97-4094

264001

Rio Tinto Exploration Pty. Limited

A.C.N. 000 057 125

A member of the Rio Tinto Group

EL 34/88 Zeehan 2
Ninth Annual Report
for the Period Ending 9 November 1997
Tasmania, Australia

Author: SAJ Russell

Date: December 1997

Submitted to: Chief Geologist - SE District

Copies to: Rio Tinto Exploration, GER - Bundoora
Rio Tinto Exploration, SE District - Bundoora
Mineral Resources Tasmania
Allegiance Mining NL

Submitted by: Sarah Russell

Accepted by:

Rio Tinto Report No. 23624

97-4094

ANNUAL REPORT
EL 34/88-BURNIE
RIO TINTO-SAJ RUSSEL

Abstract

Zeehan 2, EL 34/88 covers 34 km^2 located near Zeehan on the Tasmanian W coast (plan Tv1025). EL 34/88 was granted to "His Grace, The Most Noble, The Duke of Avram" on 9th December 1988, and transferred to Major Mining Ltd on the 23rd November 1989. Rio Tinto Exploration Pty. Limited entered into a joint venture agreement with Major to explore EL 34/88, commencing on 23rd April 1991. Major Mining Ltd divested its interest in the joint venture to Allegiance Mining NL, with the exploration tenements transferred to Rio Tinto (90%) and Allegiance (10%) as tenants in common on 22nd January 1994.

Rio Tinto's principal focus in the Zeehan area has been zinc mineralisation within the Ordovician Gordon Limestone, considered prospective for Irish-style carbonate-hosted Zn-Pb deposits.

During recent project rationalisation and prioritisation, Rio Tinto Exploration Pty. Limited concluded that the Ordovician carbonates of western Tasmania are no longer a priority zinc target.

No work has been conducted on the licence since the last annual report.

It is recommended that EL 34/88 be relinquished.

Table of Contents

		Page No.
Abstract		
List of Plans		
List of Appendices		
1.	Conclusions and Recommendations	1
2.	Introduction	1
3.	Review of Previous Work	1
4.	Exploration Completed in the 12 Month Period Ending 9 November 1997	1
5.	Rehabilitation	2
6.	Expenditure	2
7.	References	2
8.	Location	3
9.	Keywords	3

List of Plans

Plan No.	Title	Scale
Tv1025	EL 34/88 Zeehan 2 Location Plan	1:100,000

List of Tables

Table 1	EL 34/88 Zeehan 2 Expenditure

List of Appendices

Appendix 1	The Gordon Limestone Lithostratigraphy
Appendix 2	Summary of Previous Exploration - Competitor and Rio Tinto
Appendix 3	Zinc Mineralisation in the Gordon Limestone

1. Conclusions and Recommendations

During recent project rationalisation and prioritisation, Rio Tinto Exploration Pty. Limited concluded that the Ordovician carbonates of western Tasmania are not a priority zinc target.

No work has been conducted on the licence since the last annual report.

It is recommended that EL 34/88 be relinquished.

2. Introduction

Zeehan 2, EL 34/88 covers 34 km^2 located near Zeehan on the Tasmanian W coast (plan Tv 1025). EL 34/88 was granted to "His Grace, The Most Noble, The Duke of Avram" on 9th December 1988, and transferred to Major Mining Ltd on the 23rd November 1989. Rio Tinto Exploration Pty. Limited entered into a joint venture agreement with Major to explore EL 34/88, commencing on 23rd April 1991. Major Mining Ltd divested its interest in the joint venture to Allegiance Mining NL, with the exploration tenements transferred to Rio Tinto (90%) and Allegiance (10%) as tenants in common on 22nd January 1994.

Rio Tinto's principal focus in the Zeehan area has been zinc mineralisation within the Ordovician Gordon Limestone, considered prospective for Irish-style carbonate-hosted Zn-Pb deposits.

During recent project rationalisation and prioritisation, Rio Tinto Exploration Pty. Limited concluded that the Ordovician carbonates of western Tasmania are no longer a priority zinc target.

Sub-divisions of the Gordon Limestone have been made on a lithologic/lithostratigraphic basis for utilisation in drillhole logging. Explanation of formation codes is in Appendix 1.

See Parkinson (1992, 1993 and 1994) and Tear (1995) for regional setting, prospect geology and mineralisation.

3. Review of Previous Work

See Appendix 2.

4. Exploration Completed in the 12 Month Period Ending 9 November 1997

During recent project rationalisation and prioritisation, Rio Tinto Exploration Pty. Limited concluded that the Ordovician carbonates of western Tasmania are not a priority zinc target.

No work has been conducted on the licence since the last annual report.

It is recommended that EL 34/88 be relinquished.

5. Rehabilitation

No field work was conducted during the current year of reporting. Hence no rehabilitation was necessary.

Monitoring of drill site revegetation continued.

6. Expenditure

Expenditure for EL 34/88, Zeehan 2 for the 12 month period ending 9 November 1997 is $5,872. Total expenditure for the licence is $755,663.

7. References

Kratochvil, M	1991	EL 34/88 Henty, Tasmania. Statutory Progress Report for the Period Ending 9th November 1991. *Rio Tinto Report No. 17635*
Parkinson, RG	1992	Zeehan No. 2 EL 34/88. Report on Exploration for the Fourth Year of Tenure, 9/11/91 to 9/10/92. *Rio Tinto Report No. 18359*
Parkinson, RG	1993	Zeehan No. 2 EL 34/88. Report on Exploration for the Fifth Year of Tenure, 9/10/92 to 9/11/93. *Rio Tinto Report No. 19285*
Parkinson, RG	1994	Zeehan No. 2 EL 34/88. Report on Exploration for the Sixth Year of Tenure 9/11/93 to 9/11/94. *Rio Tinto Report No. 20458*
Tear, SJ	1995	Zeehan No. 2 EL 34/88. Report on Exploration for the Seventh Year of Tenure 9/11/94 to 9/11/95. *Rio Tinto Report No. 21151*
Russell, SAJ & Tear, SJ	1996	Zeehan No. 2 EL 34/88. Report on Exploration for the Eighth Year of Tenure 9/11/95 to 9/11/96. *Rio Tinto Report No. 22209*

8. Location

Queenstown	SK55-05	1:250,000
Pieman	7914	1:100,000
Zeehan	7914-S	1:50,000

9. Keywords

Tasmania * Ordovician * Gordon Limestone * Zinc

Table 1

EL 34/88 Zeehan 2
Expenditure Table

	1/11/96 31/10/97	Total
Drilling	0	276,212
Contractors	243	61,178
Laboratory	0	39,257
Rent & Property	75	12,030
Payroll & Benefits	1,273	168,126
Field & Transport	158	65,698
Travel & Accommodation	266	19,484
Computer Services	774	5,525
Professional	580	4,080
Office & Miscellaneous	411	7,980
District Administration	460	41,049
Regional Costs	574	47,085
Tenements	1,060	7,960
TOTAL	**5,874**	**755,664**

145.3°
360000 mE
145.4°
370000 mE
145.5°
Dundas
Zeehan
Mt. Agnew
Comstock
Mt. Dundas
5360000 mN
-41.9°
Austral
Mt. Zeehan
EL34/88
EL34/88
Henty Road
5350000 mN
-42°
EL34/88
Foreshore
Flats
Henty Dunes
Queenstown
Airport
5340000 mN
Southern
Ocean
-42.1°
Highway
Lynchford
N
0
2
4
Kilometers
Projection: AMG Zone 55
Grid: AMG Zone 55 & Lat/Long AGD66
Strahan
Strahan Airport
Regatta Point
5 cm

Legend

- Town
- Mountain
- EL Boundary
- Perennial Drainage
- Non-Perennial Drainage
- Highway
- Secondary Road
- Minor Road
- Track
- Railway
- Lake
- Swamp
- Urban

Burnie
Hobart

Location Diagram

SK55-20 NW-Tas

Conical Rocks 7814	Pieman 7914	Sophia 8014
	Cape Sorell 7913	Franklin 8013

SK55-22 SW-Tas

Mapsheet Reference

RIO TINTO EXPLORATION PTY. LIMITED

EL34/88 Zeehan 2

Location Plan

Author: Simon Tear	Reference: SW Tasmania SK55-22
Drawn: Tony Sargeant	File Name: Tv1025.wor
Date: December 1996	Report No: 23624
Scale: 1:100,000	Plan No: Tv1025

264008

Appendix 1

The Gordon Limestone Lithostratigraphy

Zeehan Carbonate Project

In the Zeehan sub-basin the Gordon Limestone has a thickness of 500m (DDH ZB1007). Drilling by Rio Tinto has subdivided this formation into lithologic and lithostratigraphic units. These subdivisions have been utilised in the drillhole logging and are displayed below.

Drill Hole Logging Formation / Lithology Codes

Sc	=	Crotty Quartzite		**SILURIAN**
Ogud	=	Upper Dolomite		
Ogsi	=	Siltstone Unit		
Ogul	=	Undifferentiated limestone		
Ogdl	=	Undifferentiated dolomite		
Ogmu	=	Laminated Micrite Unit		
Ogoo	=	Oolite Unit		**ORDOVICIAN**
Ogsd	=	Siderite Unit	**GORDON LIMESTONE**	
Ogdc	=	Dark Grey / Black Clay Unit		
Ogfc	=	Ferruginous Clay Unit		
Ogms	=	Massive Sulphide Unit		
Ogst	=	Silty Transition Unit		
Om	=	Moina Sandstone		
Oo	=	Owen Conglomerate		
Ed	=	Dundas Group (undifferentiated)		**CAMBRIAN**

An explanation for the sub-divisions is given below.

1) The Crotty Quartzite

This formation is a sequence of deltaic quartzites of Silurian age. However in drillcore there appears to be no consistency in lithologies at its base which is perhaps to be expected. The question of a faulted contact is brought to mind and thus the unit has not been subdivided. In DD95ZM190 the sequence passes from white massively bedded sandstone into interbedded/interlaminated sands, shales and silts before finally passing into dark shales (fissile) and clays (possible fault gauge). This is possibly matched in DD95DS98 but there are considerable thickness variations.

2) The Upper Dolomite Unit (Ogud)

This is a dolomitised limestone unit that always occurs beneath the Crotty Quartzite contact. Its thickness is variable, up to 100m in DD95ZR104 and down to 25m in DD95ZM190. It is possible that the dolomitisation is fault related, the fault being the Crotty Quartzite/Gordon Limestone Contact.

3) The Siltstone Unit (Ogsi)

This is an argillaceous calcsiltite with bands of bioclastic calcarenite and nodular calcsiltite. Locally it is unreactive to dilute HCL. It generally occurs at the base of the top third of the stratigraphic column and has an average thickness of 15m.

There is a transitional upper and lower sequence to the main Siltstone Unit.

4) Undifferentiated Limestone (Ogul)

This is a bucket term to fit all limestones that do not separate out into any distinctive lithology subdivision

5) Undifferentiated Dolomite (Ogdl)

Localised zones of dolomitised limestone occur within various parts of the stratigraphic column. Unless it is part of the Upper Dolomite, it is referred to as undifferentiated dolomite. The dolomitisation is attributable to faults and/or due to mineralisation as Ogdl units often have elevated base metal values.

6) Laminated Micrite Unit (Ogmu)

This is a distinctive lithofacies comprising of banded and stylolitic fine grained calcarenites and micrites. Sometimes the laminae consist of argillaceous material. The units have an upper thickness limit of generally <3m except in specific circumstances (DD95ZP63). Birds eye micrite units are often associated with the laminated zones. The unit is not a marker horizon but occurs with sufficiently regularity in drillcore as to be able to assist stratigraphic correlations.

7) Oolite Unit (Ogoo)

This unit occurs in outcrop at Grieves Prospect as a dolomitised equigranular calcarenite unit - believed to be an oolite. It is believed that this well sorted, clean, medium grained bioclastic calcarenite unit, locally oolitic, is really part of a package of well sorted calcarenites seen towards the base of the limestone sequence.

8) Siderite Unit (Ogsd)

The Siderite Unit is an alteration facies imposed on and replacing limestone (?dolomitised) at the base of the Gordon Limestone. It is regarded as being part of the alteration associated with the replacement Zn/Pb mineralisation.

Siderite alteration also occurs at Grieves in the middle of the limestone sequence.

Siderite is also present at the upper sandstone/limestone contact at Blackjacks (DD95DB110) and Myrtle (DD95ZM190).

9) Dark Grey/Black Clay Unit (Ogdc)

These clays are encountered at surface and in drill core above 300m vertical depth. They generally are to be found at the base of the limestone, although they can occur at the top contact (DD95DB110). Dark clays can also be found in the top of drillholes where surficial weathering of the limestones has produced a black pug - depths of 45 vertical metres have been recorded (DD95ZR103). The exact nature of the clays at the basal part of the limestone is unclear. They always underlie the Oolite Unit, often can be intermixed with siderite zones of the Siderite Unit and can be part of the underlying Silty Transition Unit. Whether they are products of deep surface weathering, palaeo-weathering, fault zones or mineral-related alteration remains to be resolved.

10) Ferruginous Clay Unit.

These are light grey, orange, yellow, brown and red coloured clays, often banded. They generally occur beneath the Dark Clay Unit, although at Grieves they can be intermixed with the Dark Clays. In some instances they are sericitic, in others they can be sandy (fine grained quartz grains). They are heavily limonitic and their exact nature is unsure. It is possible that the clays are part of the Silty Transition Unit or even the underlying Moina Sandstone. Alternatively they could be weathering products of mineralisation associated

with the dark clay unit.

11) Silty Transition Unit

This is the basal unit of the Gordon Limestone. It comprises of a series of partly dolomitised limestones and fine grained arenaceous units with black siltstones. It appears to have a well defined thickness of between 12-16m and in some instances overlies the Moina Sandstone conformably. Mineralisation would appear to lie immediately above the top contact of the Silty Transition Unit.

12) Moina Sandstone

This sandstone formation is characterised by a silicic quartzite with localised conglomerate bands, often becoming a pink silicic quartzite.

Appendix 2

Summary of Previous Exploration

Competitor and Rio Tinto

Exploration by Major Mining Ltd / Rio Tinto Prior to 9/11/96

Year 1 & 2 Activities by Major Mining prior to Rio Tinto's involvement are detailed in the relevant statutory reports. Field activities included a gradient array IP survey covering a small part of the Firewood Siding area.

Year 3 Exploration by Rio Tinto on EL 34/88 prior to 9/11/91 focused on a compilation and review of existing open-file data (Kratochvil, 1991). Emphasis was placed on identifying areas of limestone not explored in detail by Amoco-EZ. Rio Tinto's initial exploration strategy aimed to test two under-explored blocks of Ordovician limestone, the Fen Creek and McLean Creek areas. This approach was abandoned when it was realised there were more prospective targets with considerably easier access in the Badger River Valley.

Year 4 Rio Tinto's exploration strategy in 1992 aimed to test for primary carbonate mineralisation in Gordon Limestone where the unit was cut by the Firewood Siding Fault (Parkinson, 1992). Incomplete Amoco-EZ bedrock sampling returned up to 1.45% Zn in this area. The Firewood Siding Fault may have been a conduit for metal-rich fluids passing into the limestone, and as such the areas of the fault/limestone contact is a prime focus for exploration.

Bedrock wacker sampling, dipole-dipole IP surveys, ground magnetometer traverses and reinterpretation of existing gravity data were completed. Line 9600E, between 5225N and 5400N showed over 0.1% Zn, up to 0.47% Pb and 0.32% Zn. Amoco-EZ produced 1.45% Zn from sampling in this vicinity. IP surveys identified several anomalies but it is unclear how they relate to known structure and stratigraphy. A circular gravity feature remains unexplained.

Year 5 Rio Tinto continued to test for primary carbonate mineralisation in Gordon Limestone in the Firewood Siding area (Parkinson, 1993). Bedrock wacker sampling returned significantly elevated Zn-Pb up to 1.39% Zn and 1.09% Pb at or near the Gordon Limestone - Crotty Quartzite contact on the N side of the Firewood Siding Fault over a distance of 800m. Arsenic and Fe values were also enhanced coincident with the high Zn-Pb, suggesting a geochemical alteration halo may be developed around underlying mineralisation.

Wacker sample depths were commonly over 10m, and locally over 20m, suggesting thick development of potentially mineralised decomposed carbonate.

At the end of year 5, EL 34/88 was reduced from 68 km^2 to 34 km^2.

Year 6 Aircore drilling and end-of-hole sampling was completed at Firewood Siding. A total of 35 holes were drilled.

At Professor Range 102 aircore drillholes totalling 1578m were drilled. End-of-hole samples were collected and geochemically interpreted.

At Baura 30 wacker samples on a 200m x 25 grid were taken, mainly across the Moina Sandstone/Gordon Limestone contact.

Year 7 One diamond drill hole (TD 218m) was drilled at Firewood Siding, following up aircore drilling from the previous year. Elevated zinc values were found in association with the sandstone/limestone upper contact.

Two reconnaissance lines of deep overburden sampling were completed at the south east end of the Professor Range prospect. Maximum values of 5800 ppm Zn and 655 ppm Pb were returned. Two diamond drill holes (total 522m) were designed to test the upper and lower sandstone/limestone contact. Best result was 0.3m @ 0.8% Zn from 217.8m in DD95ZR104

At Baura, two diamond drill holes (total 105m) were targeted at the intersection of the Firewood Siding Fault and the lower limestone/sandstone contact. Best zinc values were 0.37% associated with a 2m siderite dark grey clay in DD95ZB1.

132 deep overburden samples were completed at the Amber Creek prospect. Results show that the lower sandstone/limestone contact contains anomalous concentrations of base metals and siderite.

Deep overburden sampling at King Billy (55 samples) highlighted anomalous base metals (6700 ppm Zn and 3750 ppm Pb) associated with the lower limestone/sandstone contact. 23 reverse circulation air core drill holes totalling 782m were completed. Best recorded value was in hole AC95ZK39; 3m @ 2.64% Zn and 1.3% Pb from 9m. Zinc and lead assays for the bottom of hole sampling were relatively low (maximum zinc value of 850 ppm, maximum lead value of 4840 ppm). Relative to other areas, the King Billy prospect contains higher concentrations of lead.

The Gordon Limestone in the Zeehan area was flown as part of a sub-regional

helicopter magnetic survey. Line spacing was approximately 60m with an average flight height of 30m. Sampling intervals were approximately every 3-4m. Flight lines were aimed at being perpendicular to the strike of the limestone.

Year 8

One diamond drill hole totalling 113.7m was drilled at the King Billy Prospect. The hole aimed to test a surface geochemical anomaly of 1.35% Zn at the lower limestone/sandstone contact. A maximum zinc value of 950 ppm was intersected.

The King Billy Magnetic Anomaly was followed up with reconnaissance stream sediment sampling, rock chip sampling and a single soil sampling line. Rock sampling identified an unrecognisable mafic unit with 2.4 ppb Pt and 5.6 ppb Pd. Soil sampling defined a mafic unit coincident with the magnetic high.

A single reconnaissance wacker bedrock sample line was completed south of the Firewood Siding area, within the Rose Valley Prospect. The line confirmed the presence of limestone in the area and provided geological control for helimag data.

Helimag was interpreted. Information can be found in the relevant Rio Tinto Report.

A basin analysis study was completed by Dr Clive Burrett of Geosea Consultants.

Appendix 3

Zinc Mineralisation in the Gordon Limestone

Zinc Mineralisation in the Gordon Limestone

Rio Tinto's exploration and research activities directed at locating carbonate-hosted Zn-Pb mineralisation within Gordon Limestone at Zeehan have led to a number of mineralisation styles being recognised. The following discussion is a synthesis of Rio Tinto's current level of knowledge, grained from work throughout the Zeehan area.

Rio Tinto's exploration activities in the Zeehan area have indicated that Zn-Pb mineralisation within the Gordon Limestone may be pre-Devonian in age, and therefore unrelated to the Tabberabberan Orogeny. On this basis, it is possible that carbonate-hosted Zn-Pb mineralisation may be more widespread than that presently under evaluation at Zeehan.

The Gordon Limestone originally occupied a large area, deposited at the close of a major period of tectonic activity that produced the metal-rich Mount Read Volcanics. During and immediately before carbonate deposition the tectonic regime was still unstable, evidenced by rapid changes in stratigraphic thickness of Ordovician strata. Hydrothermal systems may have continued to emit metals into this system, focused by basement irregularities and syn-sedimentary faults.

The present Gordon Limestone exposure is a vestige of Devonian deformation. Ordovician mineralisation may have a distribution totally independent of the well-documented Devonian systems.

Five targets are recognised for the carbonate-hosted Zn mineralisation in Gordon Limestone at Zeehan, subdivided by the stratigraphic interval in which they are hosted (Figure):-

- stratabound at the lower limestone-sandstone contact
- stratabound at the upper limestone-quartzite contact
- stratabound within a sub-unit in the middle of the limestone sequence
- structurally controlled discordant mineralisation
- surficial "clay-hosted" accumulations developed above primary mineralisation.

Stratabround at the lower limestone-sandstone contact

Mineralisation at Grieves and Mariposa falls into this category. Alteration located at Blackjacks, Pyramid and Professor Range may also belong to this deposit type.

This position is characterised by carbonaceous and/or ferruginous clays resting on the Moina Sandstone, in turn overlain by a massive siderite zone. The siderite zones passes stratigraphically upward either gradationally or abruptly into unaltered and unmineralised limestone. The clay layer may be up to 50m thick and the siderite zone up to 25m thick. Both may contain Zn mineralisation up to several percent. The clay and siderite zone are laterally quite uniform and it may be that the mineralisation is actually stratiform.

Mineralisation of this style has an alteration halo that is both visually and geochemically distinct. This halo, characterised by vughy, broken or massive recrystallised Fe-carbonate and Fe-rich clays, may extend laterally hundreds of metres beyond the main Zn mineralisation, and thus present a considerably larger target than the mineralised core. Lateral alteration geochemistry is reflected by Fe-Mn-As-Zn. Stratigraphy above the mineralised core is a weaker halo of elevated Zn (± As).

Ore mineralogy, based on work at Grieves, is complex with a mixture of zincian siderite and minor sphalerite in the siderite zone, and a Zn-clay with minor to moderate amounts of sphalerite in the siderite zone, and a Zn-clay with minor to moderate amounts of sphalerite in the clay zone. It is not known whether this is a regional characteristic of this position.

The stratiform character, replacive style of alteration/mineralisation, intense Fe-Mn alteration, and reasonably predictable geometry suggest similarities to Navan or Reocin.

Stratabound at the upper limestone-quartzite contact

Low-grade but widely anomalous zones from Firewood Siding, Grieves, Professor Range, Sunny Corner, and Mariposa are examples of this type.

Upper zone mineralisation occurs near the contact between the limestone and overlying Crotty Quartzite. Mineralisation is not closely bound to the upper quartzite contact, but may "wander" up to 100m stratigraphically below the contact.

Mineralisation appears characterised by widespread but low-level Zn in the 0.1% to 2% Zn range. None of the prospects tested has revealed a higher-grade core, although given the limited drilling it is entirely possible high-grade cores may exist. Limited mineralogy suggests all Zn to be as sphalerite.

Air-core drilling shows the mineralised zones to be comprised of clays and decomposed carbonate. Rare fresher material is usually a granular recrystallised dolomite, and can be ferroan. Intense siderite alteration is absent. A detailed geochemical study of the alteration has not been completed.

The upper zone style may be occurring within karstic structures formed by Ordovician weathering before deposition of the Crotty Quartzite. This setting is analogous to Bleiberg or Cracow-Silesia.

Stratabround in a middle sub-unit of the limestone sequence

Currently two occurrences fall into this grouping, Grieves middle zone, and Oceana. Apart from their stratigraphic concurrence, these two deposits may not share many other similarities.

The mineralised middle sub-unit is equidistant from the upper and lower contacts, although facies variations may affect the location at other prospects. Mineralisation is breccia hosted, and in the case of Grieves has a linear aspect. For Grieves there is very little indication of proximity to mineralisation as there is virtually no alteration outside the breccia zone itself.

Mineralogy at Grieves is a mixture of zincian siderite and sphalerite. Oceana is dominated by galena with subordinate (?) sphalerite. There is also intense siderite alteration at Oceana, presumably containing Zn?

Zinc grades at both prospects are high, locally forming massive sulphide.

There has been insufficient work completed at Grieves middle zone to suggest any controlling mechanisms.

Structurally controlled discordant mineralisation

Most mineralisation in the Zeehan area is structurally controlled. Mineralisation at the historic Mariposa mine, and at Myrtle belong to this type. Possibly some of the mineralisation at Oceana is also structurally controlled.

Structurally controlled mineralisation may occur at any stratigraphic level. It appears to be late-stage filling of brittle fractures. Alteration of wall-rocks is absent, and the gangue to mineralisation may be pure calcite. Mineralisation within the structures is patchily distributed. Ore minerals are coarse-grained sulphides.

Devonian deformation is the likely cause of the fracturing and mineralisation. Potential deposit size is small, although the presence of discordant mineralisation may indicate a nearby stratabound source. Late-stage structurally controlled deposits *per se* are not currently considered a valid Rio Tinto target.

Surficial "clay-hosted" accumulations developed above primary mineralisation

Surficial Zn accumulations within decomposed carbonate was Rio Tinto's original target for carbonate exploration in Zeehan. All currently tested prospects were selected due to the presence of known surficial mineralisation.

It has now been conclusively demonstrated that the surficial mineralisation occupies the surface trace of underlying stratabound mineralisation. Geometry of the surficial deposits are therefore dependent on the shape and extent of this underlying mineralisation. Depth extent of the Zn-rich clays and decomposed carbonates averages 10m to 20m, but have been reported to be over 100m at Oceana.

A thin layer of decomposed carbonate exists over large areas of limestone, but this layer only thickens and becomes substantially Zn-rich as "basement" mineralisation is approached. Areas of +0.1% Zn in the clay layer are regionally extensive, indicating substantial dispersions from the primary zone. Clay thickness and Zn grade may be useful vectors toward primary zones. Geochemically inert peat and gravels up to 5m thick obscure the clays and limestone over virtually the entire trace of the Gordon Limestone.

Zinc ore mineralogy is dominantly to exclusively sphalerite.

Because of their restriction to the surface zone, the potential size of the surficial deposit is somewhat limited. They are probably unlikely to be a Rio Tinto target in themselves. Their main attraction is their usefulness as an indicator of the underlying primary mineralisation. If a large primary deposit suitable to Rio Tinto's requirements can be identified, then the surficial deposits would possible be an easy way to generate short-term cash-flow whilst the major deposit was being developed.

Zinc-rich clay deposits overlying primary carbonate mineralisation have been described at Tynagh and Silvermines.

R.G. Parkinson (1994)