

**OM Manganese Ltd** 

EL 22786 Attack Creek

Year 5

## **Annual Exploration Report**

year to 23/03/2008

Report Compiled By:

Craig Reddell

### **1** Tenement Details

The 34 block licence was granted on 24/03/03, was reduced by 14 blocks in 2006 and a further 10 blocks reduction is proposed for 2008.

#### **Table 1: Tenement Details**

| Project      | EL Number | Blocks | Area          | Grant Date           |
|--------------|-----------|--------|---------------|----------------------|
|              |           |        | (Remaining)   | (Partial Surrender)  |
| Attack Creek | 22786     | 34     | 106.73 sq km  | 24/03/2003           |
|              |           | 20     | (62.61 sq km) | (-14 blocks in 2006) |
|              |           | 10     | (31.30 sq km) | (-10 blocks in 2008) |

# 2 Geology





The Attack Creek project contains a sedimentary sequence analogous to the Bootu Creek area that hosts the Bootu Creek manganese deposits. The tenement is interpreted to contain sequences of sandstones and siltstones which have the potential to host manganese mineralisation.

A detailed geological description is included in the 2007 Project Review by Amit Eliyahu appended to this report. The figure above shows the remaining tenement area in blue over the NTGS geology mapping from the Tennant Creek sheet.

### 3 Previous Work

Only regional reconnaissance via a field visit in 2004/05 had been conducted over the tenement area prior to Year 4.

In Year 4 OM Manganese (OMM) commenced a satellite-borne ASTER spectral study over the project area in an attempt to identify possible Mn mineralisation targets, prospective stratigraphy and contacts, and prospective structures.

The Advanced Thermal Emission and Reflection Radiometer (ASTER) can be considered to be the geological successor to Landsat TM. The ASTER instrument collects data in 14 bands and is described in detail in the attached Project Review.

Mapping of ferrous iron spectra proved useful in identifying ironstone and disseminated Mn in siltstone and sandstone, though not as distinctively as in the Bootu Creek Project area. Mapping for Mg(OH) abundance and for the dolomite spectral signature identified the entire Attack Creek Formation dolomite unit, though with mixed results in identifying dolomitic-siliclastic units.

Reconnaissance field work was conducted in late November 2006 to test targets derived from the ASTER spectral study and evaluate its value as an exploration tool over the project area, to advance our geological understanding of the Mn mineralisation style and establish the physiography of the project area for access and planning of logistical aspects of future exploration activities (Figure 2).

Conclusions from the above program were that the project area is prospective for Mn mineralisation and under-explored. ASTER was successful in identifying the one known Mn mineralised outcrop (A) and added three new zones of disseminated Mn mineralisation (B,C,D see Figure 3).

A new database of GPS located geological field observations, rock chip samples, field photography and mapped and unmapped access tracks was established over the project area. 16 Rock chip samples were collected for geochemical analysis, petrological and spectral signature studies.

The spectral studies and field reconnaissance work was completed by consulting geologist Amit Eliyhu and is reported in detail in the attached Project Review.



Figure 2. Project Location and Access Plan.



Figure 3. Prospective Contact and Identified Mn Mineralisation

# 4 Work Completed During Year 5

#### **Rock Chip Sampling -**

16 samples collected in the previous field season were assayed for 44 elements. Results are encouraging for several of the samples and need to be followed up with further field reconnaissance and RC drill testing during year 6.

Better results included

| Point | Mn    | MGA94 co-ords     |
|-------|-------|-------------------|
| P334  | 24.3% | 402718E, 7872330N |
| P356  | 22.5% | 399250E, 7890467N |
| P366  | 25.3% | 398772E, 7892944N |
| P371  | 29.5% | 399293E, 7892679N |
| P373  | 20.2% | 399313E, 7892437N |
|       |       |                   |

Full sample location and assay results are attached in Appendix 1 (note Mn quoted in table as MnO).

#### Petrology -

#### *P377* (*description by* Janet Muhling of UWA)

#### **Comments**

Attack Creek: ironstone after silt-sandstone; Mn staining.

#### Hand specimen examination

Layered ferruginous sandstone, with layering caused by differences in grainsize. The quartz grains are generally well rounded within a red ferruginous cement, although some layers have a dark cement. The weathered surface of the sample is black, possibly due to Mn staining, but on a cut surface the matrix is mostly red.

#### Petrographic examination

The rock is a sandstone with clasts from 0.1-1.0 mm across. Most of the clasts are single crystals of quartz, but there are rare clasts of quartzite and chert. Some clasts are elongate but not aligned, and the clasts are matrix supported. Fractures within the quartz grains are iron stained. Unlike the sandstone from BSDD0691, there is no pervasive fracturing of the quartz grains in this sample, and no acicular crystals growing in the quartz grains. The ferruginous matrix (goethite) flows around the quartz clasts, and shows some colloform banding. There is no evidence of Mn mineralization in this sample.

## 5 Expenditure Incurred for Year 5 (to 23 Mar-2008)

| G.I.S                | Spectral data and processing                             | \$ 1,375         |
|----------------------|--|------------------|
| Analysis -           | Rock chip analysis (16)<br>Petro-logical description (1) | \$ 800<br>\$ 220 |
| Project Management - | Review and report  | \$ 700           |
| Tenement Admin -     | Bichard Tenement Services                                | <u>\$ 130</u>    |
| Total                | Year 5   | \$ 3,225         |
| Covenant             | Year 5   | \$25,000         |

Exploration expenditure for year 5 was constrained by higher priority exploration programs on other OMM project areas including extensive RC drill programs on ML24031 and EL10412, and airborne EM flown over the Renner Springs and Helen Springs areas. A total of \$3.6 million was expended on OMM exploration in 2008 and expenditure covenants were met on all other OMM exploration licences.

### 6 Planned Work Program for Year 6 (to 23 Mar-2009)

Work to date on the Attack Creek project has identified 4 main targets and OMM is keen to resolve the potential of those prospects by drill testing before the end of Year 6.

The OM (Manganese) Ltd exploration program for Year 6 includes -

- 1. Regional Study Completing a regional structural study over the Attack Creek project area based on re-gridded magnetic and radiometric datasets.
- 2. Petrological Study geochemical, mineralogy and textural properties of Mn mineralisation samples collected during recent field reconnaissance.
- 3. Geological Field Mapping map areas of specific interest at 1:20,000 over aerial photography or Ikonos images.
- 4. Geophysical Study determine most appropriate follow up geophysical methodology to define drill targets.
- 5. RC drill test the four main prospect areas (A-D) identified in field reconnaissance.

# 7 Planned Expenditure for Year 6 (to 23 Mar-2009)

| Remote Sensing - | Interpretation (2 days)                 | \$ 1,500      |
|------------------|---|---------------|
| Field Mapping -  | Reconnaissance and mapping (4 days)     | \$ 3,000      |
| Supervision -    | Target definition and drill supervision | \$ 3,000      |
| RC Drilling -    | 8 x 50m RC drill program (\$60/m)       | \$24,000      |
| Administration - | Tenement management                     | <u>\$ 500</u> |
| Total            | Voor 6 Drogrom                          | \$32,000      |
| IUtal            |   | φ52,000       |

Appendix 1

**Attack Creek Project** 

Rock Chip Sampling Location and Assay Results

|           | ā        | 9          | 20    | 7     | 42    | \$    | ო                  | e     | 2     | 2      | 2     | \$    | 7                 | 7     | 42    | 42    | 4     | Te    | <0.05    | <0.05   | <0.05 | 0.09  | <0.05 | <0.05    | <0.05 | <0.05    | <0.05 | <0.05    | <0.05 | <0.05    | <0.05   | <0.05   | <0.05   | <0.05  |
|-----------|----------|------------|-------|-------|-------|-------|--------------------|-------|-------|--------|-------|-------|-------------------|-------|-------|-------|-------|-------|----------|---------|-------|-------|-------|----------|-------|----------|-------|----------|-------|----------|---------|---------|---------|--------|
|           | As %XRF  | <0.01      | 0.02  | 0.01  | 0.01  | <0.01 | <0.01              | <0.01 | <0.01 | <0.01  | <0.01 | <0.01 | <0.01             | <0.01 | <0.01 | <0.01 | <0.01 | Se    | 0.6      | 1.4     | <0.5  | 0.9   | 1.5   | 2.8      | 0.8   | 2.1      | 0.8   | 2.7      | <0.5  | 1.8      | <0.5    | 2.6     | <0.5    | 0.6    |
|           | As       | 21         | 9     | 28    | 7     | ₽Ç    | ₽Ç                 | 31    | 5     | 20     | ŝ     | 5     | 16                | 38    | 13    | ŝ     | 58    | ZrO2  | <0.01    | <0.01   | <0.01 | <0.01 | <0.01 | <0.01    | 0.03  | <0.01    | <0.01 | <0.01    | <0.01 | <0.01    | <0.01   | <0.01   | <0.01   | <0.01  |
|           | Co %XRF  | <0.01      | <0.01 | <0.01 | <0.01 | <0.01 | <0.01              | 0.01  | <0.01 | <0.01  | <0.01 | <0.01 | <0.01             | <0.01 | <0.01 | <0.01 | <0.01 | Zn    | <0.01    | 0.01    | <0.01 | <0.01 | <0.01 | <0.01    | <0.01 | <0.01    | 0.05  | <0.01    | <0.01 | <0.01    | 0.01    | <0.01   | <0.01   | 0.01   |
|           | ပိ       | 2          | 7     | 15    | 2     | 4     | 7                  | 104   | 6     | 310    | 4     | 32    | 8                 | 12    | 17    | 2     | 17    | V205  | 0.02     | 0.01    | 0.01  | 0.01  | 0.02  | 0.03     | 0.01  | 0.03     | 0.01  | 0.07     | 0.02  | 0.05     | 0.03    | 0.01    | <0.01   | 0.02   |
|           | ïZ       | e          | 4     | 9     | 5     | 7     | 2                  | 55    | 5     | 67     | 7     | ი     | 4                 | 13    | 2     | 9     | 13    | 8     | 0.01     | 0.01    | 0.02  | <0.01 | <0.01 | 0.01     | <0.01 | <0.01    | <0.01 | <0.01    | 0.01  | <0.01    | 0.02    | <0.01   | <0.01   | <0.01  |
|           | Zn       | 6          | 64    | 19    | 5     | 5     | 9                  | 413   | 1     | 361    | 16    | 36    | 10                | 57    | 17    | 5     | 46    | D     | <0.01    | <0.01   | <0.01 | <0.01 | <0.01 | <0.01    | <0.01 | <0.01    | <0.01 | <0.01    | <0.01 | <0.01    | <0.01   | <0.01   | <0.01   | <0.01  |
|           | Cu %XRF  | <0.01      | 0.02  | 0.03  | <0.01 | <0.01 | <0.01              | <0.01 | <0.01 | 0.05   | <0.01 | 0.01  | 0.01              | 0.02  | 0.01  | <0.01 | <0.01 | SrO   | 0.02     | 0.01    | 0.01  | <0.01 | <0.01 | <0.01    | <0.01 | <0.01    | 0.01  | 0.03     | 0.02  | 0.02     | 0.01    | <0.01   | <0.01   | <0.01  |
|           | ло       | 38         | 137   | 281   | 32    | 35    | 19                 | 17    | 52    | 426    | 10    | 55    | 183               | 242   | 85    | 28    | 16    | SnO2  | <0.01    | 0.31    | 0.35  | <0.01 | <0.01 | <0.01    | <0.01 | <0.01    | <0.01 | <0.01    | <0.01 | <0.01    | <0.01   | <0.01   | 0.23    | <0.01  |
|           | LOI 1000 | 5.04       | 7.75  | 10.5  | 0.71  | 4.68  | 33.8               | 5.18  | 15.95 | 5.8    | 39.8  | 1.73  | 3.46              | 8.63  | 32    | 0.56  | 7.53  | Pb    | <0.01    | <0.01   | <0.01 | <0.01 | <0.01 | <0.01    | <0.01 | <0.01    | <0.01 | <0.01    | <0.01 | <0.01    | <0.01   | <0.01   | <0.01   | <0.01  |
|           | CaO      | 0.18       | <0.01 | <0.01 | 0.07  | 0.24  | 0.29               | 8.61  | 19    | 0.44   | 1.65  | 0.61  | 0.49              | 0.24  | 0.21  | <0.01 | 0.19  | īz    | <0.01    | <0.01   | <0.01 | <0.01 | <0.01 | <0.01    | 0.01  | <0.01    | 0.01  | <0.01    | <0.01 | <0.01    | <0.01   | <0.01   | <0.01   | <0.01  |
|           | BaO      | 0.28       | 0.11  | 0.45  | 0.11  | 0.04  | 0.09               | 0.05  | 0.21  | 0.44   | 4.33  | 0.97  | 2.93              | 0.1   | 0.14  | 0.03  | 0.06  | Na2O  | 0.09     | 0.11    | <0.01 | 0.12  | 0.16  | 0.1      | 0.24  | 0.06     | 0.04  | 0.39     | 0.09  | <0.01    | <0.01   | <0.01   | <0.01   | 0.22   |
|           | K20      | 0.45       | 0.92  | 0.38  | 0.2   | 0.04  | 0.08               | 1.63  | 2.37  | 0.27   | 1.18  | 0.19  | 1.09              | 0.01  | 0.03  | 0.02  | 0.03  | Mo    | <0.01    | <0.01   | 0.01  | <0.01 | <0.01 | <0.01    | <0.01 | ¢0.01    | ¢0.01 | <0.01    | <0.01 | ≤0.01    | <0.01   | <0.01   | <0.01   | ¢0.01  |
|           | MgO      | 0.09       | 0.34  | 0.13  | 0.05  | 0.05  | 0.13               | 5.83  | 13    | 0.17   | 0.36  | 0.06  | 0.11              | 0.05  | 0.01  | 0.04  | <0.01 | Cr203 | 0.5      | <0.01   | <0.01 | 0.01  | <0.01 | <0.01    | 0.01  | <0.01    | 0.49  | 0.59     | 0.62  | 0.44     | 0.01    | <0.01   | <0.01   | <0.01  |
|           | SO3      | <0.01      | 0.01  | 0.26  | 0.1   | <0.01 | 0.06               | <0.01 | 0.11  | <0.01  | 0.01  | <0.01 | <0.01             | <0.01 | 0.02  | <0.01 | 0.02  | ō     | 0.01     | 0.03    | <0.01 | 0.02  | 0.01  | 0.04     | 0.05  | 0.01     | <0.01 | 0.29     | 0.07  | <0.01    | 0.01    | <0.01   | <0.01   | 0.01   |
|           | TiO2     | 0.15       | 0.26  | 0.28  | 0.02  | 0.03  | 0.12               | 0.11  | 0.11  | 0.08   | 0.52  | 0.17  | 0.37              | 0.26  | 0.27  | <0.01 | 0.08  | 8     | <10      | <10     | <10   | 10    | <10   | <10      | <10   | <10      | <10   | 10       | <10   | <10      | <10     | <10     | <10     | <10    |
|           | Po       | 2          | 9     | 32    | 15    | 80    | e                  | 25    | 5     | 43     | 23    | 10    | 13                | 67    | e     | 6     | 5     | >     | 74       | 165     | 27    | 58    | 23    | 19       | 81    | 12       | 145   | 13       | 17    | 47       | 35      | 61      | 5       | 31     |
| (7        | P205     | 0.09       | 1.25  | 0.29  | 0.11  | 0.58  | 0.17               | 0.06  | 0.04  | 0.1    | 0.09  | 0.15  | 0.05              | 0.06  | 0.06  | 0.02  | 0.03  | D     | <10      | <10     | 10    | 10    | <10   | 30       | <10   | <10      | <10   | 30       | <10   | <10      | 10      | 10      | <10     | 10     |
| 7024882   | AI2O3    | 1.11       | 2.87  | 3.58  | 0.98  | 0.21  | 1.52               | 3.11  | 4.77  | 0.06   | 1.37  | 0.27  | 1.13              | 5.32  | 4     | 0.32  | 0.88  | sb    | \$2<br>℃ | ¢5<br>م | ŝ     | ŝ     | <5    | <u>ې</u> | 9     | <u>ې</u> | 1     | <u>ې</u> | <5    | <5<br><5 | ~2<br>~ | ~2<br>2 | ٩<br>د5 | 9      |
| eek (PHO  | SiO2     | 39.8       | 11.85 | 14.4  | 89.4  | 44.2  | 14.75              | 62.8  | 33.4  | 60.8   | 47    | 47.5  | <mark>58.9</mark> | 9.81  | 16.9  | 92.9  | 59.2  | Ag    | <0.5     | <0.5    | <0.5  | <0.5  | <0.5  | <0.5     | <0.5  | <0.5     | 2.1   | <0.5     | <0.5  | <0.5     | <0.5    | <0.5    | <0.5    | <0.5   |
| ttack Cr  | \$203    | 6.1        | 72    | 57.3  | 0.65  | 44    | . <mark>7.4</mark> | 3.82  | 3.28  | .24    | .52   | 3.49  | .01               | 3.2   | 6.4   | 6.25  | 84.6  | Mo    | -        | ~       | 2     | 4     | -     | -        | -     | 2        | 12    | 2        | -     | -        | 2       | -       | -       | 2      |
| s from A  | õ        | <u>4</u> . | 49    | 07 6  | 23    | 11    | 97 6               | 37 3  | 21    | 0<br>7 | 7     | 5     | 1                 | 22    | 72 6  | 36 6  | 59    | q     | .5       | .5      | .5    | .5    | .5    | .5       | 5     | .5       | _     | .5       | .5    | .5       | .5      | .5      | .5      | .5     |
| / results | Mr       | 31         | 7.0   | 0.(   | 0.2   | 0.5   | 3:0                | 0.5   | .0.2  | 2      | 32    | 38    | 26                | 1.    | 0.5   | 0.(   | .0    | Ő     | 0        | 0       | 0     | °     | Ŷ     | Ŷ        | 2.    | Ŷ        | ~     | Ŷ        | Ŷ     | °<br>V   | Ŷ       | 0<br>V  | Ŷ       | 0<br>V |
| Assa)     | ₽        | P334       | P335  | P343  | P345  | P346  | P347               | P353  | P355  | P356   | P366  | P371  | P373              | P377  | P384  | P386  | P388  | ₽     | P334     | P335    | P343  | P345  | P346  | P347     | P353  | P355     | P356  | P366     | P371  | P373     | P377    | P384    | P386    | P388   |

|          | 1   |
|----------|-----|
| ×        | 2   |
| (D)      | -   |
| ā        | 1   |
| <u> </u> |     |
| C        | 3   |
| <u> </u> |     |
| ×        |     |
| C        | 4   |
| ā        | 1   |
| Ξ.       |     |
| ÷.,      | - 9 |
| <        |     |
| _        |     |
| 5        |     |
| 7        | - 2 |
| 9        |     |
| ÷        |     |
| Ξ.       |     |
| s        | - 9 |
| ÷.       |     |
| 2        |     |
| · =      |     |
| 0        |     |
| <b>^</b> |     |

| Way | /points | s from ⊿ | ttack Cre | sek       |      |          |   |
|-----|---------|----------|-----------|-----------|------|----------|---|
| .p  | Θ       | ast_wgs  | north_wgs | elevation | zone | type     | 0 |
|     | 334     | 402718   | 7872330   | 358       | 53k  | Waypoint |   |
|     | 335     | 402167   | 7872823   | 365       | 53k  | Waypoint |   |
|     | 343     | 401102   | 7889356   | 352       | 53k  | Waypoint |   |
|     | 345     | 401353   | 7889676   | 360       | 53k  | Waypoint |   |
|     | 346     | 401347   | 7889719   | 355       | 53k  | Waypoint |   |
|     | 347     | 401190   | 7889768   | 350       | 53k  | Waypoint |   |
|     | 353     | 400321   | 7889758   | 352       | 53k  | Waypoint |   |
|     | 355     | 399305   | 7890200   | 348       | 53k  | Waypoint |   |
|     | 356     | 399250   | 7890467   | 351       | 53k  | Waypoint |   |
|     | 366     | 398772   | 7892944   | 354       | 53k  | Waypoint |   |
|     | 371     | 399293   | 7892679   | 350       | 53k  | Waypoint |   |
|     | 373     | 399313   | 7892437   | 367       | 53k  | Waypoint |   |
|     | 377     | 399394   | 7891311   | 366       | 53k  | Waypoint |   |
|     | 384     | 400079   | 7892681   | 330       | 53k  | Waypoint |   |
|     | 386     | 400057   | 7892929   | 368       | 53k  | Waypoint |   |
|     | 388     | 403672   | 7894968   | 311       | 53k  | Waypoint |   |

date 28-Nov-06 28-Nov-06 28-Nov-06 28-Nov-06 28-Nov-06 28-Nov-06 28-Nov-06 28-Nov-06 29-Nov-06 29-Nov-06 29-Nov-06 29-Nov-06 29-Nov-06 29-Nov-06 29-Nov-06 29-Nov-06 29-Nov-06 29-Nov-06

Appendix 2

**Attack Creek Project Review** 

by

Amit Eliyahu

January 2007