



**ABM**  
RESOURCES NL

**ABM  
RESOURCES NL**

**ABN 58 009 127 020**

**GROUP  
ANNUAL REPORT**

For  
**EXPLORATION LICENCES  
EL 23926, 23927, 29367 and 29368**

**GR253/12**

**BONITA PROJECT**

From  
**16 March 2013 to 15 March 2014**

**NIL WORK REPORT**

<b>Holder</b>	ABM Resources NL
<b>Operators</b>	ABM Resources NL
<b>Author</b>	J Rohde
<b>Date</b>	April 2014
<b>Email</b>	joe @abmresources.com.au
<b>Target Commodity</b>	Gold
<b>Datum/Zone</b>	GDA94/ MGA Zone 53
<b>250,000 mapsheet</b>	Mount Theo (SF5208) Mount Peake (SF5305)
<b>100,000 mapsheet</b>	Theo (5155) Patricia (5255), Stuholme (5355), Yaloogarrie (5154), Turners Dome (5254), Giles (5354)

**Distribution:**

- o NT DME - digital
- o Central Land Council digital

File: jr74 NTDME Bonita 2014 GR253\_12

## LIST OF CONTENTS

	Page
1.0 ABSTRACT .....	1
2.0 INTRODUCTION.....	1
3.0 TENURE .....	1
4.0 GEOLOGY .....	2
4.1 Regional Geology .....	2
4.2 Mineralisation and Prospect Geology .....	3
5.0 HISTORIC EXPLORATION .....	3
6.0 EXPLORATION COMPLETED.....	5
7.0 RECOMMENDATION and CONCLUSIONS.....	5
8.0 BIBLIOGRAPHY .....	7

## TABLES

Table 1	Tenement Details
---------	------------------

## FIGURES

Figure 1	Project Location & Tenement Locality	1 :2,000,000
----------	--------------------------------------	--------------

## ACKNOWLEDGEMENT AND WARRANTY

1. Subject to 2, the tenure holder acknowledges that this Report, including the material, information and data incorporated in it, has been made under the direction or control of the Northern Territory (the NT) within the meaning of section 176 of the Copyright Act 1968.
2. To the extent that copyright in any material included in this Report is not owned by the NT, the tenure holder warrants that it has the full legal right and authority to grant, and hereby does grant, to the NT, subject to any confidentiality obligation undertaken by the NT, the right to do (including to authorise any other person to do) any act in the copyright, including to:
  - use;
  - reproduce;
  - publish; and
  - communicate in electronic form to the public, such material, including any data and information included in the material.
3. Without limiting the scope of 1 and 2 above, the tenure holder warrants that all relevant authorisations and consents have been obtained for all acts referred to in 1 and 2 above, to ensure that the doing of any of the acts is not unauthorised within the meaning of section 29(6) of the Copyright Act.

## 1.0 ABSTRACT

The ABM Resources NL (ABM), 'Bonita' project is located approximately 230 kilometres north-northwest of Alice in the north Arunta Region of the Aileron Province (**Figure 1**). The project comprises four granted Exploration Licences - EL 29367, 29368, 23926 and 23927. The tenements were granted to ABM, a publicly listed company, in March and April 2012. On 20th August 2012 the amalgamated technical reporting for Bonita was approved and the group reporting ID GR 253/12 assigned.

ABM explores the Bonita project for the potential of gold mineralisation.

As ABM focused on bringing the high-grade Old Pirate Gold Deposit at its Bonanza project into production through staged development, which commenced in June 2013 with trial mining and processing, no exploration was conducted during the reporting period; therefore this report covers nothing that was conducted during the reporting period.

In November 2013, as part of their 2013 divestment policy, ABM reached an agreement with Clancy Exploration Ltd (ASX: CLY) ("Clancy") whereby Clancy will have the option to acquire 100% of ABM's interests in the North Arunta Regional Projects, of which the Bonita Project forms a part of.

## 2.0 INTRODUCTION

The Bonita project is centred approximately 330 kilometres north-northwest of Alice Springs (**Figure 1**). The licences area lies in the central Aileron Province – in the north Arunta Region within the Mount Theo and Mount Peake map sheets. Bonita's south east tenement corner is just 25km away from ABM's Reynolds Range project tenements and as such the tenements cover a possible northwest strike extension of the Reynolds Range geological setting.

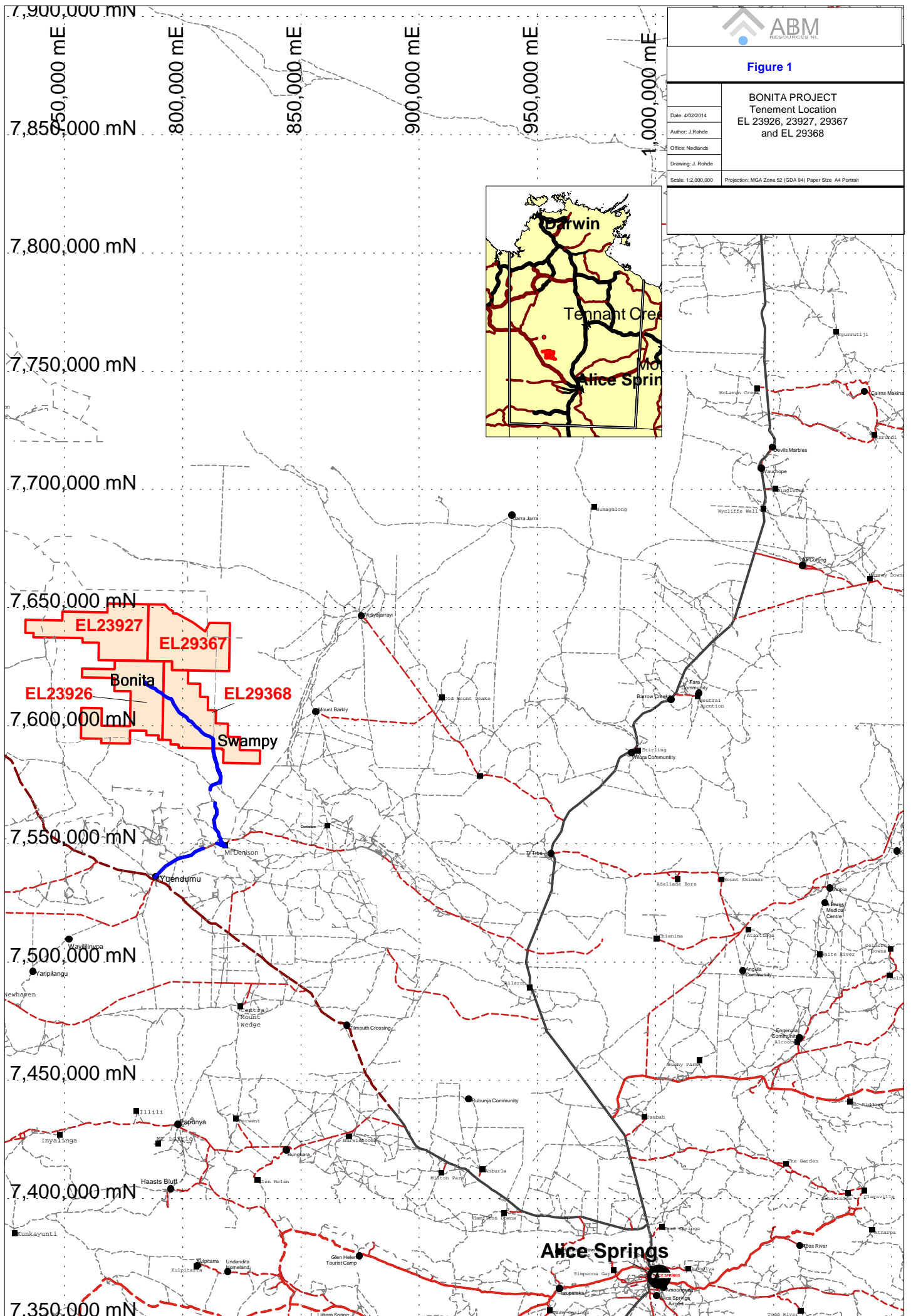
On a regional scale, the Bonita project area is interpreted to have a very complex geology; poly-deformed Palaeo-Proterozoic Lander Rock Formation metasedimentary rocks, known to host gold mineralisation, are intruded by numerous felsic and mafic intrusive phases, and are overlain by slightly younger siliciclastic metasedimentary rocks, including the Reynolds Range Group. The area is covered by complex regolith, with scree shedding from substantial hills cut by large drainage systems.

Access to the Bonita project area was via the Tanami Road up to the Yuendumu community and then via the unsealed Coniston track to the Mount Davidson station. From there, station tracks lead to a water bore, located close to the tenement boundary, from where ABM graded a 20 kilometres access track to EL 23926 via Swampy. The tenements have had little exploration and vehicle access further into the tenements was difficult. This report covers exploration carried out in the second year of tenure during the period from the 16th March 2013 to 15th March 2014.

## 3.0 TENURE

Exploration Licences 29367, 29368, 23926 and 23927 were granted to ABM in March and April 2012 for a period of six years.

On 20th August 2012 amalgamated technical reporting for EL's 29367, 29368, 23926 and 23927 (Bonita) was approved and the group reporting ID **GR 253/12** was allocated. The reporting period for this title group was set to 16 March to 15 March with a report submission due date at the 15<sup>th</sup> May each year.



In the first year of tenure the reporting period for the first Bonita group report was set from each individual tenement grant date respectively to the 15<sup>th</sup> March 2013 to align the varying reporting periods of the four tenements.

In November 2013 ABM reached an agreement with Clancy Exploration Ltd (ASX: CLY) ("Clancy") whereby Clancy will have the option to acquire 100% of ABM's interests in the North Arunta Regional Projects, which the Bonita Project forms part of.

Tenements are listed in **Table 1** and are illustrated in **Figure 1**.

**Table 1: Tenement Details**

Tenement No	Tenement Name	Current Blocks	Grant Date	Expiry Date
EL 23926	Ngadiri	240	11 April 12	10 April 18
EL 23927	Yinabalbu	244	16 March 12	15 March 18
EL 29367		238	16 March 12	15 March 18
EL 29368		247	11 April 12	10 April 18

Exploration Licences 29367, 29368, 23926 and 23927 are subject to the Arunta D Deed for Exploration between ABM and the Central Land Council on behalf of the Traditional Owners.

## 4.0 GEOLOGY

### 4.1 Regional Geology

The oldest exposed basement in Central Australia comprises metamorphic and igneous rocks of the Arunta Inlier (Haines et al., 1991). Rocks of the Arunta Inlier are interpreted as being at least partly correlative with sedimentary and volcanic sequences of the adjacent Tennant Creek and Granites - Tanami Inliers.

The Arunta Inlier (Early-Middle Proterozoic) is characterised by metamorphosed sedimentary and igneous rocks of low to medium pressure facies. Deformation and regional metamorphism to upper greenschist facies took place between 1810-1750 Ma (Black, 1981). Shaw and Stewart (1975) established three broad stratigraphic subdivisions based on facies assemblages and lithological correlations. From oldest to youngest, these subdivisions are named Division 1, 2 and 3. Using this model defined by Shaw and Stewart (1975), the orthogneiss east of Osborne Range, the calc-silicate rocks west of Crawford Range and the Bullion Schist would be included in Division 2, and the Ledan Schist in Division 3 of the Arunta Inlier.

Unconformably overlying these rocks are the Hatches Creek Group sediments and volcanics. Blake et al. (1987) formally subdivided the Group into the Ooradidgee, Wauchope and Hanlon Subgroups, comprising a total of 20 Formations and two Members. The Hatches Creek Group is a folded sequence of shallow-water sediments with interbedded volcanic units which reach thicknesses of at least 10,000 metres.

The sediments include ridge-forming quartzites, felspathic, lithic and minor conglomeratic arenites and friable arenite, siltstone, shale and carbonate. The Ooradidgee Subgroup consists mainly of fluvial sediments and sub-aerial volcanics which partly interfinger. The Wauchope Subgroup is characterised by large volumes of volcanics and sediments probably both marine and fluvial in origin. The Hanlon Subgroup may be entirely marine and lacks volcanics (Blake et al., 1987).

Deformation and regional metamorphism took place between 1810-1750 Ma (Black, 1981). Folding was about NW trending axes while metamorphism to upper greenschist facies took place. Later intrusion of both the Arunta basement and the Hatches Creek Group by granitoids of the Barrow Creek Granitic Complex took place around 1660 Ma (Blake et al., 1987). Contact metamorphism and metasomatism are often observed.

Sedimentation associated with the Georgina Basin commenced during the Late Proterozoic with the Amesbury Quartzite and was terminated during the Early Devonian after deposition of the Dulcie Sandstone. The Georgina Basin sequence was mildly affected by the Carboniferous Alice Springs Orogeny.

A long erosional period followed with subsequent deep weathering during the Tertiary produced silcrete and ferricrete horizons. A veneer of Quaternary sands and soils overlays much of the area, except where recent and active alluvial sedimentation is present.

## 4.2 Mineralisation and Prospect Geology

As the interpretation of geophysical data to date suggests similarities to the Reynolds Range geology and style of depositional mechanisms, the mineralisation of the Reynolds Range area is described below.

Most of the gold mineralisation in the Reynolds Range area appears to be concentrated along a relatively narrow corridor of greenschist facies Lander Rock Formation meta-turbidites. Where there is good exposure in the central part of the belt at Reynolds Range, folding in the Lander beds has northwest-striking axes, plunge towards the southeast and verges towards the southwest with steep southwestern limbs and gently dipping northeastern limbs (English, 2006).

Widespread gold anomalism was identified within greenschist-facies metasediments along the eastern side of the Reynolds Range in the early 1990's. Gold is hosted by sulphidic quartz veins and has been interpreted to broadly correlate with gold mineralisation in the Tanami region.

The Swampy and Bonita prospect areas in the Bonita project are located in the North Arunta region and are comprised of Lander Rock Beds which can be divided into three separate groups; an undifferentiated low grade facies, amphibolite facies including some dolerite and a moderate facies.. It is interpreted that the linear magnetic units are likely to be more magnetic BIF or intruded dolerites within the magnetic rock beds.

## 5.0 HISTORIC EXPLORATION

Exploration over the Bonita target area has been very limited.

In 1999 Normandy NFM drilled a 42 km long traverse of 2 km spaced aircore holes (CR1999-0419), of which the five easternmost (Max. Au is 0.004ppm) fall within the south western part of the 2012 EL 23926.

In **2000** North Flinders collected 20 laterite samples which fall on the 2012 EL 23926 (and are located at the western boundary of ABM's 2012 Bonita geochemical survey). Best surface sample gold record was 0.6ppb (Sample ID 5002888) out of a group of the five samples with elevated values.

In **2002** North Flinders (Report ID CR2002-0143) completed a total of eleven aircore holes which fall on the 2012 EL 29368. Seven of the aircore holes were drilled on an eight kilometres NS orientated traverse of over ABM's 2012 Swampy prospect.

Best recorded overall historic result was 260ppb gold returned from the line of aircore holes drilled over ABM's Swampy target area.

In **2012** ABM applied for the tenements for their strategic position along strike of the mineralised Reynolds Range corridor, and its interpreted similar geology, as well as for several anomalous total magnetic intensity features like the Swampy magnetic high.

Exploration in the **first year** of tenure (March 2012 to March 2013) consisted of regional desktop studies, including geophysical and geological interpretations which resulted in the planning and completion of an airborne electromagnetic (AEM) survey over two of the tenements (in collaboration with the NTGS) and two surface sampling programs.

The airborne electromagnetic (AEM) survey covering the majority area of EL 23926 and 29368 comprised 58 lines for a total of 1,229 line km with a 1,000m line spacing and a line direction of 042 degrees. The nominal terrain clearance was 100m. The AEM survey covering 1,233km<sup>2</sup> was completed by Fugro Pty Ltd. (Fugro). The survey data was processed by Fugro, and Fathom Geophysics Australia Pty Ltd. (Fathom) completed further processing and interpretation work.

*Fugro and ABM concluded* that the AEM survey revealed a previously unidentified regional structure, as well as generally thick transported cover, deep weathering and two north-south trending palaeo channels towards the eastern parts of the tenement holdings.

*Fathom concluded* that no quantifiable anomalies were recognized in their first-pass plate modelling due to the effects of the overburden, which must be removed from these data, before any effective plate modelling can be done.

The two surface sampling program areas Swampy and Bonita were selected to test conceptual targets of the underlying prospective regional magnetic features interpreted from public domain data. A total of 1,242 surface samples were collected; 468 samples on EL 23926 and 774 samples on EL 29368. In order to create access to the tenement, in particular to the geochemical survey areas, approximately 40 kilometres of track grading and re-grading was completed.

At the Swampy prospect (EL29368) the pH survey and the regional soil survey over a magnetic anomaly of 3km in diameter, at the intersection of tectonic scale geological structures, produced an anomaly in the 90 – 100 percentile range, covering an area of 7.5km x 2.5km, which remains open to the south. A second area, 4.5km x 1.5km, is highlighted by gold response in the 80 – 98 percentile range. These anomalies are highly significant as Swampy was a conceptual target in a poorly explored area.

At the Bonita prospect (EL23926) the soil survey showed patchy gold response in the 80 – 100 percentile range over an area of 4.5km x 2.5km, open to the west, coincident with a broad zone of magnetic anomalism. This target was historically very poorly tested, with extensive transported cover, making this a significant result.



## 6.0 EXPLORATION COMPLETED

ABM conducted no exploration during the reporting period, as it focused all its exploration efforts and financial commitments on the transition from exploration to trial mining of the high-grade Old Pirate Gold Deposit at its Bonanza project.

## 7.0 Recommendations and Conclusions

No recommendation and conclusions can be made other than the previous 2012 recommendations which were:

The 2012 AEM data over southern parts of the Bonita project area has resulted in a number of observations:

- A previously unidentified regional structure was recognized.
- Thick cover and deep weathering is present over the majority of the surveyed area.
- Quantifiable anomalies associated with potential massive sulphide mineralisation have not been identified over the Bonita prospect area. At the Swampy prospect, they may possibly be masked due to the thickness of transported cover and deep weathering.

Future geophysical work should comprise:

- EM data processing which effectively removes the influence of the overburden from the dataset.
- Collection of higher resolution geophysical data over the Swampy prospect and the regional structure to the south of Swampy.
- Amalgamation of 2012 AEM data with public domain magnetic and gravity datasets.
- Further follow up of regional geochemical surveys results in context with geophysical anomalies.

From the surface sampling program at Bonita it can be concluded that it is difficult to establish the litho-geochemical signature of the underlying geology when there is little understood about the prospect. A distinct inverse relationship was observed between the sedimentary and igneous pathfinders. Outcrop is scarce over the survey area, as is historical data, and transported cover is extensive; providing a difficult terrain for geochemical surface techniques and little solid geological information for interpretation of results. At best the mineralisation can be interpreted as trending on the margins of the interpreted dolerites or BIF. However if the magnetic anomalies were BIF the igneous pathfinders theoretically should/would not correlate. Further investigation needs to be undertaken to define the relevance of this observation to the underlying lithology and mineralisation. These observations and hypotheses will need to be validated and verified in the field and followed up with drilling for absolute confirmation of the litho-geochemical observations.

Due to the incomplete nature of the survey and the compelling anomalism on the western margin of the survey it is strongly recommended that in 2013 the remainder of the sampling programme be completed in order to fully investigate the nature of the western anomalism.

The pH survey and the regional survey at Swampy lead to the conclusion that the lithological pathfinders are difficult to distinguish and tend not to map spatially separate as they have in other ABM's surveys. The standard sedimentary pathfinder's used by ABM to geochemically define lithologies include Cs, Be, Ce, Hf and Pb; igneous pathfinders commonly comprise Ba, Ca, Ga, Ni and Sr.

It is recommended to further investigate the underlying geology before conclusions were to be drawn regarding the effectiveness of the surveying. The nature of the regolith definitely indicates that the

mineralisation if present would be incredibly muted by the thick cover over the magnetic target. Further work will need to be undertaken before this prospect can be considered a drill target.

Interpretation of the soil survey results, in combination with the geophysical data, suggests that at the Bonita prospect the gold response is consistently elevated on the western margin of the 2012 survey corresponding very well with localised magnetic features. The magnetic data suggests linear magnetic features which likely represent stratigraphy. A fold closure, with complex internal magnetic features, is indicated to the northwest. There is patchy gold response on the northern margin of the survey, but this does not correlate well with the magnetic image features. The overall tenor of gold, in the 60 – 80 percentile range, is slightly lower than ABM's Buccaneer; however the survey remains open to the west, in an area where the geophysical response indicates a potential fold closure in significant host rocks.

At the Swampy prospect, the largest DPG soil survey anomaly generated covers an area of approximately 7km by 2km with a distinct NNW trend. This anomalous area corresponds with several NW-SE-trending, linear magnetic features, which suggests that gold in the area is spatially associated with stratigraphic units, potentially adjacent to a fold closure/hinge zone to the southeast.

## 8.0 BIBLIOGRAPHY

Black L.P., 1981. Age of the Warramunga Group, Tennant Creek Block, Northern Territory. BMR Journal of Australia Geology and Geophysics, 6, 253-257.

Blake, T.U. et al., 1987. Geology of the Proterozoic Davenport Province, Central Australia. Bureau of Mineral Resources, Australia, Bulletin, 226.

English, L.T.P., 2006. Reynolds Range Project, Northern Territory, Drilling Completion Report. Tanami Exploration NL internal report.

Haines, P.W. et al., 1991. Explanatory Notes 1:250,000 Geological Map Series, Barrow Creek SF 53-6. Department of Mines and Energy. Northern Territory Geological Survey. Darwin.

Richards, R., 2012. Bonita BO\_GS1, Bonita Regional Project – EL23926, Deep Penetrating Geochemistry (DPG) – Geochemical Sampling Programme, December 2012. ABM internal Report.

Richards, R., 2012. Swampy SW\_GS1, Bonita Project – EL29368, Deep Penetrating Geochemistry (DPG) – Geochemical Sampling Programme, January 2013. ABM internal Report.

Richards, R., 2012. Swampy SW\_GS2, Bonita Project – EL29368, Deep Penetrating Geochemistry (DPG) – Geochemical Sampling Programme, January 2013. ABM internal Report.

Rohde, J., 2013. Group Annual Report for Exploration Licences EL 23926, 23927, 29367 and 29368, GR253/12, Bonita Project, From 16 March 2012 to 15 March 2013. ABM unpublished Report for the Northern Territory Department of Mines and Energy.

Shaw, R.D. and Stewart, A.J., 1975. Arunta Block, regional geology. In Knight, C. L. (Editor), Economic Geology of Australia and Papua New Guinea: 1 Metals. AusIMM, Melbourne.

Van Roij, A., February 2013, Submission to Northern Territory Geological Survey( NTGS), North Arunta Project, Bonita Sub Project, Airborne electromagnetic data acquisition and processing, final report for ABM Resources NL.