

# **MEMORANDUM**

Date: June, 2014 Author: Pascal Hill TO: Darren Holden

#### TITLE: Drilling Request. Dune EL 26590

#### Summary

Completion of a single diamond drillhole, to a depth of 200m, to test for extensions of the Oberon mineralised system is proposed at Dune.

Dune lies approximately 2km south of Newmont's Oberon project, which hosts considerable gold mineralisation. Little has been published about recent work at Oberon (previously Titania), however the author was directly involved in the discovery of significant gold mineralisation while working for Newmont.

Mineralisation at Oberon is hosted in lithologies that are chemically similar to the Callie host sequence; however the units are significantly different in terms of their character. This host stratigraphy has not yet been correlated with any other sequences in The Tanami region. Felsic igneous units are known from the Oberon stratigraphy, and have been dated by Bagas. This data remains confidential.

Following recent ABM mapping completed at Vampire Prospect area (EL 28327 forming part of ABM's Bonanza Project), the author feels that the sequence at Oberon shares similarities to the host units at Vampire, although silts and igneous units are not yet known at Vampire. There are also potential similarities to the Old Pirate host stratigraphy now that higher energy, very coarse grained sands, and dolerites are becoming more widely known at Old Pirate.

The opportunity is to test the Dune target area, and in doing so, potentially extend the known footprint of the Oberon mineralised system, securing a strong foothold within what is perhaps one of the best emerging Project areas in the Tanami in the last decade

Newmont's recent discovery at Oberon was based on innovative application of the work published by Lex Lambeck, utilising geochemical ratios to define stratigraphic correlatives of the Dead Bullock Formation. The author had defined Dune as a potential target while working for Newmont, based on geophysical similarities. The proposed hole has been selected by the NTGS for support through the Collaborative Funding exploration initiative, for completion in 2014. The NTGS will co-fund to approximately \$11,000.

## Introduction

The Dune project is situated at 129°59'19.8456" -20°18'23.1048" (GDA94), approximately 15km south of Rabbit Flat, with access via the Tanami Downs Road (10km southward). The project area would be best accessed via Newmont's existing roads through to the Oberon Project, reducing track clearing requirements to approximately 1km of new track. Newmont have granted permission to access the area, which would require 350m of track clearance on Newmont's tenure, and 550m of clearance on ABM's license.

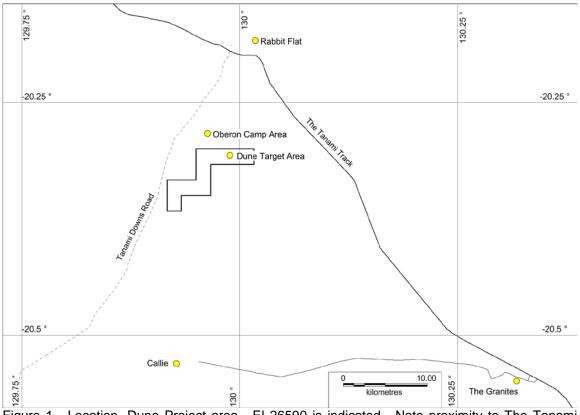


Figure 1. Location, Dune Project area. El 26590 is indicated. Note proximity to The Tanami Track and Tanami Downs Road, and the location of Newmont's former Oberon Camp area.

The area is typically flat, with sparse low dunes extending east west. Vegetation is typically spinifex with acacia scrub and scattered small eucalypts.

As noted briefly above, there is good access to within approximately 1km of the target area. The Tanami Downs Road is in good condition and is well maintained. Newmont re-established the Titania / Oberon access roads in 2009, and maintained this road until 2012. Little clearing would be required to establish access to the target area. Newmont drew water for drilling from a Production Bore within the Oberon project area. Permission has also been granted to draw water from this bore; however Newmont have requested that the use of the bore not be made public, and not be raised with the NT statutory bodies.

An MMP has been lodged, seeking approval for several percussion drillholes. The MMP will be amended such that the percussion drilling was deferred and replaced with a single diamond drillhole.

#### **Regional Context**

The Dune prospect lies within the Tanami Region, comprising Palaeoproterozoic lower greenschist to amphibolite facies metamorphosed sediments and volcanics. For the most part, the sediments represent flych sequences.

The prospect area lies under cover. To the north, drilling at Oberon has shown relatively shallow cover of 5 - 15m, comprising unconsolidated sands and clays related to a palaeo drainage system that lies to the east. Cover depth increases to the east. Recently released NTGS mapping shows that the Dead Bullock Formation (Callie Member), comprising siltstones, cherts and ironstones, outcrops within 15km to the east, west and south of the prospect area. Turbidites of the Killi Killi Formation would also be anticipated to occur in the area.

As mentioned above, drilling at Oberon revealed lithologies that could not be immediately correlated with the Dead Bullock Formation stratigraphy, however it was confirmed that the Killi Killi Formation turbidites occurred high in the Oberon sequence.

Considerable mineralisation is known at Oberon, 2km north of the project area. Historic, unexploited resources comprising approximately 400k ounces have been previously published. Below, two figures from public presentations are shown, indicating the scope of the Oberon mineralisation.

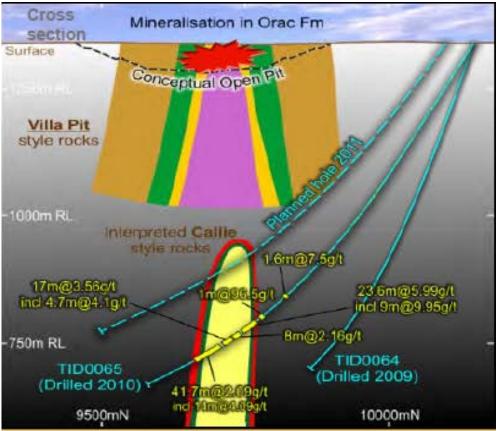


Figure 2. Oberon cross section, looking west. After Newmont Mining Corporation. http://newmont.q4web.com/files/doc\_presentations/AnalystDay-04-07-11-small.pdf

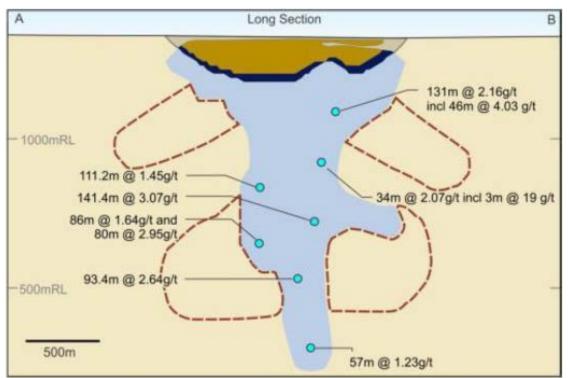


Figure 3. Oberon long section, looking north. After Newmont Mining Corporation. http://newmont.q4web.com/files/doc\_presentations/Diggers%20%20Dealers%20v5.pdf

#### **Previous Exploration**

The Dune project area has been previously held by Newmont and its predecessors (North Flinders Mines and Normandy NFM).

Two historic tenements are known, EL 2370 (CR1994-0467, CR1997-0042, CR1999-0162, CR1999-0297 and CR2002-0379) and EL 8802 (CR2003-0208).

CR 2003-0208 is a partial relinquishment report for EL 8802 'The Window', and is summarised as follows;

Partial relinquished report of EL 8802 contains result of exploration program conducted during the term of the licence. It includes airborne magnetic survey, gravity survey, geochemical survey and assaying. Petrology of three rocks was also done. Result of the exploration was disappointing and therefore, part of the licence area was relinquished.

CR 2002-0379 is a relinquishment report for EL's 2369 and 2370. Following extensive exploration, Normandy NFM elected to relinquish the ground. Exploration is summarised as follows;

This report summarises exploration programs carried out on relinquished ELs 2369 and 2370. Both ELs were explored extensively by various geochemical geophysical and drilling methods. A number of anomalies such as Vivitar, Kelpie, East Ptilotus, Lennards Ridge, Titania and Isis prospects were extensivley tested for gold. The best results from EL 2369 were obtained from East Ptilotus where a mineralised zone of 35 m averaged at 1.5 g/t. Similarly, Isis prospect from EL 2370 showed a best intersection of gold mineralisation of 1.5 g/t over 3 m. All these results remained disappointing and hence both ELs were dropped subsequently.

Normandy NFM subsequently took up EL 23662 in order to retain areas of interest including Titania / Oberon.

Soil sampling in 1991 detected a weak gold-in-soil response to the west of Oberon (Lamaque prospect). Subsequent drilling (RAB, RC and DD) confirmed an in-situ source for the gold anomaly at Lamaque, however stronger RC results were initially returned from Titania. Subsequent drilling returned significant results, and a drill-out was completed, leading to an open pit Reserve in 1996.

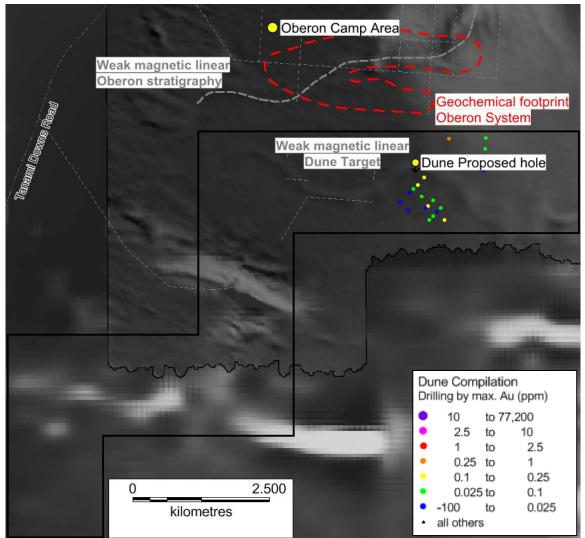


Figure 4. Available drilling results, themed by gold, Dune area. Image is 1<sup>st</sup> vertical derivative magnetics. Note the weak curvilinear magnetic feature which passes through the Dune target area. The Dune target area is more distinct in 2<sup>nd</sup> Vertical derivative imagery, however this data is not available to the author at the time of writing.

## **Exploration Concept**

The target at Dune is a repeat, or extension, of the Oberon mineralised system. Mineralisation drilled at Oberon by Newmont since 2009 occurs below the historic near surface Reserve. The target concept for that work was to locate Callie equivalent mineralisation, based on observed similarities between lithologies at Oberon and Dead Bullock Ridge (Callie).

Work proposed at Dune is an extension of this conceptual work. Based on its proximity, and in the absence of evidence to the contrary, it is assumed that lithologies at Dune will be comparable with those at Oberon. At Oberon, the mineralised position shows a weak positive anomaly in 1<sup>st</sup> Vertical Derivative magnetic data. A similar magnetic feature occurs at Dune, with attendant weak geochemical response in shallow drilling.

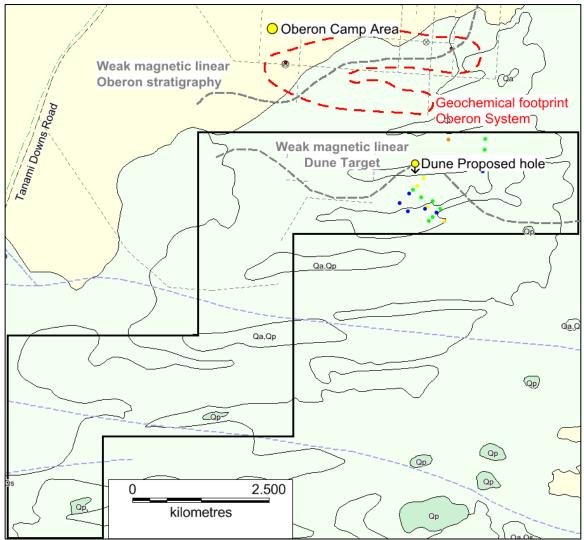


Figure 5. NTGS Geology, The Granites 1:250K.

It is not possible to provide examples of similar geological context, as there is nothing known of the Dune geology. It is apparent however that there is scope for a mineralised system, as there is detectable gold known from the area. As yet, there is no significant data from the area to support the target concept; as a result, the initial test, for which collaborative funding is sought, is relatively modest, and is aimed at determining the lithological, stratigraphic and structural setting of the target area.

## **Proposed Program**

A single diamond drillhole is proposed, with a depth of 200m. The hole will be drilled on an azimuth of 180°, with a dip of -60° (to the south). The planned collar co-ordinates are GDA94, MGA52 603,160mE 7,754,460mN. Drilling will be 'diamond from surface'. A pre-collar would reduce costs; however it will be important to gain as much lithological information as possible to assist in defining the geology of the target area, so diamond drilling will be required.

Drill recovery in the initial 25 meters may be low. Drilling at Oberon encountered no significant issues with core recovery, with the exception of minor fault zones.

Additional whole rock analysis, particularly for Th, Sc and Zr would be undertaken on selected samples to allow correlation with the Dead Bullock Formation and Killi Killi Formation, following the work of Lambeck.

#### **Estimated Costs and Timeframes**

ABM have recently received a quotation from Top Drill in relation to possible drilling in The Tanami. From that quotation, the following direct costs are indicated;

Direct Costs		Units	Rate	Direct Cost
Mob / Demob	Working rates	12 Hours	\$200	\$2,400
HQ	0 - 50m	50m	\$110	\$5,500
NQ2	50 - 200m	150m	\$105	\$15,750
Survey	Daily Rate	7 Days	\$125	\$875
Sub Total				\$24,525
Indirect Costs				
Preparation	Earthmoving	2 Days	\$2,500	\$7,500
Assays (FA)		200	\$20	\$4,000
Assays (WR)		20	\$50	\$1,000
Supervision	Geologist time	7 Days	\$600	\$4,200
Logistics	Management	5 Days	\$600	\$3,000
Field Support	Cook / Field Tech	7 Days	\$400	\$2,800
Field Support	Meals	35 man days	\$50	\$1,750
Sub Total				\$24,250
Total				\$48,775
NTGS Contribution				\$11,950
<b>Cost to ABM.</b> This will qualify for R & D under STF				\$36,825