MANTLE MINING CORPORATION LIMITED

(ABN 70 107 180 441)

BARKLY PROJECT

Relinquishment Report for the Period
05 December 2007 to 04 November 2010

For

EL 26019 "Mitchiebo"

MANTLE MINING CORPORATION LTD
ACN 107 180 441
PO Box 2071, Toowong BC, Queensland 4006
Phone: (07) 3310 8932 Facsimile: (07) 3870 7022
www.mantlemining.com

Target Commodities: Phosphate, Base Metals
Tenement Manager: Austwide Mining Title Management Pty. Ltd.
Author: Stuart Moore, Mantle Mining Corporation Limited
Report Date: 04 April, 2011
Datum/Zone: GDA94/Zone 53

250k mapsheet: Mt Drummond
100k mapsheet: Mittiebah, Mitchiebo

Author: Stuart Moore, Queensland Operations Manager, Mantle Mining Corporation Limited
Email for further technical details: stuart@mantlemining.com

Distribution:
Geoscience Information, Northern Territory Geological Survey, DPIFM, Darwin
Austwide Mining Title Management Pty Ltd
Mantle Mining Corporation Ltd, Brisbane
Mantle Mining Corporation Ltd, Townsville

Contents

LIST OF FIGURES

LIST OF APPENDICES

(Appendices are separate files to the report body. Appendices I to VI are in a single pdf file.)

1. ABSTRACT

This report presents details of work completed by Mantle Mining Corporation (Mantle) on Exploration License (EL) 26019 during the period of tenure 05 December 2007 to 04 November 2010. The tenement comprised part Mantle's Barkly Project, covering portions of the Georgina Basin on the Barkly Tableland considered to be prospective for phosphate mineralisation. Potential also exists for the discovery of deposits of base metals, uranium and potash in these areas.

A desktop review of the tenement area was undertaken as part of a regional assessment of Mantle's Barkly Project Area during 2007 and into early 2008. This work provided the basis for a program of field reconnaissance during the 4th quarter of 2008, which did not reveal any obvious signs of mineralisation (P, U, base metals) at any potential sites identified by the desktop studies.

No field work was undertaken on the Barkly Project between December 2008 and August 2009 as Mantle undertook steps to conserve resources and confirm funding as a consequence of the Global Financial Crisis.

During the periods late November to early December 2009 and September 2010, four (4) reverse circulation drillholes were completed for a total of 185 metres within EL 260019. The drillholes were completed as part a broad spaced reconnaissance pattern throughout Mantles tenements adjacent to accessible station tracks.

All drill samples from the first program were analysed on-site using a handheld Field Portable X-Ray Fluorescence (FPXRF) instrument for a total 149 sample analyses and 5 Quality Assurance (QA) checks. The instrument was a hire unit from Portable Analytical Solutions and had been calibrated to include Phosphorous to a lower detection limit of approximately 0.5% P. During the second phase of drilling the initial FPXRF screening step was omitted and all 1-metre drill samples were submitted for laboratory analysis. In total, 64 samples (individual and composite) were laboratory analysed.

The results of this work have indicated that the discovery of a large deposit of phosphate mineralisation was unlikely to be present at shallow depth within the relinquished areas of EL 26019.

2. INTRODUCTION

Mantle Mining Corporation Ltd ("Mantle") was admitted to the Australian Stock Exchange on 22nd November 2006. Mantle Mining is a diversified Australian minerals exploration company with a large portfolio of quality projects across a range of "In High Demand" commodities. These include gold, coal & coal bed methane (hydrocarbon energy), uranium (non hydrocarbon energy) and phosphate.

EL 26019 is located on the Barkly Tableland approximately 330km east-north-east of Tennant Creek and 125km west of the NT-Queensland border (see figures 1 and 2).

ELs2618 is located within the Mt Drummond 1:250,000 map sheet.

The exploration rationale for the EL 26019 is based on prospectivity for phosphate. A watch was also maintained for indications of accumulations of potash, uranium, and potentially base metals.

A waiver of reduction of the area of EL 26019 was granted on 20 October, 2009. This report therefore encompasses exploration activities undertaken during the three years of tenure from 05 December, 2007 to 04 November 2010.

Exploration activities carried during the reporting period to 04 November, 2010 has comprised:

1. Desktop review, field inspection and geological reconnaissance, and compilation of drilling proposal
2. Field reconnaissance to locate the proposed drillhole locations on the ground and to investigate and confirm logistical arrangements for the drilling program.
3. Completion of 4 reverse circulation drillholes within EL 26019 for a total of 185 metres.

3. TENURE

This report covers the results of exploration activities undertaken on EL 26019 located on the Barkly Tablelands in the Northern Territory.

Land affected by these licenses is:
PPL926 – Australian Agricultural Company Limited

The location of ELs 26019 is illustrated on Figure 1, which illustrates the original extent of EL26019 and summary details in Figure 2.

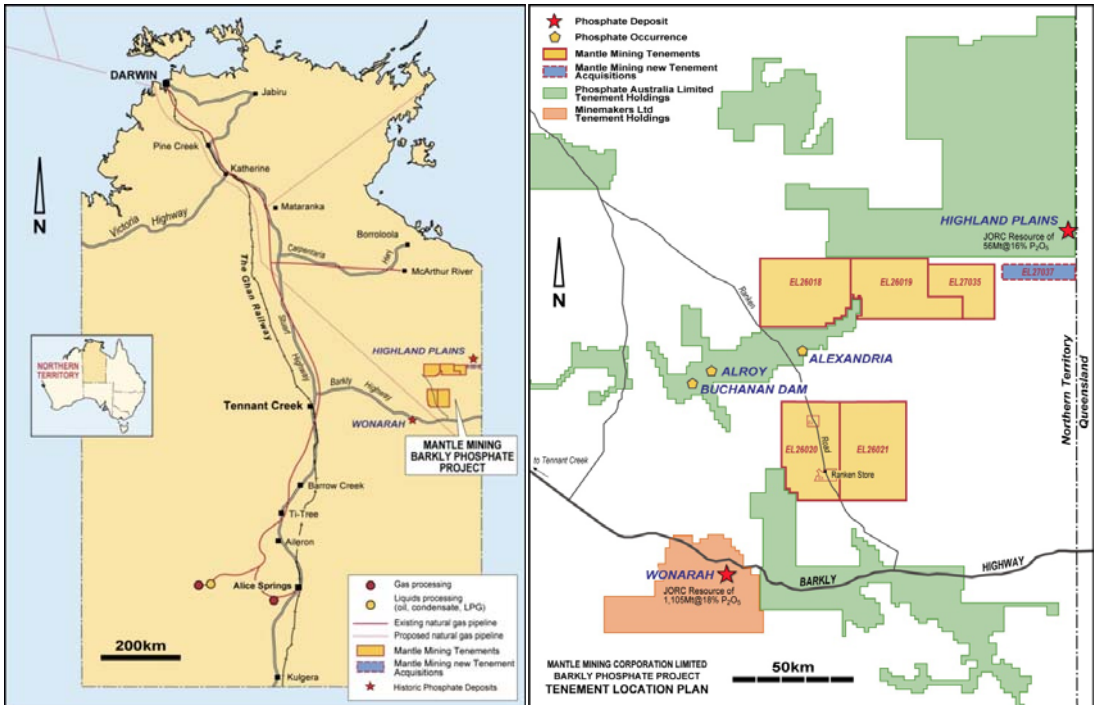

Figure 1: Location of Mantle's Barkly Phosphate Project

Figure 2: Summary tenement details

EL	Name	Date granted	Expiry date	Blocks	Expenditure commitment (total)
EL26019	Mitchiebo	05/12/2007	04/12/2013	340	$127,000

4. GEOLOGY

Parts of the South Nicholson and Georgina basins underlie EL 26019.

The South Nicholson Basin straddles the Queensland-Northern Territory border. It contains a Mesoproterozoic sedimentary succession that unconformably overlies Palaeoproterozoic rocks of the Murphy Inlier to the north and Lawn Hill Platform to the north, south and southeast. The basin is unconformably overlain by the Palaeozoic Georgina Basin to the south and southeast and by the Mesozoic Carpentaria Basin to the east in Queensland. The basin-fill predominantly consists of sandstone, siltstone and shale of the South Nicholson Group. This is believed to correlate with the Roper Group in the McArthur Basin (NTGS).

The Georgina Basin is a 330 000 km2 erosional remnant of a series of originally interconnected central Australian intracratonic basins, including the Savory, Officer, Ngalia and Amadeus Basins, which range from Neoproterozoic to Palaeozoic. The Georgina Basin covers most of the central-eastern Northern Territory and extends into Queensland. In excess of 1.5 km of Neoproterozoic sedimentary rocks are preserved in downfaulted blocks and half-grabens on the southern margin of the Georgina Basin in the Northern Territory. Depocentres and synclines contain up to 2.2 km of Cambrian to Devonian section. The southern region contains the thickest basinal successions, and demonstrates the strongest structuring related to distal effects of the 320Ma Alice Springs Orogeny. In contrast to the southern region, the central Georgina Basin, north of latitude 21°S, contains a relatively thin stratigraphic succession, up to 450 m thick, deposited on a tectonically quiescent platform. Deposition in the central region commenced with a marine transgression in the early Middle Cambrian and may have extended into the Late Cambrian. This central platform has been subdivided into an eastern Undilla Sub-basin and a western Barkly Sub-basin, separated by the Alexandria-Wonarah Basement High. The northern Georgina Basin is largely concealed beneath Mesozoic sedimentary rocks of the Dunmarra Basin (NTGS).

Locally overlying the Palaeozoic rocks are thin deposits of flat lying late Palaeogene (c. 25Ma) limestone. Thin deposits of Cretaceous marine sediments also locally occur on the northern margin of the Barkly Tableland (Edgoose, 2003).

Economic phosphate deposits in Middle Cambrian Georgina Basin rocks are being mined at Duchess in Queensland. In the Northern Territory several deposits of collophane mudstone and pelletal phosphorite have been identified in sedimentary intervals on the Alexandria-Wonarah Basement High. These deposits average about 16% P2O5. Minemakers Limited has a 72 Mt phosphate resource at the Wonarah deposit on the Alexandria-Wonarah Basement High. Smaller deposits are known at Alexandria, Alroy and Buchanan Creek (NTGS), southwest of EL 26019.

5. EXPLORATION ACTIVITIES 05/12/07 – 04/12/10

Exploration within EL 26019 has comprised:

- Desktop review of historical data and including regional radiometric, geophysical, and DTM datasets and field reconnaissance of target areas identified from this work.
- Desktop planning to develop a broad spaced drilling pattern to test the areas covered by EL 26019 for potential phosphate mineralisation to a nominal depth of 50 metres, with regional reconnaissance to ground-truth proposed drillhole locations and confirm access and logistics,
- Completion of 4 reverse circulation drillholes for a total of 185 metres within the relinquished area.

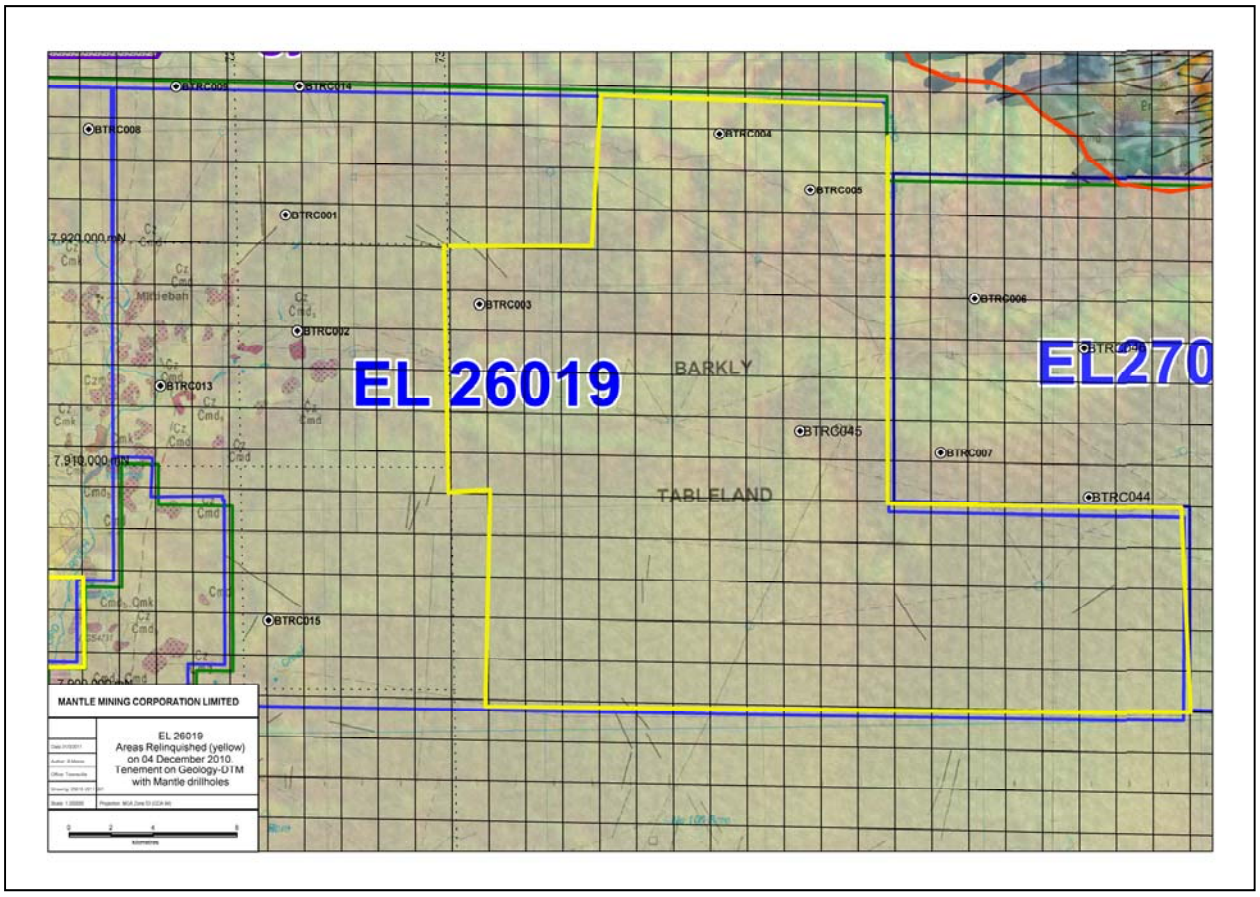

Figure 3: ***EL 26019 (blue) showing relinquished area (yellow) with drillhole locations on geology-magnetics-DTM base map.***

5.1 Regional Desktop Studies and Field Reconnaissance

Exploration activities carried during the first year comprised:

- Desktop study integrating airborne radiometrics and magnetics, gravity,geology, elevation and topography datasets (Stamoulis, V., Chrysoar Exploration, 2008), Appendix X
- Field reconnaissance and sampling to inspect targets located by the desktop study (K. Lindsay-Park, CSA Global Pty Ltd, Report No. 259.2008), Appendix X
- A report "Regional Assessment and Exploration Model" (K. Lindsay-Park, CSA Global Pty Ltd, Report No. 275.2008), Appendix X

Office-based desktop studies were undertaken to identify targets, provide a regional assessment and development of exploration models, and include a review of historical drilling and phosphate mineralisation in the region.

Targets identified by the Desktop studies were investigated by field reconnaissance program to examine target geology and collect geochemical samples.

No significant mineralisation was located, however, the exploration models generated and the review of historical data, gave a better insight into the areas of better prospectivity.

Reports of the work undertaken by Chrysoar and CSA Global, with details of samples and spectrometer data, are presented within Appendix X.

Internal project reviews completed by Mantle Mining Corporation (Hornabrook, 2008 and 2009) considered historical phosphate exploration programmes with particular attention to historical drilling data and compilation of a common stratigraphy across Mantle's tenement areas.

A program of field reconnaissance of the Barkly Project area was undertaken by Mantle personnel during September, 2009. The primary aim of this work was to ground truth the proposed drillhole locations and where necessary re-locate the proposed locations to positions adjacent to accessible tracks and provide revised coordinates. All holes were sited at least 150 metres from the station tracks. This work also confirmed logistical issues such as where the drilling crew will camp, water supply, access to fuel, sample transport, etc. The landholders at Mittiebah and Alexandria were willing to assist and permission was granted to set up camp adjacent to Mittiebah Homestead (permanent water and reduced fire risk) and at Rankin Store (water supply, access to work areas and proximity to the Barkly Highway).

All navigable tracks, gates, waterbores, and proposed drillhole locations were documented using a handheld Garmin GPSmap 60CSx GPS unit. All hole locations were marked with a wooden stake to facilitate site location during the drilling program.

Appendix I includes a topographic map of EL 26019 upon which the GPS waypoint locations and access tracks have been plotted. Waypoint point data is included in Appendix II.

5.2 Drillhole Planning

Short programs of broad spaced reverse circulation drilling was undertaken throughout EL 26019 during November-December 2009, and September 2010. Only one hole was completed within EL26019 during 2010 as the program was terminated due to drill rig breakdown shortly after drillhole BTRC045 was completed.

Planning of drillholes was undertaken with the aim of testing broad areas of the Barkly Project to a nominal depth of 50 metres vertical seeking confirmation of areas likely to be favourable for phosphate mineralisation and those areas where economic accumulations of phosphate are potentially present at shallow depth.

Hornabrook (2009) indicates that work by Mines International in the late 1960's to early 1970's, to the north, east, and south of ELs 26018 and 26019, considered the thin phosphate intersections found were in coarse sandstones and that relatively finer medium to coarse lithologies down dip into the basin may provide a relatively quieter sedimentary environment more favourable for greater thicknesses of phosphate deposition. Potential may also exist for material from sites of phosphate deposition to have slumped into deeper and finer sediments.

The presence of a subsurface rise, perhaps the SW-NE extension of the interpreted structural high on which the Wonarah deposit sits and which lies immediately to the east of the Alroy, Britannia Downs, and Alexandria prospects, is proposed to be a scenario conducive to the accumulation of a significant phosphate deposit such as Wonarah. This interpretation enhances the prospectivity of the western portions of EL 26019. In general, it appears that Mid-Cambrian lithologies, such as those at the base of the Wonarah Formation that immediately overlie the basement rocks, and other formations of the same age throughout the Georgina Basin (including the Queensland side of the border), host the significant deposits so far located (Hornabrook, 2008).

Public domain magnetics and gravity geophysical survey data was referenced when designing the drillhole program. Magnetics TMI, Magnetic Depths, and Barkly Gravity images were acquired from the Northern Territory Geological Survey (NTGS) Geophysical Image Web Server (GIWS) in EWS format. While recognizing that the large scale features evident on these regional datasets may not directly impact the outcomes from the relatively shallow drilling program being proposed; it was considered that near surface influences of these features on the overlying stratigraphy may be relevant.

Consideration was also given to accessibility given the difficulty of driving over the cracking black soils that cover much of the tenement areas. To avoid unnecessary land disturbances it was decided not to undertake clearing of access with a dozer or grader and instead locate the drillholes adjacent to existing station tracks. Given the broad drillhole spacing, large features evident in the geophysical data, and the scale of deposit sought, it was possible to target locations of interest from sites along existing station tracks.

Proposed drillholes (2009) locations over the Depth To Magnetics base plan are illustrated in Figure 5, below. Final drillhole locations (2009), as drilled, are illustrated relative to the Magnetics Total Magnetic Intensity (TMI) in Figure 6 and Gravity in Figure 7. BTRC045 is not shown on these figures, however the relative location is apparent from Figure 3. Only data pertaining to drillholes completed within EL26019 are included in this report.

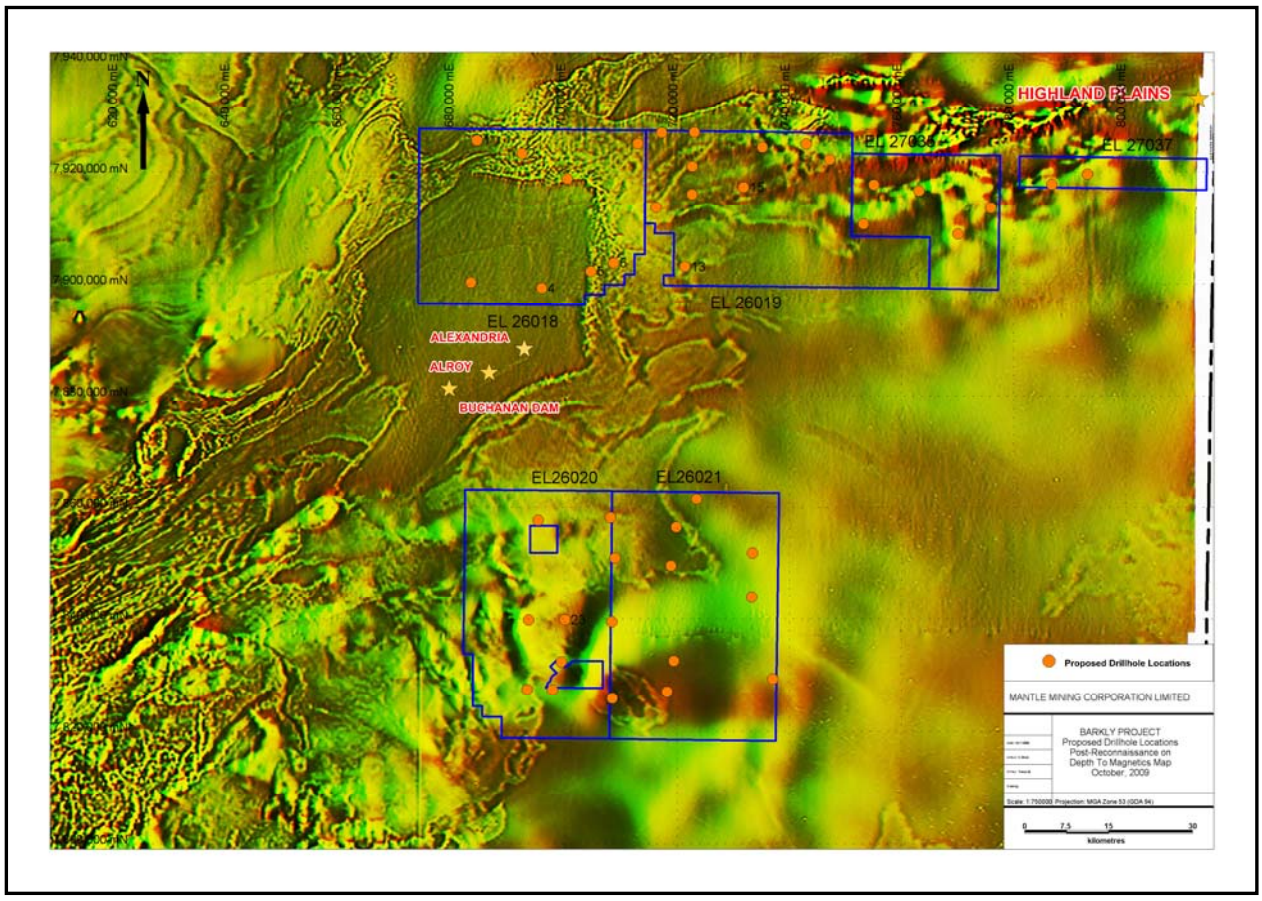

Figure 5: ***Proposed drillholes on Depth To Magnetics source image.***

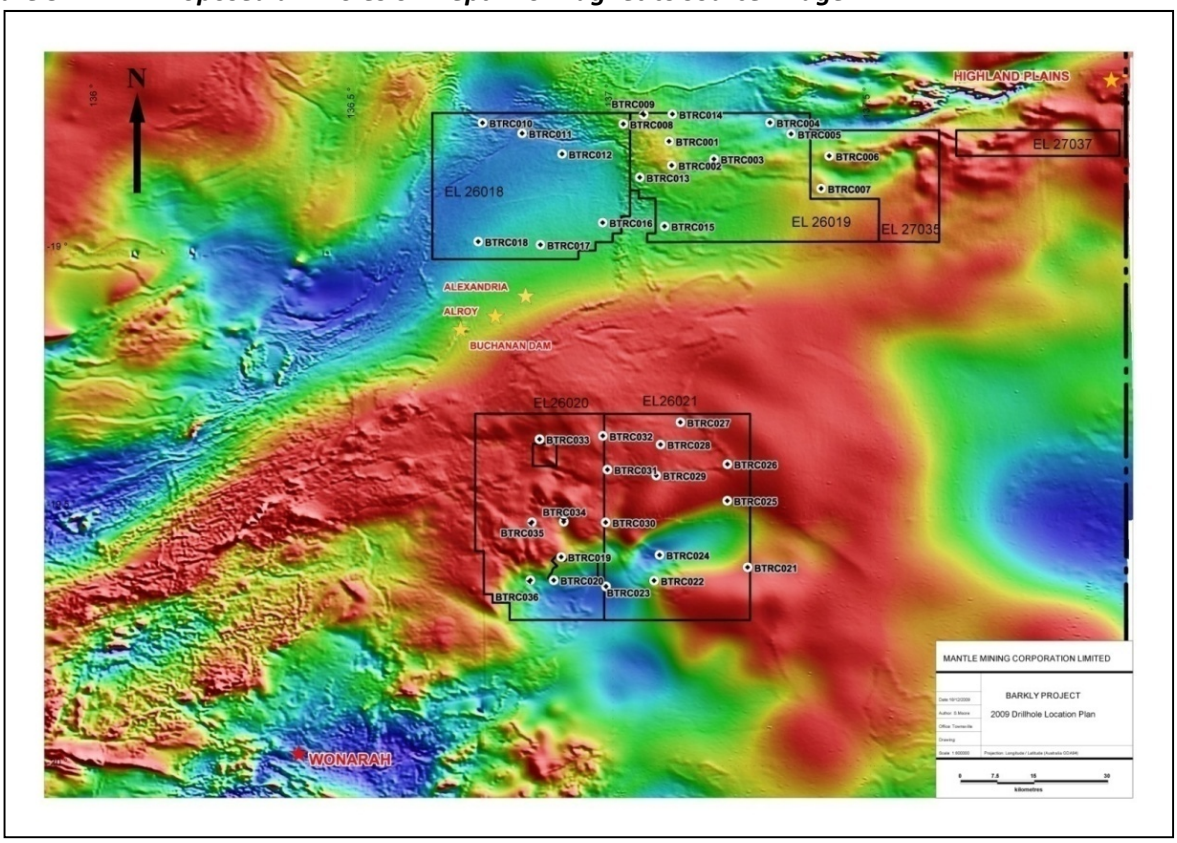

Figure 6: ***Proposed drillholes as drilled, on Magnetics TMI image.***

A subsurface basement ridge, host to the Wonarah phosphate deposit, is interpreted to trend NNE-NE from the Wonarah region and east of the Buchanan Dam, Alroy, and Alexandria prospects that are considered to lie on the western margin.

5.3 Drilling Program

Four (4) reverse circulation drillholes were completed within the relinquished areas of EL26019. Drilling was completed by MLM Drilling using a Multipurpose EVH drilling rig set up for R/C. All drillholes were completed using a 4 ½ inch diameter bit. The 2009 drilling was supervised by a Contract Project Geologist and Senior Field Assistant from CSA Global, Darwin. Map to Mine, Townsville, provided full camp facilities and additional field personnel. In 2010, a Map to Mine Geologist and field personnel conducted the drilling program.

Drillholes are nominally 5 to 10 kilometers apart in a broad reconnaissance pattern. Hole locations are illustrated in Figures 3, and 5 to 7. Drillhole collar details are presented in Appendix III. All drillholes were accessed from existing station tracks and collars were sited at least 150 metres from these tracks.

One metre samples were collected from all drillholes. Samples were collected in plastic bags from a cyclone-mounted splitter that provided an assay sample of approximately $1/5^{th}$ volume and the remainder in a single large plastic bag.

All drillholes were rehabilitated following drilling by filling the hole with cuttings from the discarded bulk 1 metre sample bags. The top 2-3 metres of backfill were compacted and the cuttings mounded to allow for subsidence. Care was taken to ensure that the uppermost intervals were returned to the top of the drillhole and that the interval 0-1m was always on top.

Details of drillhole coordinates, FPXRF and Laboratory analyses, drill logs, and FPXRF procedures, are included in Appendices III to IX.

64 1-metre and 4-metre composite drill samples were selected, on the basis of geological composition and FPXRF results, for laboratory analyses. Samples were sent to ALS (Townsville) for phosphate suite (oxide) analyses by fusion XRF. No significant phosphate values were reported.

5.3.1 Drillhole Logging and Sampling

All drillholes have been geologically logged at 1 meter intervals, consistent with the sampling intervals. Drill logging data is presented in Appendix VII and the geology lithcodes used are defined in Appendix IX.

To reduce the volume of material and expense to be transported off site during the 2009 drilling programm, a decision was made to use a Field Portable X-Ray Fluorescence (FPXRF) instrument to do a first pass screen of the assay samples for phosphorous. This would enable selection of anomalous and adjacent samples for laboratory analysis.

The FPXRF analyses also provides an additional 32 medium to heavy elements, including base metals, that are expected to assist compilation and determination of continuity of broad stratigraphic lithologies between drillholes. The analyses were done through the plastic sample bag and were intended as a

simple first pass check for the presence of phosphate. It is recognised that there is likely to be attenuation of the x-ray response through the plastic sample bag, however this was considered to be minor and a consistent effect for all samples. The FPXRF field sampling process is outlined in Appendix XIII. Compiled FPXRF analyses are presented in Appendix V. FPXRF QA/QC readings taken during the drilling program are presented separately in Appendix IV.

The FPXRF was not used during the 2010 drilling program. This was both consequence of mixed results obtained from the 2009 drilling (carbonate interference was a problem encountered with data from Mantle's FPXRF) and the unavailability of a trained and licensed operator for the instrument at the time of drilling. It was considered that the laboratory pulps could be tested by the FPXRF unit at a later date. As a result, all 1-metre intervals were sampled and all samples were sent to ALS Laboratories (Townsville) for analysis. All 1-metre samples were prepped, and from these 4-metre composite samples were compiled. Only full 4-metre composite samples were compiled and all intervals falling outside of these intervals were assayed individually.

The laboratory phosphate analyses were done using a fused disk XRF method that, in addition to phosphate, also provided a suite of element oxides relevant to phosphate resources. Laboratory analytical data is presented in Appendix VI.

6. CONCLUSIONS AND RECOMMENDATIONS

Programs of desktop data review, follow-up reconnaissance and reverse circulation were completed during the term of EL 26019. This has been a positive outcome given that field operations during 2009 were constrained by GFC impacts on the Company.

The drilling completed within EL26019 has intersected no significant phosphate values in four drillholes. The broad area of coverage and lack of 'ore-grade' values suggests that a deposit of potentially economic grade and thickness is unlikely to be present within relinquished areas of EL26019. If a narrow ribbon deposit such as found at Alroy, Buchanan Dam and Alexandria to the south is present then it would have to run between the drillholes completed. A regional close spaced program of drilling would be required to confirm or negate the presence of such a body of mineralisation; however a significant accumulation of phosphate in close proximity is not apparent from the drillholes completed.

The lack of broad spaced phosphate mineralisation supported by ore-grade intersections has downgraded the prospectivity for an economic phosphate deposit at shallow depth within the relinquished area of EL26019.

7. REFERENCES

Lindsay-Park, K., 2008	Regional Assessment and Exploration Model, Barkly Project	CSA Global Pty Ltd Report No. 275.2008 for Mantle Mining Corporation Ltd
Stamoulis,V., 2008	Field Prepatory Work (Desktop Remote Sensing study)	Chrysoar Exploration
Edgoose, C.J., 2003	Barkly Tableland Region, Northern Territory	CRC LEME 2003
Smith, K.G., 1972	Stratigraphy of the Georgina Basin.	B.M.R. Bulletin 111
NTGS	Georgina Basin	Northern Territory Government - NTGS web site
Hornabrook, A. (Nov,2008)	Review of Phosphate in the Georgina Basin	Internal Mantle Mining Corporation Limited Monthly Report
Hornabrook, A (Jan 2009)	Previous drillhole phosphate intersections in current tenement areas	Internal Mantle Mining Corporation Limited Monthly Report
Lindsay-Park, K., 2008	First Annual Report for ELs 26018, 26019, 26020, and 26021, Barkly Region, Northern Territory, Dec 2008	CSA Global Pty Ltd Report for Mantle Mining Corporation Ltd