840	<b>Land tenure:</b> Crown Land Min Exp. Lease RL 5/1997	<b>Historic theme:</b> Mining
<b>Description of remains:</b> This site consists of an adit and associated mullock dump situated on the opposite/north side of the Trial Harbour Road. The adit portal has been almost silted up with acid mine drainage but remnants of the timber shoring can be still be seen.		
<b>History (If known):</b> The precise history of this site remains uncertain however Kostoglou (1998/1) attributes this working to unknown miners working on Clarke's Lode between 1900 and c1940.		
<b>Interpretation of site:</b> Silver lead adit/underground crosscut and associated mullock dump.		
<b>Significance:</b> Low		
<b>Recommendations:</b> Avoid locations of adit and associated mullock dump.		
<b>References:</b>		
<ul style="list-style-type: none"> <li>• MIRLOC data base (Mineral Resources Tasmania)</li> <li>• Kostoglou 1998/1</li> </ul>		

Map showing location of site



Photograph showing timbered adit entrance.



HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.		
<b>Site/Feature name:</b> Unknown concentrating mill (Zeehan Queen lease)		<b>Site number:</b> 02
<b>Location (AGD 1966)</b> E 0360488 N 5361840	<b>Land tenure:</b> Crown Land Min Exp. Lease RL 5/1997	<b>Historic theme:</b> Mining
<b>Description of remains:</b> The site consists of an earthen embankment, three tiered concrete mill footing and adjacent concrete water tank.		
<b>History (If known):</b> The precise history of this site remains uncertain however Kostoglou (1998/1) attributes this plant to tributers working the adjacent Clarke's Lode between c1900 and 1929.		
<b>Interpretation of site:</b> c1900's ore concentrating mill plant.		
<b>Significance:</b> High		
<b>Recommendations:</b> Protect from all impacts		
<b>References:</b> <ul style="list-style-type: none"> <li>MIRLOC data base (Mineral Resources Tasmania)</li> <li>Kostoglou 1998/1</li> </ul>		

**Map showing location of site**



**Photograph showing site**



**HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.**

<b>Site/Feature name:</b> Silver Queen No. 4 shaft		<b>Site number:</b> 03
<b>Location (AGD 1966)</b> E 0360420 N 5361749	<b>Land tenure:</b> Crown Land Min Exp. Lease RL 5/1997	<b>Historic theme:</b> Mining
<b>Description of remains:</b> The site consists of the former shaft (now flooded and fenced) concrete footings marking the location of the pump house and a smaller southern shaft and mullock dump 25 metres to the east.		
<b>History (If known):</b> The Silver Queen Prospecting Association was formed in 1888 and worked commenced on the company's number 4 shaft by c1890 and operated continuously until its closure by the company in c1910. Government sponsored prospecting may have seen further work done by tributers until its final closure in 1929.		
<b>Interpretation of site:</b> Former headframe, power plant and mine shaft location		
<b>Significance:</b> Low		
<b>Recommendations:</b> None made		
<b>References:</b>		
<ul style="list-style-type: none"> <li>• MIRLOC data base (Mineral Resources Tasmania)</li> <li>• Kostoglou 1998/1</li> </ul>		

**Map showing location of site**



**Photograph showing site**







**HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.**

<b>Site/Feature name: North Comstock (adjacent unnamed working)</b>		<b>Site number: 06</b>
<b>Location (AGD 1966)</b> E 0358056 N 5361258	<b>Land tenure: Crown Land</b>	<b>Historic theme:</b> Mining
<b>Description of remains:</b> This site consists of a 30 x 25 x 0.5 metre high expanse of substantially re-vegetated mullock.		
<b>History (if known):</b> The Comstock group of mines commenced operation by c1890 and operated continuously until c1928. Between 1935 and 1950 some limited extraction and exploration was undertaken by government sponsored individuals.		
<b>Interpretation of site:</b> Late 19 <sup>th</sup> /Early 20 <sup>th</sup> century silver lead prospect.		
<b>Significance:</b> Minimal		
<b>Recommendations:</b> None made		
<b>References:</b>		
<ul style="list-style-type: none"> <li>MIRLOC data base (Mineral Resources Tasmania)</li> </ul>		

**Map showing location of site**



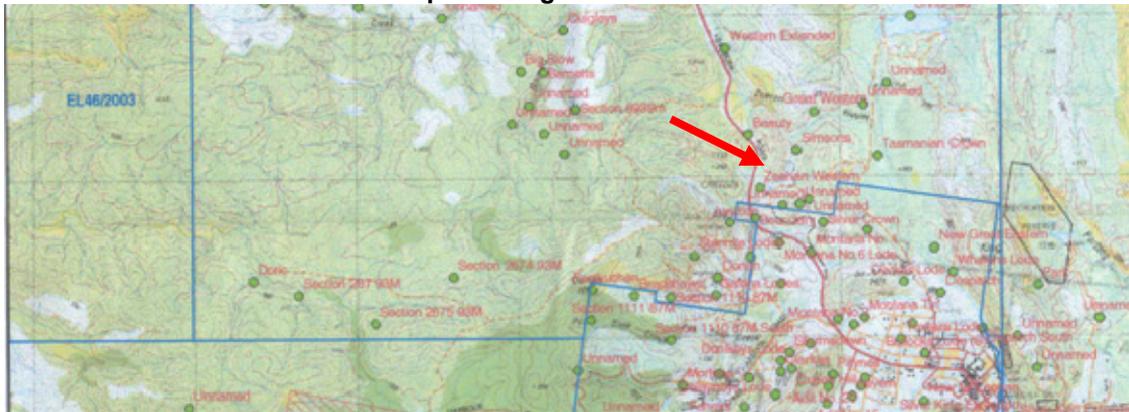
**Photograph showing site**



**HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.**

<b>Site/Feature name:</b> Zeehan Western mill site		<b>Site number:</b> 07
<b>Location (AGD 1966)</b> E 0360854 N 5362489	<b>Land tenure:</b> Crown Land	<b>Historic theme:</b> Mining
<b>Description of remains:</b> The site consists of a roadside cemented rubble wall building and adjacent tailings. The resident structure has a two roomed floor plan.		
<b>History (if known):</b> The Zeehan Western group of mines commenced operation by c1890 and operated continuously until c1910. Some limited extraction and exploration was undertaken by government sponsored individuals up to 1960.		
<b>Interpretation of site:</b> Late 19 <sup>th</sup> century silver lead concentrating mill site		
<b>Significance:</b> High		
<b>Recommendations:</b> Protect from all impacts		
<b>References:</b>		
<ul style="list-style-type: none"> <li>MIRLOC data base (Mineral Resources Tasmania)</li> </ul>		

**Map showing location of site**



**Photograph showing site**



**HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.**

<b>Site/Feature name:</b> Montana mill site		<b>Site number:</b> 08
<b>Location (AGD 1966)</b> E 0359785 N 5364902	<b>Land tenure:</b> Crown Land	<b>Historic theme:</b> Mining
<b>Description of remains:</b> A 34 x 20 metre wide concrete foundation containing numerous upright footings formerly accommodating concentrating mill plant. A mortar box formerly comprising part of the crushing plant is still <i>in situ</i> .		
<b>History (If known):</b> The Montana group of mines commenced operation by c1890 and operated continuously until c1928. Between 1935 and 1950 some limited extraction and exploration was undertaken by government sponsored individuals.		
<b>Interpretation of site:</b> Early 20 <sup>th</sup> century silver lead concentrating mill site		
<b>Significance:</b> High		
<b>Recommendations:</b> Protect from all impacts		
<b>References:</b>		
<ul style="list-style-type: none"> <li>MIRLOC data base (Mineral Resources Tasmania)</li> </ul>		

**Map showing location of site**



**Photograph showing site**



HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.		
<b>Site/Feature name:</b> Western Extended mullock dump		<b>Site number:</b> 09
<b>Location (AGD 1966)</b> E 0360445 N 5362853	<b>Land tenure:</b> Crown Land	<b>Historic theme:</b> Mining
<b>Description of remains:</b> 25 x 33 x 4metre high tailings dump situated on eastern side of Heemskirk road.		
<b>History (if known):</b> The Zeehan Western group of mines commenced operation by c1890 and operated continuously until c1910. Some limited extraction and exploration was undertaken by government sponsored individuals up to 1960.		
<b>Interpretation of site:</b> Early 20 <sup>th</sup> century silver lead mullock stockpile		
<b>Significance:</b> Medium		
<b>Recommendations:</b> Protect from all impacts		
<b>References:</b>		
<ul style="list-style-type: none"> <li>MIRLOC data base (Mineral Resources Tasmania)</li> </ul>		

**Map showing location of site**

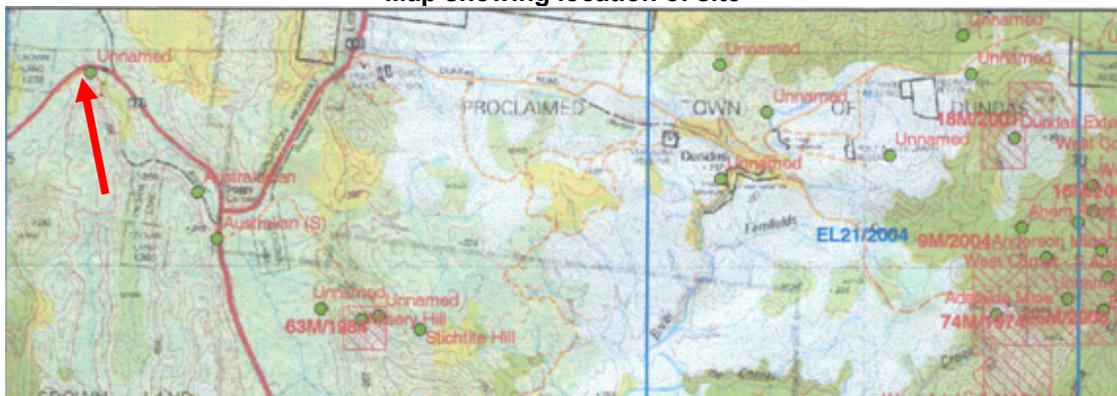


**Photograph showing site**



HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.		
<b>Site/Feature name:</b> Unnamed silver lead mine (Rayna Flats vicinity)		<b>Site number:</b> 10
<b>Location (AGD 1966)</b> E 0365441 N 5362862	<b>Land tenure:</b> Crown Land	<b>Historic theme:</b> Mining
<b>Description of remains:</b> Timber tramway formation situated on south side of Zeehan Highway leading to remnant mine settlement and adjacent workings. Several timber wall panels attest to former hut remains.		
<b>History (If known):</b> No data available		
<b>Interpretation of site:</b> Early 20 <sup>th</sup> century silver lead prospect and encampment		
<b>Significance:</b> Medium		
<b>Recommendations:</b> Protect from impacts		
<b>References:</b>		
<ul style="list-style-type: none"> <li>MIRLOC data base (Mineral Resources Tasmania)</li> </ul>		

**Map showing location of site**



**Photograph showing site**



**HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.**

<b>Site/Feature name:</b> Australian mine		<b>Site number:</b> 11
<b>Location (AGD 1966)</b> E 0365991 N 5362176	<b>Land tenure:</b> Crown Land	<b>Historic theme:</b> Mining
<b>Description of remains:</b> Remnant mullock dumps and roadside artefacts including sections of a riveted iron ships water tank.		
<b>History (If known):</b> No data available		
<b>Interpretation of site:</b> Early 20 <sup>th</sup> century silver lead prospect		
<b>Significance:</b> Low		
<b>Recommendations:</b> None made		
<b>References:</b> <ul style="list-style-type: none"><li>MIRLOC data base (Mineral Resources Tasmania)</li></ul>		

**Map showing location of site**



**Photograph showing site**

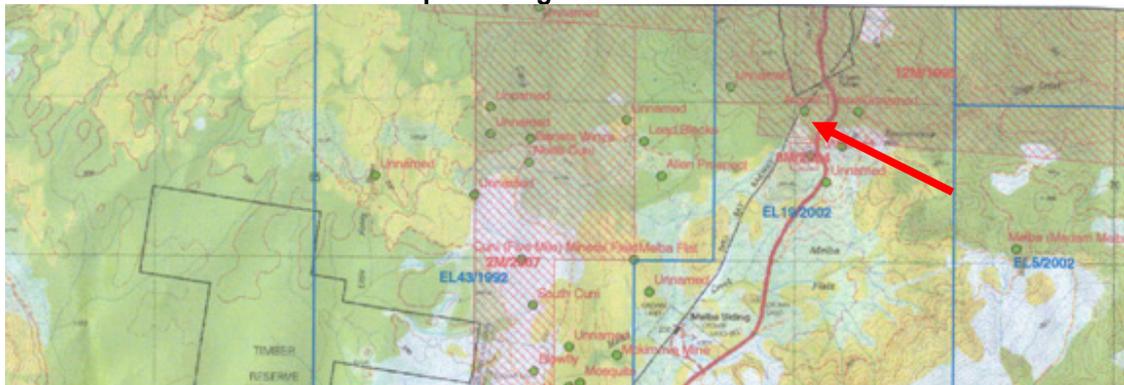




**HISTORIC CULTURAL HERITAGE ASSESSMENT. ADDITIONAL SURVEY AREAS.**

<b>Site/Feature name:</b> Unnamed workings (Dundas River)		<b>Site number:</b> 13
<b>Location (AGD 1966)</b> E 0367272 N 5360072	<b>Land tenure:</b> Crown Land	<b>Historic theme:</b> Mining
<b>Description of remains:</b> Remnant roadside mullock with poorly preserved mine timbering.		
<b>History (If known):</b> No data available		
<b>Interpretation of site:</b> Early 20 <sup>th</sup> century silver lead prospect		
<b>Significance:</b> Minimal		
<b>Recommendations:</b> None made		
<b>References:</b>		
<ul style="list-style-type: none"><li>MIRLOC data base (Mineral Resources Tasmania)</li></ul>		

**Map showing location of site**



**Photograph showing site**



## 8.0 REFERENCES

- Kostoglou, P. 1998/1 An archaeological survey of the Five Mile (Cuni) copper Nickel mines. Report to Mineral Resources Tasmania.
- Kostoglou, P. 1998/2 An archaeological survey of the historic Zeehan Queen Hill mine workings. Report to Mineral Resources Tasmania.
- Kostoglou, P. 2000 A selective archaeological survey of the Comstock mine lease. Report to Zeehan Zinc Pty. Ltd.
- Kostoglou, P. 2006/1 Historic cultural heritage assessment. Oceana mining lease, Zeehan. Report to Z.Z. Exploration.
- Kostoglou, P. 2006/2 Historic cultural heritage assessment. Tasmanian Smelter Company smelter site, Zeehan. Report to Z.Z. Exploration.
- Townrow, K. 1984 An archaeological investigation of early mining in Tasmania. Parks & Wildlife Service, Tasmania.