



## OM Manganese Ltd

**Title holder (s):** OM (Manganese) Ltd (100%)  
**Operator:** As above  
**Tenement Manager:** Australian Mining and Exploration Title Services Pty Ltd (AMETS)

# EL28627 Calvert Hills Project

## Annual Technical Report - Year 1 25<sup>th</sup> October 2011 to 24<sup>th</sup> October 2012

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## **Abstract**

Exploration licence EL28627 consists of two blocks (graticules) located 10km north of the Calvert Hills homestead.

Exploration activity in 2011/2012 included office studies, Geoeye-1 satellite imagery and a site field visit by exploration staff in September 2012. The site visit established logistical issues, verified local geology and checked for surface manganese exposures.

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## Electronic file list

<b>File Name</b>	<b>File type</b>	<b>Content</b>
EL28627_2012_A.pdf	Pdf	This report
CH_NTSG4_SURF2012A	txt	Rock chip samples
CalvertHills_readme	pdf	Sat image details
CalvertHills_GE_Mosaic_FalseCol_x2	ecw	Sat image
CalvertHills_GE_Mosaic_FalseCol_x20	ecw	Sat image
CalvertHills_GE_Mosaic_NatCol_x2	ecw	Sat image
CalvertHills_GE_Mosaic_NatCol_x20	ecw	Sat image

# 1 Introduction

Exploration licence EL28627 was granted on the 25<sup>th</sup> of October 2011 and covers an area of 6.56 sq km (2 blocks).

The EL is located 10 km due north of Calvert Hills Homestead and around 180 km southeast of Borroloola and 100 km inland of the Gulf of Carpentaria. The EL is accessed from the Barkley Tableland Highway via Calvert Road and is located entirely within the Calvert Hills Pastoral property.

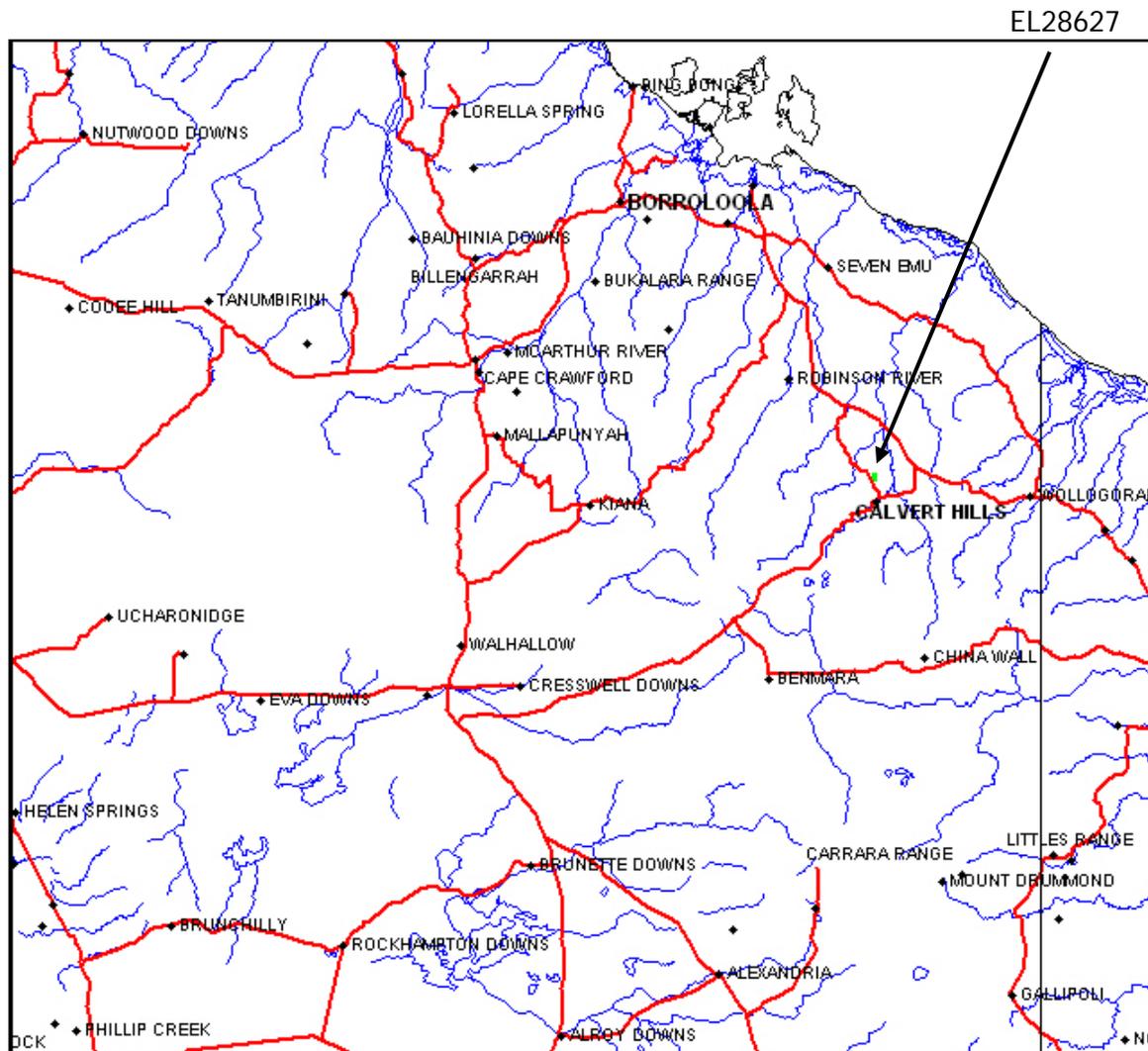


Figure 1. Regional plan and access roads for EL28627

## 2 Geology

The Calvert Hills project is located within the Masterton Sandstone and Karns Dolomite units of the middle Proterozoic McArthur Basin Sequence.

The dominant regional structural feature of the area is the NNW-ESE trending Calvert Fault, located 10 km to the west of the Calvert Hills homestead. The most significant manganese occurrence in the district is the Masterton 2 deposit, located around 15 km ENE of the Calvert Hills homestead.

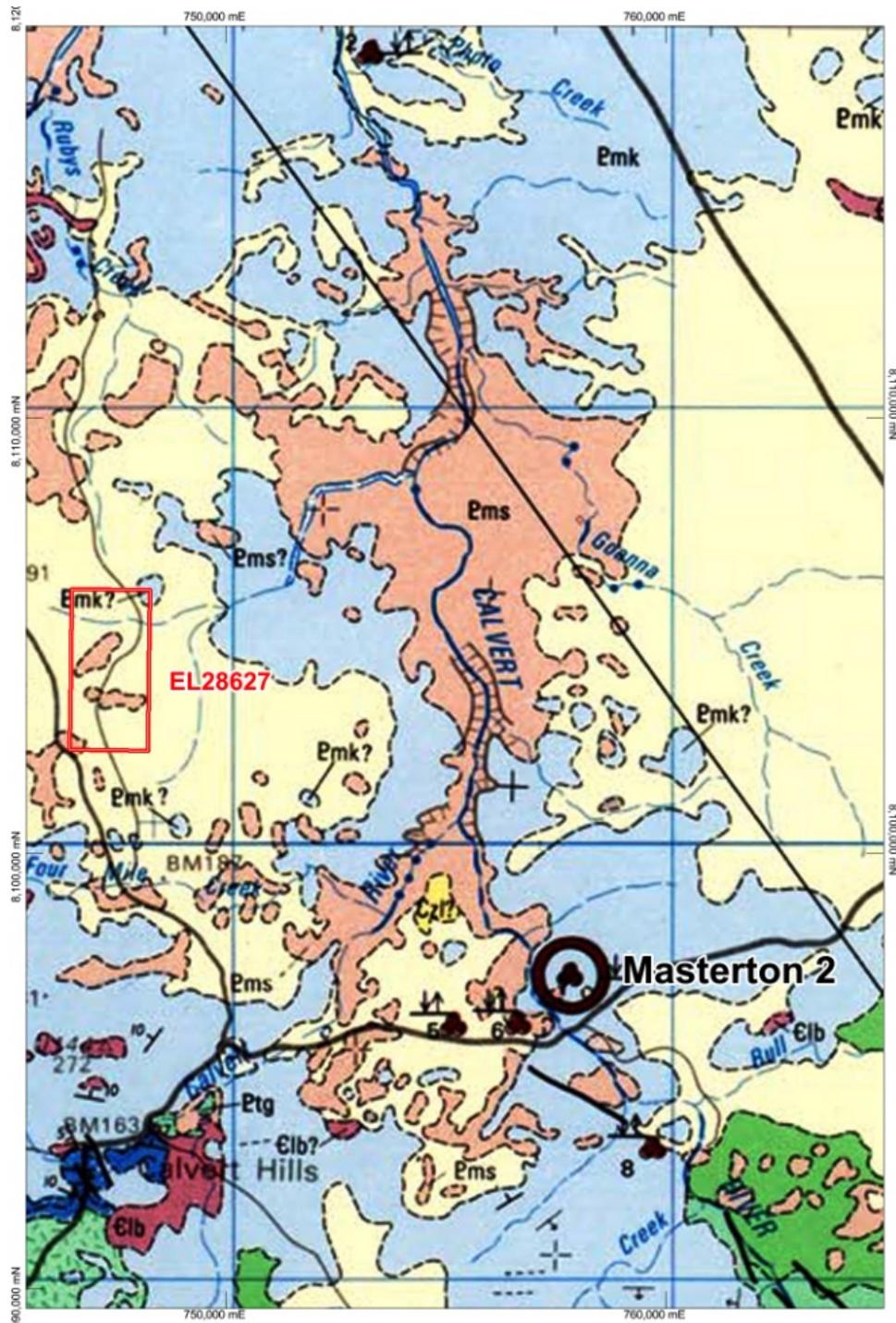


Figure 2. Geology from the NTGS 1:250k Calvert Hills sheet, *Ahmed et al 1989*.

### 3 2011-2012 Exploration Activity

Exploration activities undertaken in 2011/2012 period include -

- Office studies, data review and initial interpretation,
- Site visit and field inspection.

#### 3.1 Office Studies

An initial review and assessment conducted on available public data and subsequent interpretation.

The dominant regional structural feature of the area is the NNW-ESE trending Calvert Fault, located 10 km to the west of the Calvert Hills homestead.

A subordinate sub-parallel fault structure (un-named) is located around 15 km to the northeast of the Calvert Fault (NTGS 1:250k Calvert Hills sheet), passing to the west of the Masterton 2 manganese deposit, and projecting through the northeast corner of EL28627.

Several small manganese occurrences are mapped along the projection of this sub-parallel fault structure, from Camp No.1 in the south east, Manganese No.2 occurrence (located to west of Masterton 2 deposit), through to No.5 occurrence located to the northwest of EL28627.

The most significant manganese occurrence in the district is the Masterton 2 deposit, located around 15 km ENE of the Calvert Hills homestead. This deposit consists of four prominent ENE trending manganese-breccia outcrops, extending up to 600m in length, previously estimated to contain 40-50,000 tonnes at 32% Mn. Limited past drilling indicate the manganese is surficial. (*Ferenczi, 2001*).



Figure 3. Masterton 2 outcrop - massive Mn matrix with sandstone clasts.

The orientation of the manganese mineralisation at Masterton 2 is inferred by the author to be hosted within tensional structures related to the subordinate NNW-ESE regional fault.

### 3.2 Satellite Imagery

Geoimage Pty Ltd were contracted to supply high quality satellite imagery for the Calvert Hills area. An area of 227km<sup>2</sup> was selected to cover both EL28627 and the published manganese occurrences in surrounding areas.

The ortho-recitified Geoeye-1 images were supplied in natural colour and false colour in both high and low compression formats.

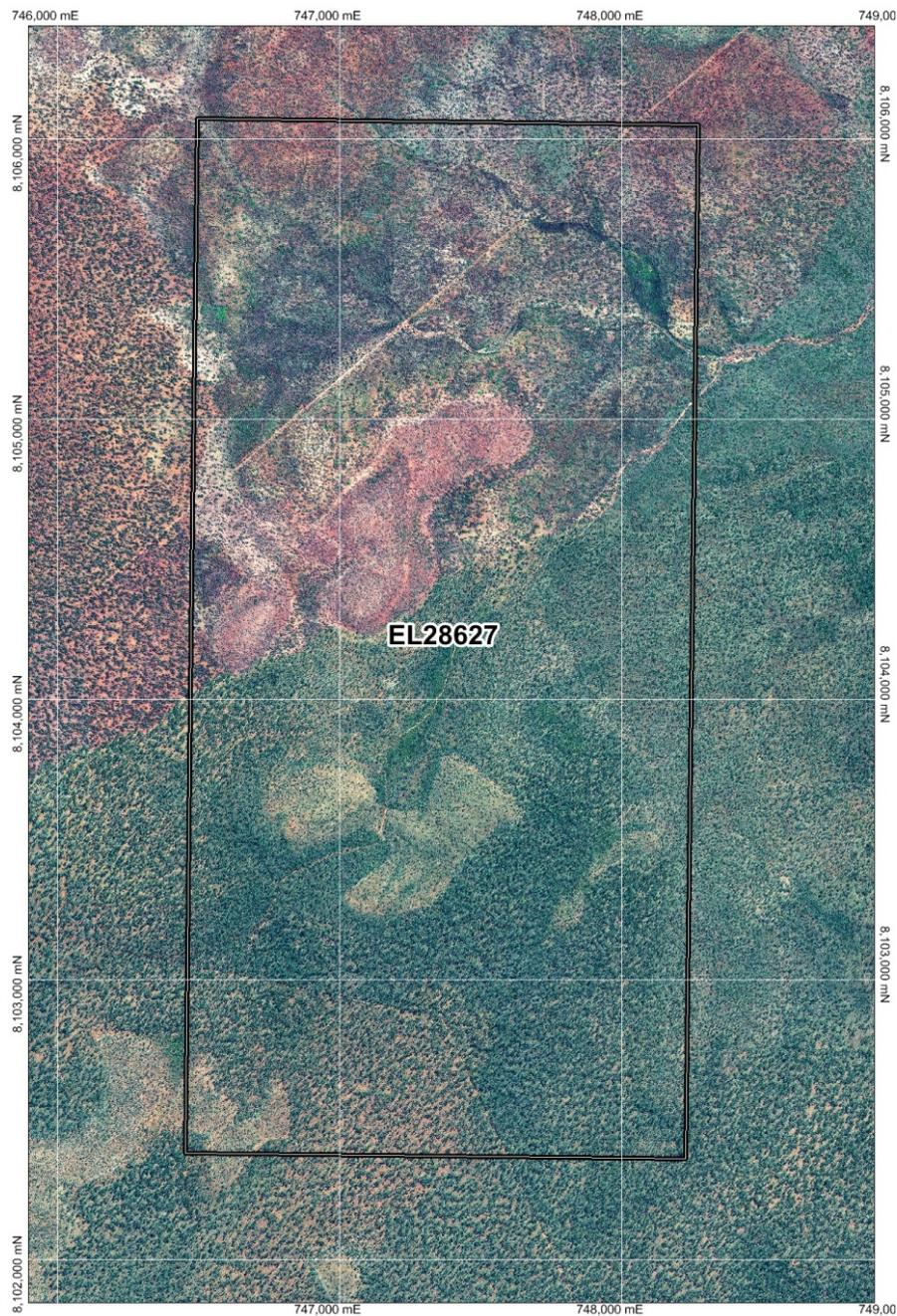


Figure 4. Geoeye-1 natural colour satellite imagery for EL28627

### 3.3 Site Inspection

The site inspection by Craig Reddell (Geology Manager, OMM) and Humphrey Boogaardt (Senior Exploration Geologist, OMM) in September 2012 assessed logistical issues and local surface geology.

Logistically, the project area is remote and would be very difficult access during the wet season (summer). Any exploitation of potential manganese resources would be problematic with the only viable transport option being trucking to the Gulf of Carpentaria coast, then barging and offshore transfer to ships.

Local accommodation for exploration staff was available at the Calvert Hills homestead.

Local geology is reasonable well exposed and site inspection of EL28627 confirmed the dominance of outcropping, barren Masterton Sandstone and minor Karns Dolomite units of the middle Proterozoic McArthur Basin Sequence

Minor flat laying manganiferous pisolite-laterite was located adjacent to the central eastern licence boundary. Rock chip analysis of relatively scarce massive manganese nodules, associated the laterite, assay 54.8% Mn (BC158422).



Figure 5. Manganese nodules within manganiferous, pisolite laterite.

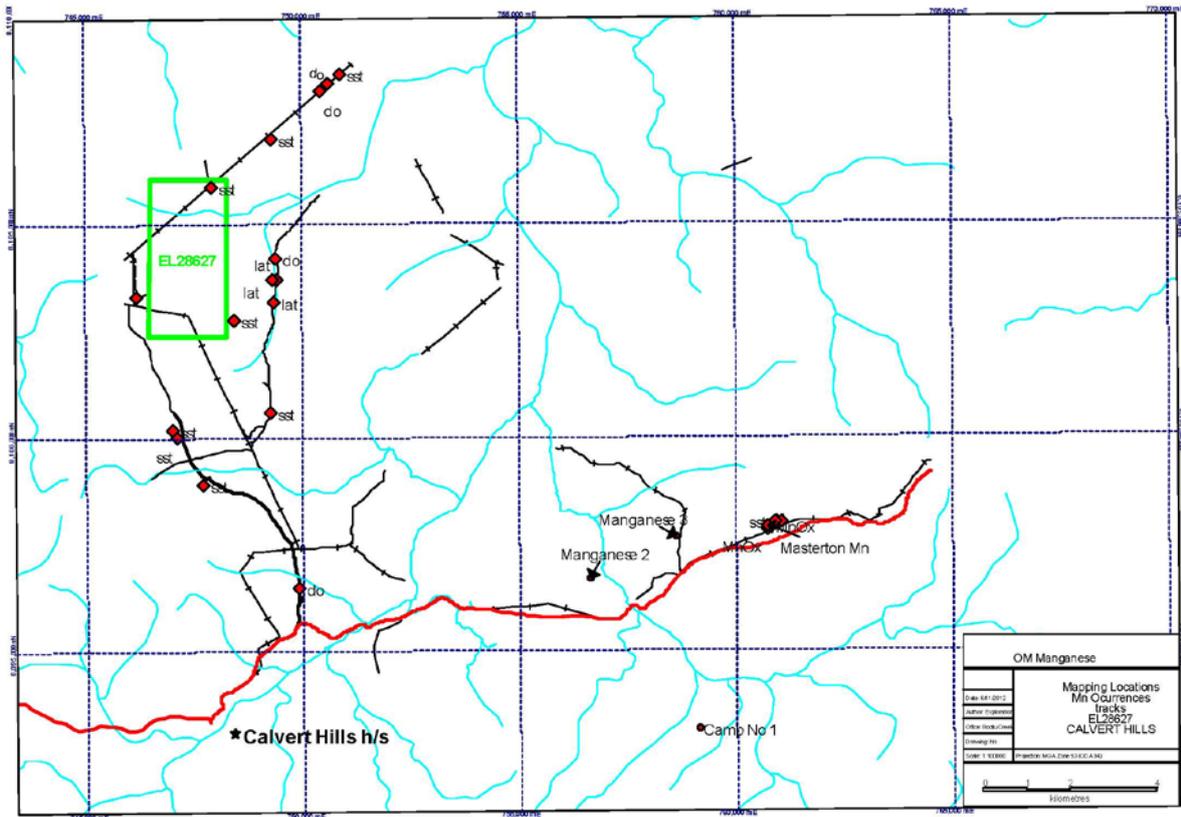


Figure 6. Local plan showing access tracks and map locations

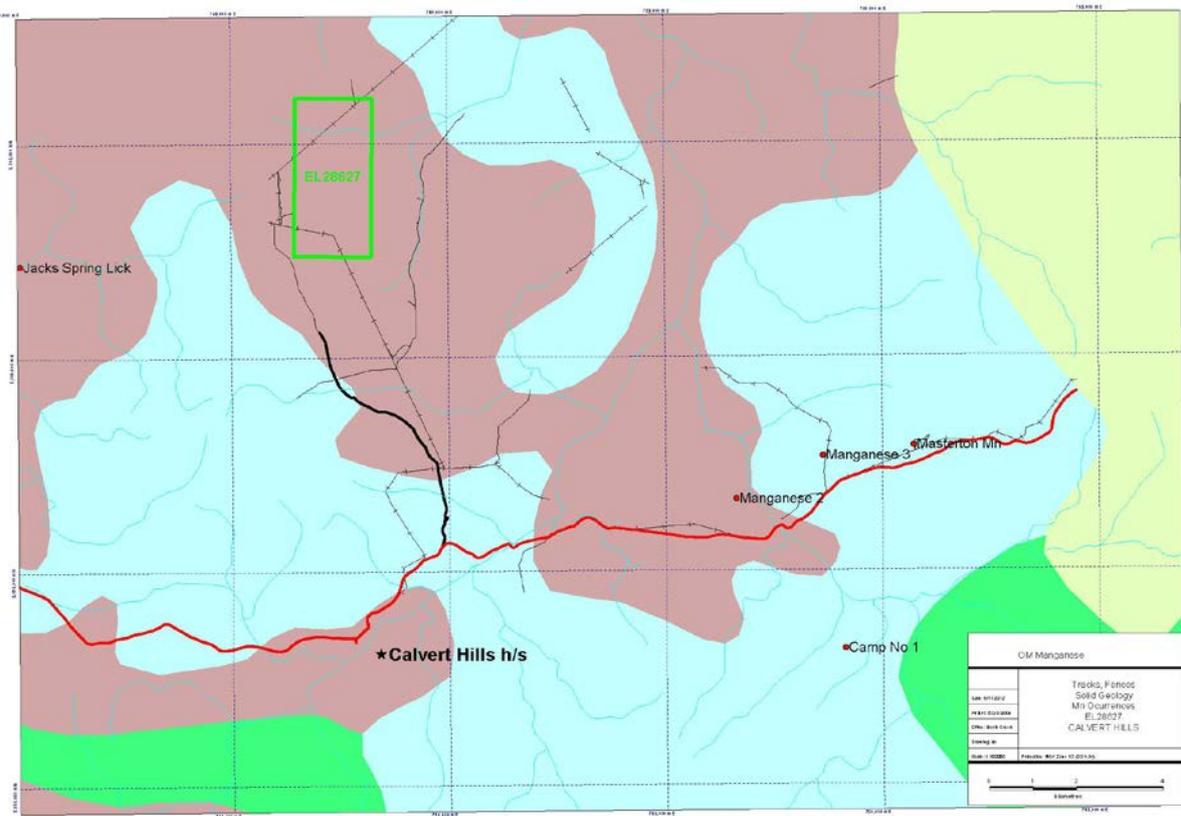


Figure 7. Local plan showing interpreted solid geology (NTGS) for EL28627

## 4 Conclusions and Recommendations

The objective of the Year 1 exploration program was to assess the geological potential for EL28627 to host manganese mineralisation. No manganese mineralisation had been previously recorded within the licence area, though several manganese occurrences are recorded within the local Calvert Hills area.

Inspection of EL28627 revealed mostly barren sandstone, though minor manganese nodules were observed in adjacent flat laying manganiferrous pisolite-laterite outcrops.

The small extent of EL8627 (2 blocks) and dominance of sandstone outcrop limits the potential for the discovery of significant manganese mineralisation. More detailed site inspection is required to follow up the manganese mineralisation recently observed in the area adjacent to the east boundary of the licence.

Recent application for three new exploration licences, located in the surrounding area, warrants that EL28627 be retained in the short term while assessment of the newer applications proceeds.

## 5 References

- Ferenczi,P.A., (2001) Iron Ore, Manganese and Bauxite Deposits of the Northern Territory, Report 13, *Northern Territory Geological Survey*.
- Ahmed,M., Wygralak,A.S., (1989) Calvert Hills, Northern Territory. 1:250,000 geological map series and explanatory notes, SE5, *Northern Territory Geological Survey*.