Grieves Siding Zinc Deposit: EL47/2004

Construction of Grieves Siding Digital Data Set and Mineral Resource Estimation of Surficial Clay Zinc Deposits

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10th December 2005

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Summary

There are two mineralised zones in the Grieves Siding area. The surface mineralised clay zone contains 409,000t at 3.9% zinc as an Inferred Resource (dry tonnes) in four mineralised blocks. These blocks are truncated by local faulting. The Ordovician Gordan Limestone, our host unit is well folded and weathered with the base of the primary mineralisation being a weathering profile.

Zinc mineralogy and bulk density data is lacking for the mineralised zone. At no time in the history of the work completed does it appear that bulk density or specific gravity measurements have been compiled. All tonnes quoted are dry tonnes using 1.7 as the bulk density.

Mineralogy of the zinc mineralisation within the clay is critical to the milling processes. Further work is being carried out starting January 2006 to support previous work completed with respect the type and percentage of zinc minerals present in the clay mineralisation. Bulk density measurements will also be made on freshly collected samples.

The area is structurally more complex than we have available data to determine the geological continuity at depth for the second zone of mineralisation. Drilling shows mineralisation occurs in many mall units within the Ordovician sediments. This zone exhibits significant potential as a target of interest.

There are substantial gaps in the available data. If the metallurgy work that is to commence in January 2006 casts a positive light on the recovery of the ore from the clay then a further drilling program will be necessary too fill in the gaps in the data. A well structured program should lead to a conversion from an Inferred Resource to an Indicated Resource. The expectation of the author is that there will be an increase in tonnes, an increase or decrease in grade is not known at this time and should not be speculated upon due to lack of existing data.

Some of the drill collar data in the data base has not been surveyed in these holes are clearly indicated in MRT open file document 95-3714.pdf. There would be value in attempting to locate such collars and survey them in as much of the previous work is still clearly visible on the ground. If this can not be done caution should be taken with such holes and if economically viable this may be remedied with some further drilling.

There does not appear to have been any attempt to perform check assays and re assays of any samples that were previously collected. There may be some value in re assaying some of the remaining core depending upon it's condition. All new drilling if undertaken should as standard include re assays, check assays and blind assays.

The constructed data set will require further additional geological data to be entered from the hand written or typed logs if production is considered. The Access data set can be read into all of the mainstream mining software packages as required. The Access front end can be customised to print out reports and to enter data directly.

Introduction

E.L.47/2004 was granted to Applied Geophysical Research Pty Ltd in August 2004 for base metals exploration. The 23 km^2 E.L. is located 12 km south of Zeehan on the Henty Road between Zeehan and Strahan on the west coast of Tasmania. The location and boundaries of the E.L. are shown in *Figure 1*.

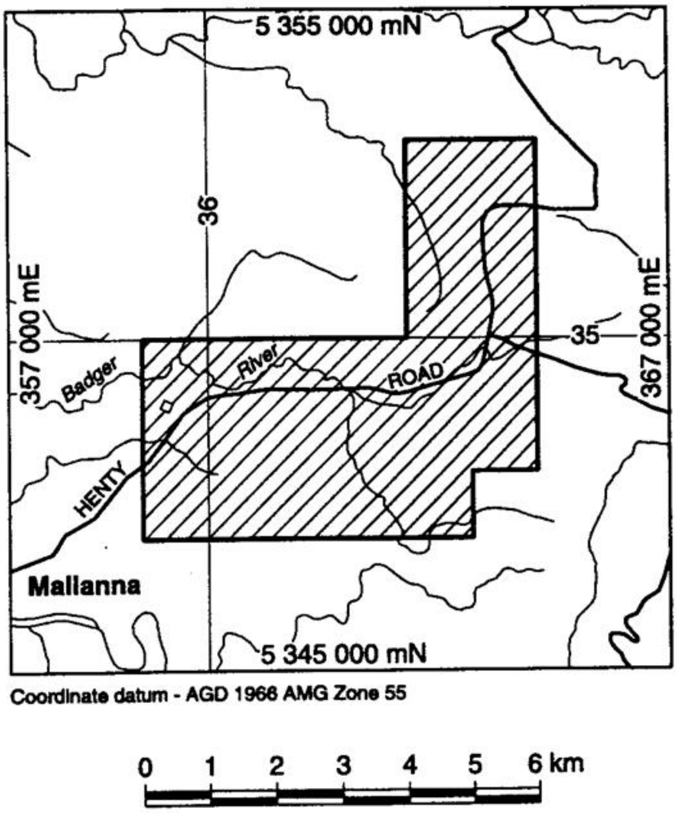


Figure 1: E.L. 47/2004 location and boundaries. Plan provided by Mineral Resources Tasmania.

The land in this area has been held by numerous companies over the last thirty years; refer to the references for further details. During this period a considerable amount of diamond drilling, air core, point data and metallurgical data has been developed and collated. The chief features of the previous work completed are anomalous zinc assays at depth and in surfical clay deposits in the folded and faulted Ordovician Gordan Limestone. For a more detailed geological description refer to 'Report in support of Retention Licence Application (for Allegiance Mining NL and Rio Tinto)' by Newnham.

This report details the consolidation and construction of a digital data set and ore resource specific to the 'Grieves Siding' grid with in the E.L. 47/2004 boundary.

Construction of Digital Data Set

A Grieves Siding digital data set has been constructed from data gleaned from Mineral Resources Tasmania open file documents. All documents used to construct the data set are listed in the attached references. Diamond drilling, aircore and soil sample data has been input into the data set. Manual transcription of data from the scanned drill core and air core logs of assays was required after optical character recognition software proved ineffectual due to the poor transcription quality of the open file report scans. In total 463 drill holes were entered.

Database Foundation

The data set has been constructed in Microsoft Access 2003 and exported to the Access 2000 and Access 97 format, for distribution as required. The data has been validated using various techniques in Microsoft Access, Microsoft Excel and Datamine. Microsoft Access was used as it is compatible with a majority of the mining software packages resulting in a data set that is transportable between packages and can be added to when new data is acquired. There has been no commitment to any specific mining software package at this time.

The tables created consist of collar, assay, survey, point and geology data. Look up tables were created for the stratigraphy field, drill hole type and log document fields. All fields constructed and populated are shown in *Figure 2*.

Referential integrity was established using the drill hole name as the primary key and the from field as the secondary key where necessary. Field sizes and formats were established for all tables and fields.

Fields 'Log Document' and 'MRTHole ID' reside in the collar table. The 'Log Document' field lists the Mineral Resources Tasmania open file number that the data was taken from to construct that hole. The 'MRTHole ID' field where populated is a specific Mineral Resources Tasmania identifier for that hole. This has been done to assist in the validation of the data.

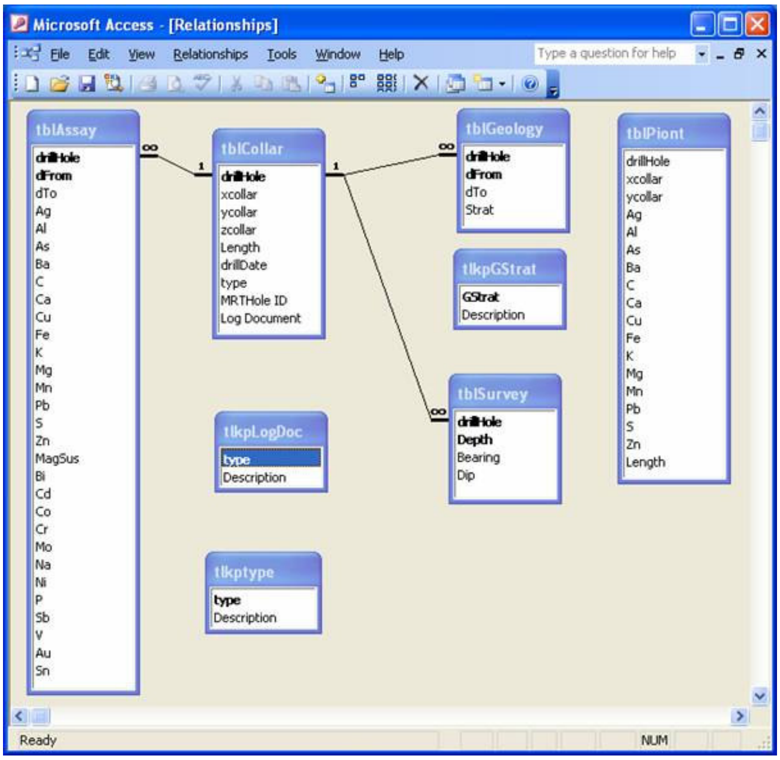


Figure 2: Access data tables, showing relationships and all fields.

Data Specifications and Construction Issues

All data was directly transcribed from either hand written or printed drill logs. Various questions arose while building the dataset. Details of assumptions and decisions made are detailed below.

Collar Location

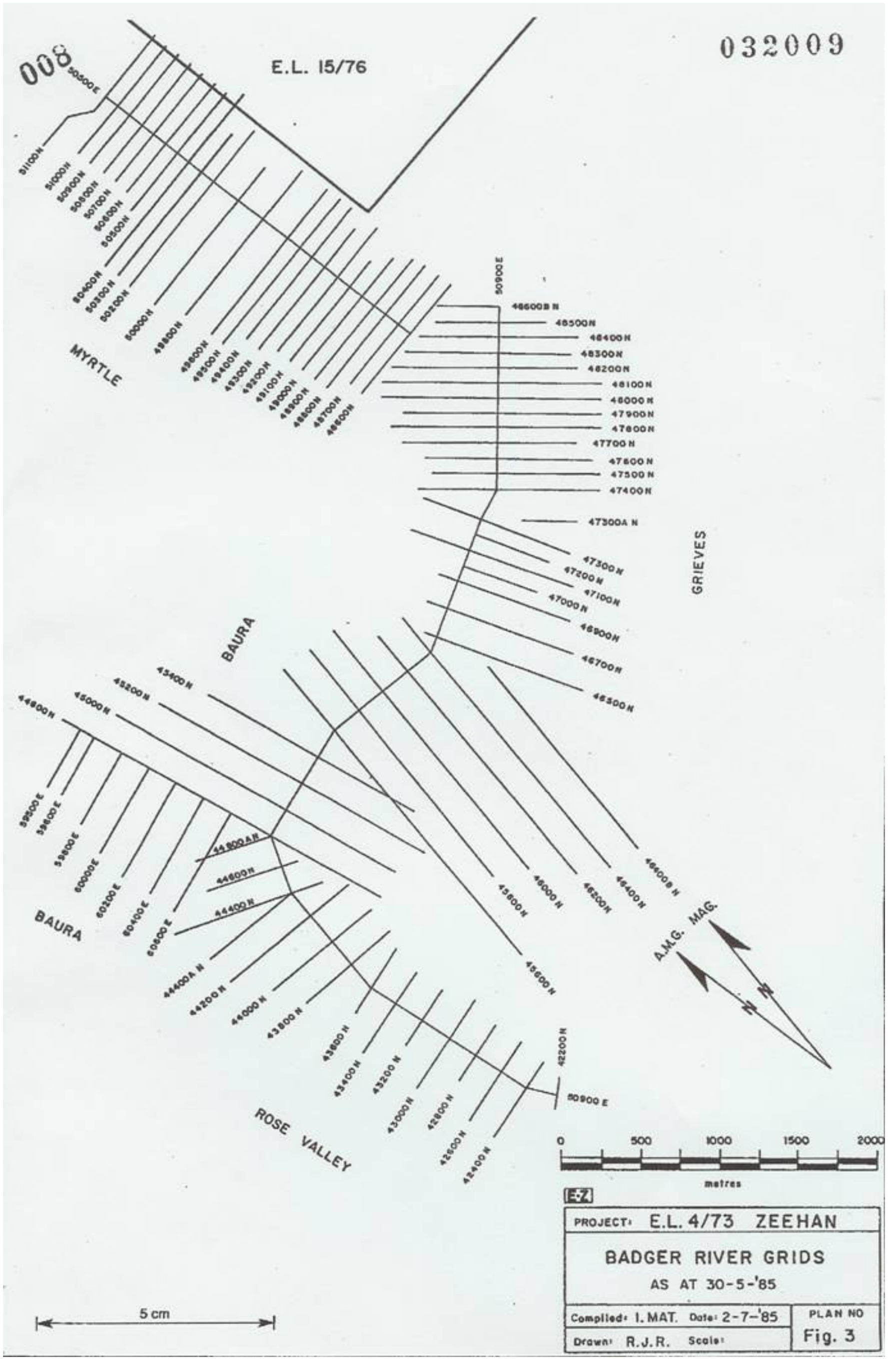


Figure 3: Page9, Exploration Licence No. 4/78 – Zeehan. Progress Report on Exploration Activity 15th June 1984 to 30th April 1985, 1986, Mathison. Diagram showing multiple grids and their relationship in the Grieves Siding vicinity.

Due to the folding of the Gordan Limestone there are four grids with different strike directions in the E.L.., as a result the decision was made to set the data base up in AMG co-ordinates. Local grid co-ordinates were available for all data. Using AMG means data from other local grids can be incorporated as necessary.

Using the available documentation it was established that the Henty road was put in following the train line after the original grids were cut. The basis for the AMG co-ordinates used is the 'Zeehan No. 4 EL 38/89, Tasmania, Report on Exploration for the Fifth Year of Tenure 1/3/94 to 28/2/95, CRA Exploration Pty Ltd' by Parkinson. It is stipulated that all locatable collars were surveyed and tied to the Main Roads survey Mark BM6372. This data was complied in Appendix 2 of the report. The holes were surveyed for Northing, Easting and RL.

Not all holes were locatable and some RL data was taken from a gravity survey of the area. The holes that were surveyed are clearly marked in the Appendix 2 table.

Assays

Where assays were below detection limits, 0.001 was used. Where no sample was collected the field was left blank.

Samples were submitted for mineralogical analysis. These sample results do not appear to have been re assayed for elemental assay repeatability. However detailed molecular analysis is reported upon in 'Zeehan No. 4 EL 38/89, Tasmania, Report on Exploration for the Fifth Year of Tenure 1/3/94 to 28/2/95, CRA Exploration Pty Ltd' by Parkinson.

Geology

Limited geological data was entered due to the volume of geological log data available. From, to and stratigraphy were necessary for inclusion in the database for the interpretative purposes. If the Grieves Siding area is to be mined this database will need to be expanded to include the much more detail geology available in the logs.

Down hole core recovery was not included in any significant quantity. This should be mandatarily collected in any future work.

Downhole Surveys

'Zeehan No. 4 EL 38/89, Tasmania, Report on Exploration for the Fifth Year of Tenure 1/3/94 to 28/2/95, CRA Exploration Pty Ltd' by Parkinson Appendix indicates which of the diamond drillholes have had down hole surveys taken. Bearing surveys were not included when it was not possible to confirm what corrections if any had been applied to the survey. In these instances the design bearing was used.

An end of hole survey based on either the last down hole camera shot or the collar survey has been included for each hole. This was done to facilitate the use of the Surpac software if required.

Data Validation

Data validation was undertaken using both Excel and Access. All from's and to's were checked for overlaps in the geology and assay files. The depth down hole in the survey file was confirmed to fall the end of hole depth. The hole identifiers were checked to ensure that there were not holes without data and no data without collars. Statistics were run on all the assay fields to high light any outliers. Statistics were run on the collar file to highlight any outliers. Plans were plotted for the drill hole collars and confirmed against scanned plans contained in the reference documents to ensure no collars we out of place. Desurveyed drill holes were plotted in section to ensure all holes were dipping and striking according to the plotted sections, plans and data.

Data Importation into Datamine

All tables were exported from the Access data set as csv files and imported into Datamine. Once imported into Datamine the survey table required the dip to be multiplied by -1 as Datamine assumes the drill hole dip to be obverse to logic.

Data was spot checked against the Access data set to confirm data transfer did not introduce errors.

Mineral Resource Estimation – Surface Target

Geology and Interpretation

The Ordovician Gordan Limestone is folded and faulted. Unconformably overlain by the Crotty Sandstone and underlain by the Moina Sandstone. The surfical black clay deposits appear to be the direct result of weathering by acidic waters of the underlying mineralised Gordan Limestone. The Gordan Limestone is dipping at 45 degrees with an undulating weathering profile of between five and twenty-two metres in depth. This profile marks the base of the predominantly clay material versus the partially weathered limestone material. In the core logging this weathering point has not always be clearly indicated. This point appears to be critical with the relationship of the distribution of zinc minerals refer to 'Grieves Siding Project (EL38/89). Surficial clay zinc deposits: resource and economic potential (for Allegiance Mining NL), 1998a, by Newnham. Overlying the lease area is a half to five metre layer of Quaternary gravels and sediments. For further details of the genesis of mineralisation refer to 'Report in support of Retention Licence Application (for Allegiance Mining NL and Rio Tinto)' by Newnham.

The interpretation was done in AMG using the following local grid sections 47,700N, 47,750N, 47,800N, 47,850N, 48,000N, 48,050zn, 48,100N, 48,150N, 48,200N, 48,250N, 48,300N, 48,350N, 48,400N. These sections were the section lines along which the aircore drilling was completed. Along section the drill collars are between three and ten metres apart. The aircore samples were collected on average on two metre intervals down the hole with a 1 -2 kg sample sent for analysis.

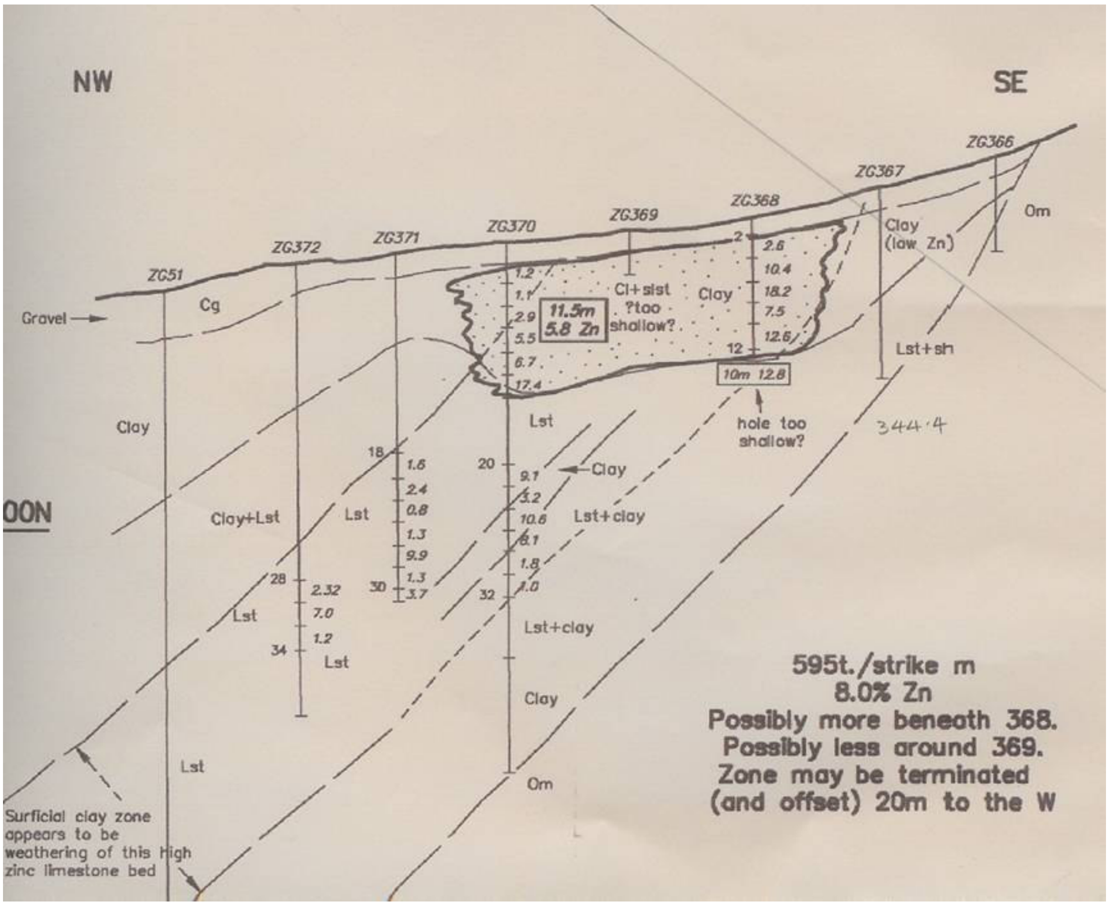


Figure 4: Section 47,700N looking local grid north. Example of typical cross section. Illustrating hole ZG369. Hole ZG369 requires extending. Excerpt from Figure 6 of 'EL38/89 Grieves Project Zeehan Area Annual Report Year Ending February 1999 (for Allegiance Mining NL), 1999 by Newnham.

The zone of economic interest lies underneath the Quaternary sediments and above the clay and weathered limestone profile and where the sample grades are above a cut off grade of 1% zinc. The interpretation was digitised on each section creating strings with intermediated sections introduced as required. The Grieves fault and three other interpreted faults all dipping north on local grid were used to truncate the mineralisation into four discrete blocks. The extreme northern and southern sections were translated twenty-five metres north and south respectively to truncate the orebody beyond the know data.

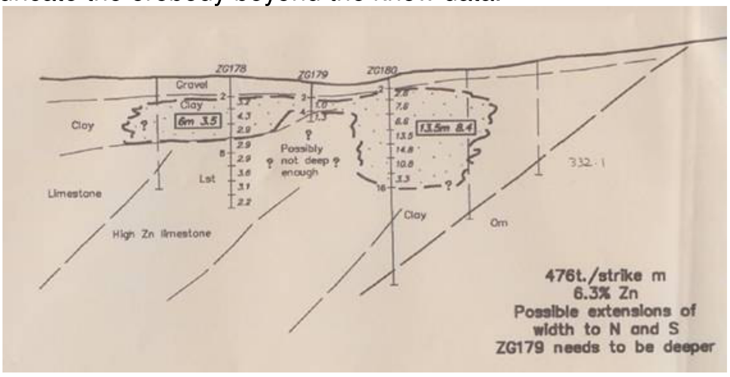


Figure 5: Section 47,850N looking local grid north. Section illustrating a second hole that appears be too short ZG179. Excerpt from Figure 6 of 'EL38/89 Grieves Project Zeehan Area Annual Report Year Ending February 1999 (for Allegiance Mining NL), 1999 by Newnham.

All strings were then validated to ensure that they were closed, clockwise and that there were no cross overs. The strings were then linked to form an empty wireframe or solid. The solid was then validated to ensure there were no overlaps or openings.

Estimation and Modelling

Cell Sizes

The solid was then filled with empty cells. The dimensions in metres of the cells used to fill the model were as follows; 10, 10, and 2, x, y and z respectively. These cell sizes were arrived at for two reasons. The first reason was due to the trialling of 10, 50 and 4 cell sizes which corresponds to half the drill and sample spacing. Using 10, 50 and 4 it was found that after estimating the grade into the model the sparsity of data left large voids in the grade model. Not wanting to increase the search parameters required the use of smaller cell sizes to facilitate not spreading the grade beyond a confidence in the data. The second reason was to do with the rotation of the ore zone against AMG grid. The Grieves Siding sections are striking 42° east of north. This has resulted in a solid running at 42° east or 48° west of a major axis. This is the least optimal orientation for filling a solid with cells. To facilitate even filling and reduce the requirement for subcelling where we have very little sample data, squares cells in x and y appear most suitable.

The model and the solid were both evaluated by volume to confirm that the model was filling the solid well. The evaluation has the total model within 3% by area of the total solid. A manual estimation of area was also performed to ensure that there were no errors in estimation.

Search Parameters

The mean sample length in the drilling data set was 2.05 m, hence the data was composited down hole to a length of two metres. A search in the z direction of 5 m was used. A search in the along strike of the local grid was used. This required a rotation of 42 ° east of north in the z axis. A search distance of 38 m was used, three quarters of the along strike drill spacing. In the x direction a search of 10 m was used. A dip of 45° corresponding to the dip of the Gordan Limestone was used. There was no plunge used.

The search parameters used in the grade estimation were confirmed using ell.mac. This is a Datamine macro that generates an ellipse using the search parameter file. The search distances in the x, y, and z directions area represented by the length of the axis of the ellipse. The ellipse is also designed to dip and plunge and rotate as stipulated in the search parameter file. No plunge was specified. The confirmatory ellipse corresponded to the search parameters specified.

Estimation Method

Nearest Neighbour was the estimation method used within the hard boundaries established by the wireframe solid. Nearest neighbour was used due to the small amount out data available and the variation in spacing between sections. The output model was specified to show the number of samples and the minimum distance to the closest sample in each cell.

Zinc, lead, silver, copper, manganese, iron and sulphur were estimate for the whole model. There were approximately one thousand occurrences out of three thousand seven hundred in the data set of arsenic, magnesium and calcium. These were also modelled.

Given the sparsity of data there were significant areas of the model with no grade assigned. The geological interpretation supports the continuity of weathering profile and the assumption of grade between known data. Given these assumptions the mean grade for the known mineralised zones for each of the four discrete blocks was calculated and assigned to the areas of the model in which the search parameters resulted with no grade calculation.

Grade Distribution

The drill data was not subset on the hard boundaries established by the wireframe solid. This was done because there is a quantity of drill data that is interpreted and or logged to be in the weathered but solid limestone material underlying the clay zone. A large amount of this data shows significant zinc grades. In some instances the grades are higher than those exhibited in the clay material above.

This will result in the material in the limestone having an effect on the grade distribution of the model. This was done because the weathering profile has not been clearly established. Meaning that there may be more clay like material below the zone confirmed as the clay zone by the geological interpretation. Zinc in the form of sphalerite is the preferable mineralogy for recovery with this thought to be the dominant zinc mineral of the clay with less favourable zinc minerals in the weather limestone material. With existing metallurgy and mineralogy studies to be confirmed the assumption of less favourable mineralogy in the weathered limestone zone can be introduced and the data sub set once the mineralogy and metallurgy data has been confirmed.

Bulk Density

A bulk density of 1.7 has been used in the tonnage estimates, Telford et al. This bulk density represents dry pulverised clay deposits. It appears that at no time in the previous rounds of data collection have bulk density and moisture measurements been made. Moisture, bulk density calculations and mineralogy studies are due to commence in January 2006, when this work has been completed tonnage estimate may be reviewed. However in the interim it is important to note that these estimates are dry tonnes.

Bulk density and moisture analysis and there application to the tonnages estimate is critical as this data is required to feed into the economic model particularly with reference to calculations of contained metal, transportation, delivery contracts and overall costs.

Surface Mineral Resource Evaluation

The Grieves blocks were evaluated using the geological interpretation which is a construct of the upper and lower contact boundaries and the 1% grade cut off boundary of the east, west and lower boundaries.

As mentioned over page there are further metallurgical and mineralogical studies commencing in January 2006. No assumptions have been made with respect to recovery from an ore resource perspective. A bulk density of 1.7 has been used, this assumes dry tonnes.

The Grieves Siding Mineral resource evaluation in accordance with the 2004 JORC Code has resulted in an Inferred Resource of 409,000t of 3.9% zinc ore.

Table 1: Grieves Siding Inferred Mineral Resource.

Block	**Tonnes**	**Zn (%)**	**Ag (ppm)**	**Cu (ppm)**	**S (%)**	**As (ppm)**	**Mg (%)**	**Fe (%)**	**Mn (%)**	**Pb (%)**
North	164,000	3.2	0.5	67	3.0	17	0.5	4.7	0.1	0.1
Central	65,000	1.1	2	46	9.3	-	-	11.5	0.1	0.2
South	180,000	5.6	3	50	6.5	84	0.4	6.1	0.2	0.6
Total	409,000	3.9	1.8	56	5.5	44	0.4	6.4	0.1	0.3

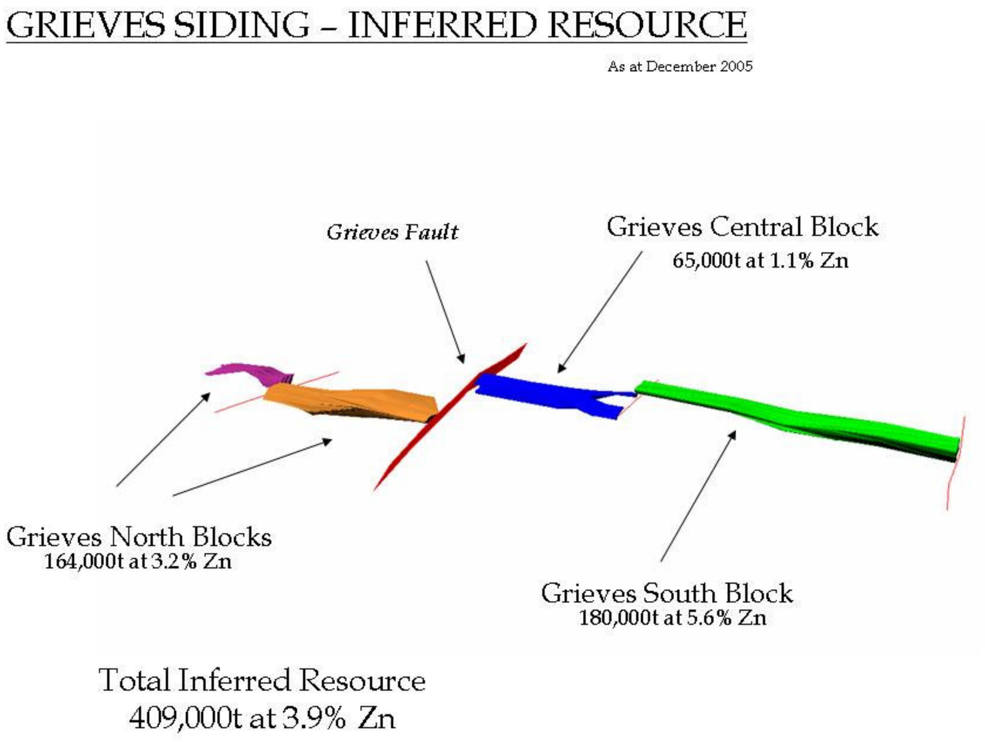


Figure 6: Illustration of Grieves Siding Inferred Mineral Resource and the block relationship.

Mineral Resource – Target at Depth

Geology and Interpretation

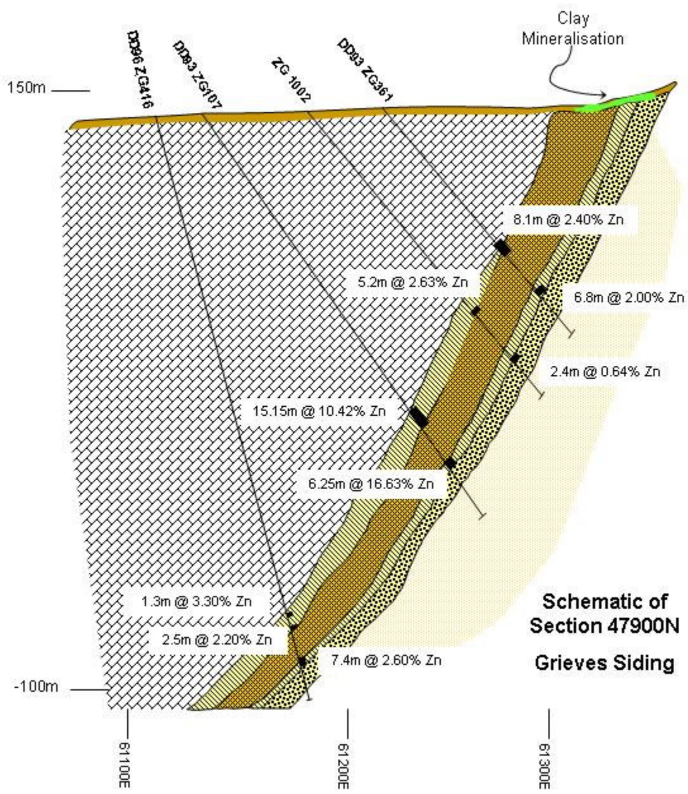
There are numerous mineralised intersections at depth in the Grieves Siding area underlying the surface clay mineralisation. However at this time with the limited information available it is difficult to delineate a continuous economic horizon. The mineralisation appears to be located in various units. The Ordovician siderite exhibits the most mineralisation but economic intersections were also drilled in a shear zone and a ferruginous clay zone.

The depth to the economic intersections varies from 50m below surface to more than 300m below surface. They appear to be following the local dip of the Gordan Limestone. This is illustrated on section 47,900N and 48,000N. These are the only two sections with a minimum of information that correlates. Structurally the faulting and folding in this area needs to be further studied as it appears that the area may be far more structurally complex than it first presents. This will required further diamond drilling.

At this time this target can not be classified as an Inferred Mineral Resource however it is has significant exploration potential. All previous exploration work completed can be sourced through the references.

In ‘Grieves Siding Project (EL38/89). Report in support of Retention Licence Application (for Allegiance Mining NL and Rio Tinto)’. 1998a by Newnham resource potentials of 450,000t to 500,000t at 8 to 10% zinc for a south block and 200,000t to 250,000t at 6 to 7% zinc had been postulated.

Figure 7: Schematic of Section 47,900N showing interpretation and exploration potential at depth.



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Appendix 1: Datamine Macros Used in Resource Estimation

COMPOSITE.MAC

```
!START comp

!stkpar comp.sav
!SCRON
 !prompt
 2
 0
 0   Enter the compositing interval data:
 0
 1   Compositing interval in metres  [$cim#]>'$cim#',n
 0
 1   Minimum compositing interval    [$min#]>'$min#',n
 0

 0
!stksav comp.sav

!SORTX    &IN(xdesurv),&OUT(qassay),*KEY1(BHID),*KEY2(FROM),*KEY3(TO),
         @BINS=5.0,@ORDER=1.0
!COMPDH   &IN(qassay),&OUT(comp),*BHID(BHID),*FROM(FROM),*TO(TO),
         @INTERVAL=$cim#,@MAXGAP=0.3,@MINCOMP=$min#,@START=0.0,
         @MODE=1.0
!END
```

DESURVH.MAC

MACRO TO CREATE DESURVEY DRILL FILE

November 2005 T. Burrows

```
!start start
!top:rem
 !scron
 !PROMPT
 2
 0
 0  DESURVEY DRILL HOLE FILE
 0
 0
 !scroff
  !LET $FILE1#='XHEADER'
  !LET $FILE2#='XASSAY'
  !LET $FILE3#='XDESURV'
  !LET $FILE4#='XSURVEY'
  !LET $FILE5#='XGEOLOGY'

  !FILE $EXIST1#=$FILE1#,$REC1#=REC
  !FILE $EXIST2#=$FILE2#,$REC2#=REC
  !FILE $EXIST4#=$FILE4#,$REC4#=REC
  !FILE $EXIST5#=$FILE5#,$REC5#=REC
```

```
!IF $REC1#=0,GOTO err1
!IF $REC2#=0,GOTO err1
!IF $REC4#=0,GOTO err1
!IF $REC5#=0,GOTO err1

!top:rem
!SELCOP &IN($FILE5#),&OUT(q2),*F1(BHID),*F2(FROM),
       *F3(TO),*F4(STRAT)

!rem setting up the header
 !selcop &in($FILE1#),&OUT(QCOP),*F1(BHID),*F2(XCOLLAR),
        *F3(YCOLLAR),*F4(ZCOLLAR),@KEEPALL=1
 !SELCOP &IN($FILE2#),&OUT(qemp2),*F1(BHID),*F2(FROM),*F3(TO),*F4(ZN),
        *F5(PB),*F6(AG),*F7(CU),*F8(AS),*F9(S),*F10(FE),*F11(CA),
        *F12(MG),*F13(MN)
 !mgsort &in($FILE4#),&out(qsuro),*key1(BHID),*key2(AT)
 !mgsort &in(qemp2),&out(qass1),*key1(BHID),*key2(FROM)
 !mgsort &in(q2),&out(qgeoo),*key1(BHID),*key2(FROM)
 !holmer &in1(qgeoo),&in2(qass1),&out(qfood),*BHID(BHID),*FROM(FROM),*TO(TO)
 !subjoi &in1(qfood),&in2(qcop),&out(qmoth),*key1(BHID)
 !desurv &in1(qmoth),&in2(qsuro),&out(q3),*BHID(BHID),*XCOLLAR(XCOLLAR),
            *YCOLLAR(YCOLLAR),*ZCOLLAR(ZCOLLAR),*FROM(FROM),*TO(TO),
            *AT(AT),*BRG(BRG),*DIP(DIP)

!GENTRA &IN(q3),&OUT($FILE3#)
SETC STRATCOL 1
EQC STRAT 'Om'
SETC STRATCOL 3
EQC STRAT 'Sc'
SETC STRATCOL 8
EQC STRAT 'Ogfc'
SETC STRATCOL 3
EQC STRAT 'Ogfz'
SETC STRATCOL 4
EQC STRAT 'Ogdc'
SETC STRATCOL 6
EQC STRAT 'Ogud'
SETC STRATCOL 6
EQC STRAT 'Ogul'
SETC STRATCOL 6
EQC STRAT 'Ogst'
SETC STRATCOL 2
EQC STRAT 'Ogsi'
SETC STRATCOL 5
EQC STRAT 'Qha'
SETC STRATCOL 2
EQC STRAT 'Ogoo'
SETC STRATCOL 7
EQC STRAT 'Ogsd'
SETC STRATCOL 7
EQC STRAT 'Ogmu'
SETC STRATCOL 6
EQC STRAT 'Og'
SETC STRATCOL 6
EQC STRAT 'Ogdl'
SETC STRATCOL 6
EQC STRAT 'Ogms'
SETC STRATCOL 6
END
```

```
Y

!tidy:rem tidying up unwanted files
  !scron
  !prompt
  2
  0
  0           Tidying up
  0
  !scroff

 !ld &out(qqqq),q?
 !d &in(qqqq)
 !scroff
!goto end

!err1:rem
 !scron
 !PROMPT
 2
 0  A necessary file is missing!
 0
 0  ABORT process.
 0
 !scroff
!goto end

!end:end
```

GRIEVES_MODEL.MAC

```
!START grmodel
!REM
!REM   GRIEVES EMPTY MODEL
!REM   @PLANE='XZ  ',

!REM SORT TRIANGLE FILE REQUIRED FOR ZONE CARRY OVER
!SORT &IN(TR03),&OUT(QTR03),*KEY1(ZONE)

!PROTOM   &OUT(proto)
n
y
364000
5349000
40
10
10
4
101
101
41


!TRIFIL   &PROTO(PROTO),&MODEL(qmodel),&WIRETR(Qtr03),&WIREPT(pt03),
        *zone(ZONE),@MODLTYPE=1.0,@zone='ZONE',@MAXDIP=45.0,
        @SPLITS=0.0,
        @XSUBCELL=2.0,@YSUBCELL=2.0,@ZSUBCELL=2.0,@RESOL=4.0
```

```
!SORTX    &IN(qmodel),&OUT(qmodel1),*KEY1(IJK),@BINS=5.0,
        @ORDER=1.0
!PROMOD   &IN(qmodel1),&OUT(model),@DENSITY=1.0,@OVERLAP=2.0,
        @OPTIMISE=2.0,@TOL=0.001,*key1(SURFACE)
!REM
!REM
!REM   TO CALCULATE MODEL VOLUME
!REM
!REM          X x Y x Z
!REM
!REM
!GENTRA   &IN(model),&OUT(qvol)
mul
TVOL
XINC
YINC
MUL
VOL
TVOL
ZINC
END
Y

!STATS &IN(QVOL),*F1(VOL)

!tidy:rem tidying up unwanted files
  !scron
  !prompt
  2
  0
  0              Tidying up
  0
  !scroff

 !ld &out(qqqq),q?
 !d &in(qqqq)
 !scroff


!END
```

GRADE_IN.MAC

```
!START GRADEIN
!ESTIMA   &PROTO(MODEL),&IN(comp),&SRCPARM(servol),&ESTPARM(estpar),
        &MODEL(GRADEMOD),*X(X),*Y(Y),*Z(Z),@DISCMETH=1.0,@XPOINTS=1.0,
        @YPOINTS=1.0,@ZPOINTS=1.0,@PARENT=0.0,@MINDISC=1.0,
        @COPYVAL=0.0,@FVALTYPE=1.0,@XSUBCELL=1.0,@YSUBCELL=1.0,
        @ZSUBCELL=1.0,@LINKMODE=3.0,@UCSAMODE=2.0,@UCSBMODE=3.0,
        @UCSCMODE=2.0,@PLANE=1.0,@TOLRNC=0.0
!END
```

REMAIN_GRADE.MAC

```
!START PUTGRADE
!REM
!REM   GRIEVES MODEL -
!REM   FILL WITH GRADE THE AREAS OUTSIDE THE SEARCH ZONE
!REM

!stkpar REMAIN_GRADE.sav
!SCRON
 !prompt
 2
 0
 0   Enter the grades IN PPM you wish to assign each zone:
 0
 0
 1   Zone 1 - South Block        [$sth#]>'$sth#',n
 0
 1   Zone 2 - Central Block      [$cent#]>'$cent#',n
 0
 1   Zone 3 - North Block        [$nth#]> '$nth#',n
 0
 1   Zone 3 - North/North Block[$nthnth#]> '$nthnth#',n
 0
!stksav REMAIN_GRADE.sav

!GENTRA   &IN(GRADEMOD),&OUT(qMOD)
eqc
ZONE
1
EQC
ZN
-
SETC
ZN
$sth#
eqc
ZONE
2
EQC
ZN
-
SETC
ZN
$cent#
eqc
ZONE
3
EQC
ZN
-
SETC
ZN
$nth#
eqc
ZONE
4
EQC
ZN
-
SETC
ZN
```

```
$nthnth#
END
Y

!SORTX &IN(QMOD),&OUT(FINALMOD),*KEY1(IJK)




!tidy:rem tidying up unwanted files
  !scron
  !prompt
  2
  0
  0              Tidying up
  0
  !scroff

 !ld &out(qqqq),q?
 !d &in(qqqq)
 !scroff


!END
```

ELL.MAC

```
!START ellipse

!rem Create a wireframe ellipsoid for display in GUIDE.
!rem This can be used to view an ellipsoid corresponding to a search
!rem volume for grade interpolation, or variogram ranges.
!rem Puts ellipse 400m in FW of orebody TB Nov 2005

!rem onerr goto err
!stkpar el.sav

!scron
!prompt
2
0
0   TO CREATE AN ANISOTROPIC WIREFRAME ELLIPSOID
0
0   To position the ellipse you need the co ordinates of the
0   relevant wireframe.(This is not the output file).
0
1   Enter the relevant wireframe points file>'$point#',a,8
0
!scroff
!stats &in($point#),&out(qstats),*f1(XP),*f2(YP),*f3(ZP)
!field $exist#=qstats,$rec#=1,$xmean#=MEAN
!field $exist#=qstats,$rec#=2,$ymean#=MEAN
!field $exist#=qstats,$rec#=3,$zmean#=MEAN
!let $xmean#=$xmean#-150

!volme:rem
 !scron
 !prompt
```

```
 0
 1   Enter the search volume parameter file>'$file#',a,8
 0
 0   If you only have one search volume in this file the reference
 0   number is 1. If you have more you will need to check your
 0   refernce number.
 0
 1   Enter your reference number[1]>'$refnum#',n,1,10
 0
 0
 !scroff

!rem check to see if the search volume file exists
 !file $exist#=$file#
 !if $exist#=0, goto err1
!field $exist#=$file#,$rec1#=$refnum#,$san1#=SANGLE1,$san2#=SANGLE2
!field $exist#=$file#,$rec1#=$refnum#,$san3#=SANGLE3,$sax1#=SAXIS1
!field $exist#=$file#,$rec1#=$refnum#,$sax2#=SAXIS2,$sax3#=SAXIS3
!field $exist#=$file#,$rec1#=$refnum#,$sd1#=SDIST1,$sd2#=SDIST2
!field $exist#=$file#,$rec1#=$refnum#,$sd3#=SDIST3

!ELLIPSE  &SRCPARM($file#),&WIRETR(trellips),&WIREPT(ptellips),
        @SANGLE1=$san1#,@SANGLE2=$san2#,@SANGLE3=$san3#,
        @SAXIS1=$sax1#,@SAXIS2=$sax2#,@SAXIS3=$sax3#,
        @SDIST1=$sd1#,@SDIST2=$sd2#,@SDIST3=$sd3#,
        @XCENTRE=$xmean#,@YCENTRE=$ymean#,@ZCENTRE=$zmean#

!scron
!prompt
0
0
0  Your ellipse file names are trellips and ptellips!
0
!scroff
!goto end

!err:rem
  !scron
  !prompt
  2
  0                 Error in estimation!
  0       Please check your data and re run the macro.
  !scroff
!goto end
!err1:rem
  !scron
  !prompt
  0
  0            The file $file# does not exist.
  0
!goto end
!end:end
```

Appendix 2: CD-Rom Containing All Digital Data

The attached CD-Rom contains copies of all the versions of the Access data set created (data in data sets are identical, it is different versions of the Access software package), all Datamine files used in the evaluation and digital copies of all data collected to construct the Grieves Siding data set and Ore Resource.