Northern Territory Government

Geophysics and Drilling Collaborations

Proposal Cover Sheet

CORE

Project title	Bing Bong Exploration
Applicant (Company Name)	Pacifico Minerals Ltd
Applicant ABN	43 107 159 713
Applicant postal address	PO Box Z5487, Perth WA 6842
Contact officer	Simon Noon
Contact phone number	08 6266 8642
Contact fax number	08 9421 1008
Contact email address	Simon.noon@pacificominerals.com.au
Granted exploration licence number(s) where this proposal is to be undertaken	EL24401
Proposed type of exploration program for funding (diamond drilling, gravity survey etc)	Diamond Drilling
Brief summary of program (total number of metres to be drilled, number of gravity stations, total length of flight lines etc)	2 x 400m diamond drill holes, total 800m
Total direct costs for the program including GST	$140,000
Amount of funding requested including GST	$70,000
Proposed timeframes for commencement and completion of program	1st August – 31st August 2015
Names and positions of signatories to the funding contract	Simon Noon (Managing Director)
Signature of applicant	
Date	13th April 2015

2015

Geophysics and Drilling Collaborations Completion Report, EL24401

For

Northern Territory Government

CORE Initiative

By Pacifico Minerals Ltd

August 2015

1:250,000: MOUNT YOUNG (SD53-15)

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Executive Summary

3D geophysical and geological inversion modelling over EL24401 using available data sets sourced from the NTGS and VTEM from Sandfire Resources NL suggest the presence of an intrusive complex that could be part of a prominent trend of Permian – Carboniferous intrusive complexes that extend from northern Queensland. Previous drilling by BHP within the licence has recorded intersections of small coarse-grained trachyte plugs, confirming the potential for igneous complexes within the tenement.

A two-hole diamond drilling program was conducted between the 6th and 13th July 2015 with the objective to intersect mineralisation with copper and/or gold, or indicative alteration, in the 'pipe like' structures indicated by the VTEM within an interpreted intrusive complex.

Diamond drilling by Pacifico Minerals has intersected the Mainoru Formation and Limmen Sandstone of the Lower Roper Group. The interpreted intrusive complex was not intersected and no signs of associated alteration or mineralisation were observed, suggesting it may reside at a significant depth in the basin.

Table of Contents

LIST OF FIGURES

LIST OF TABLES

Introduction

The project is centered about 650km southeast of Darwin in the 'Gulf Country' of the Northern Territory, Australia. The Bing Bong prospect is located on EL24401 approximately 40 km north of Borroloola and 5 km southwest of the Bing Bong Port operated by McArthur River Mine. Access to the tenement is gained via the north-south sealed road linking the Carpentaria Hwy to the Bing Bong Port and then westwards along Western Desert Resources private Haul Road, completed in early 2014, where it crosses EL24401 from east to west (Figure 1).

Drill holes BBDD001 and BBDD002 on EL24401 are included in the NT Portion 02432, which is held in the title CUCL 199 008 (order 2) and is a Crown Lease in Perpetuity (CLP 429) (Figure 2). Granted under the Crown Lands Act (NT). CLP 429 is not subject to a Native Title Claim at the time of this agreement coming into being. The Wurrunburru Association Incorporated is the registered owner of the Northern Territory Portion 02432 Plan S85/059. Pacifico Minerals Ltd has an access agreement in place with the Wurrunburru Association.

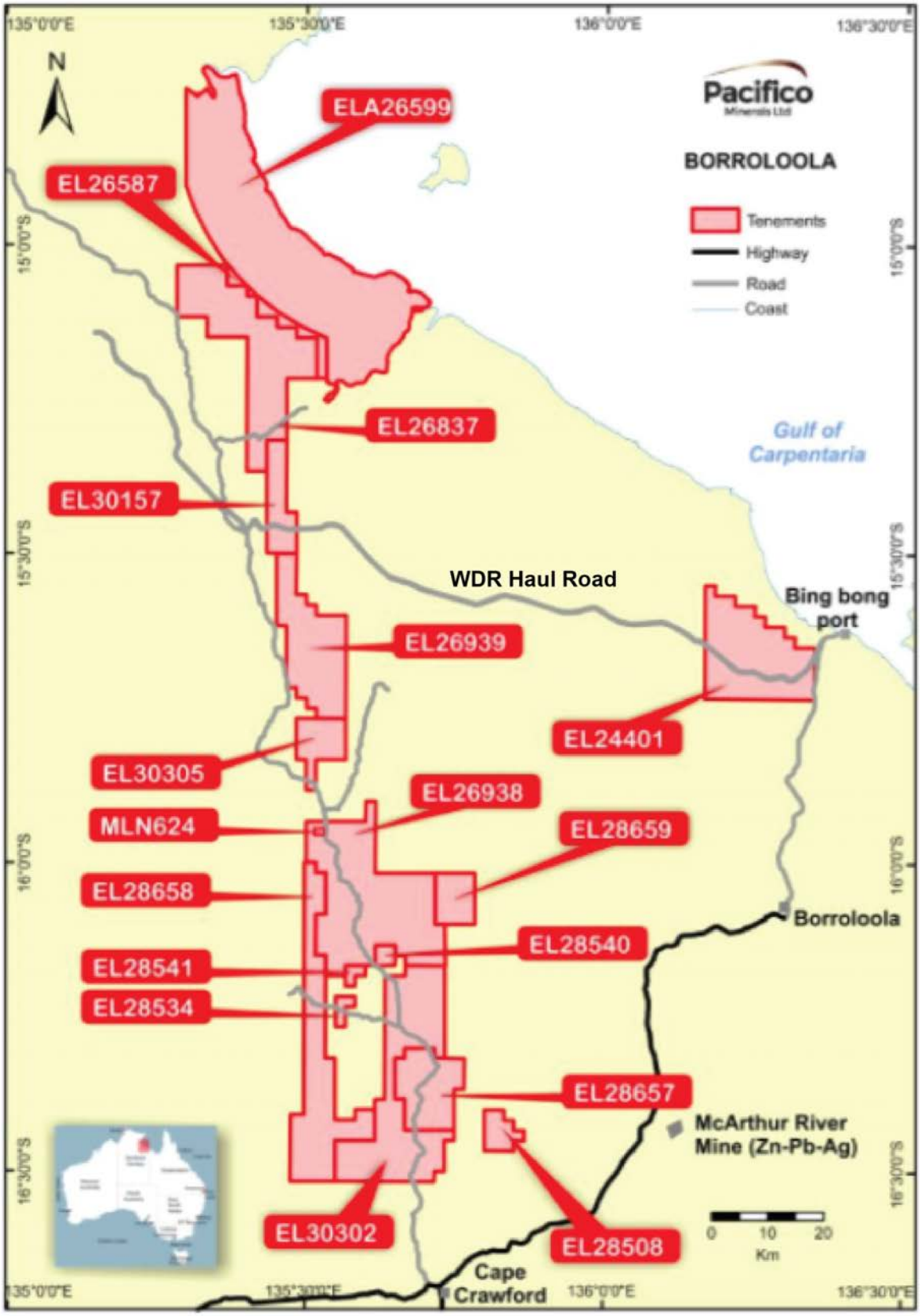

Figure 1. Location map of EL24401

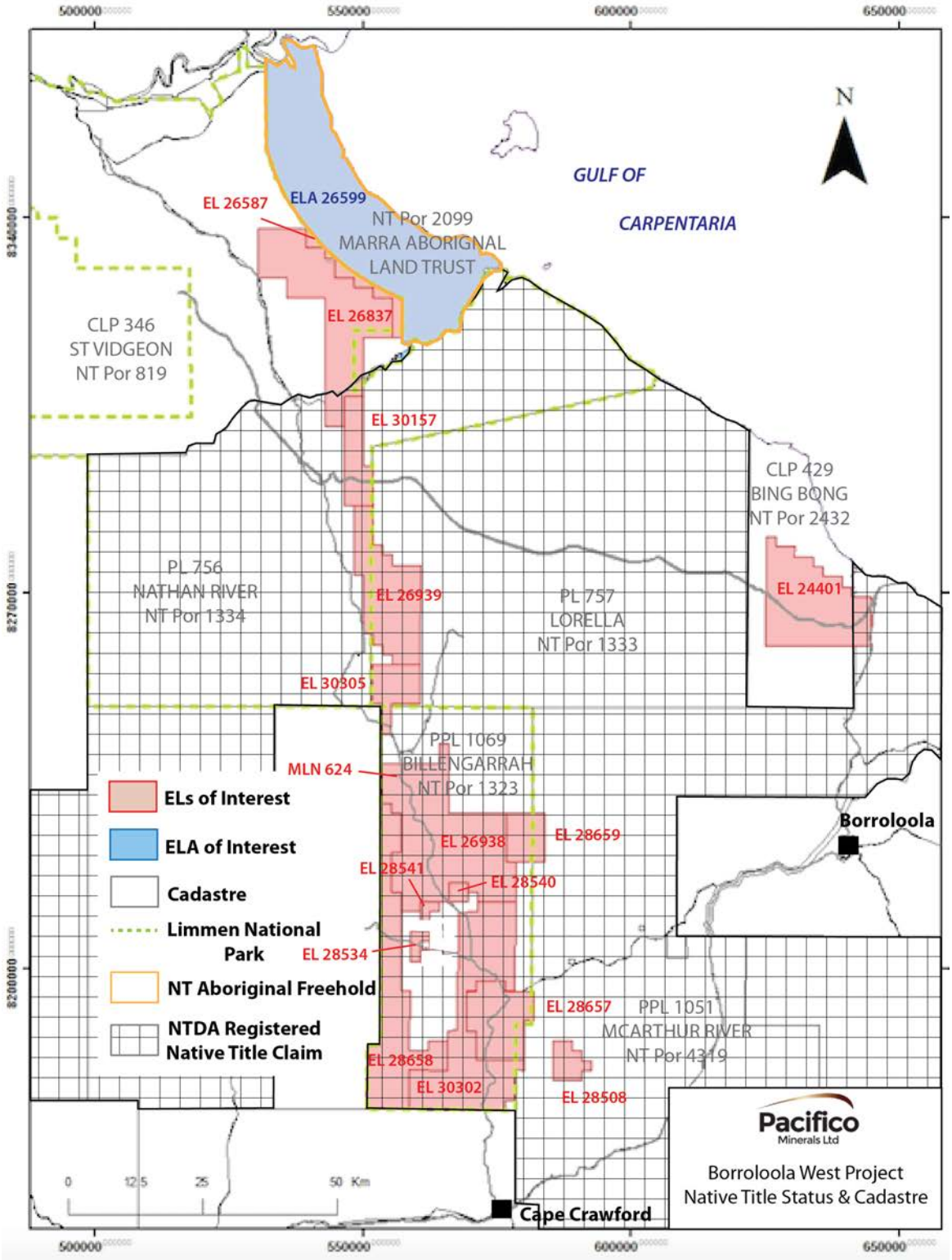

Figure 2. Native Title Status and Cadastre covering EL24401

Regional Context

The McArthur Basin is a large sedimentary basin with an exposed area of about 180,000 km2. Most of it lies within the northeastern Northern Territory, and it extends over the border into the state of Queensland. Thick marine and non-marine sedimentary rocks were deposited from the late Palaeoproterozoic to the early Mesoproterozoic (1800-1430 Ma). The Borroloola Project area lies within the Batten Fault Zone (BFZ) where sediments of the Tawallah, McArthur and Roper Groups rest unconformably on the Scrutton Volcanics, and are partially concealed by Cretaceous and Tertiary sediments.

EL24401 covers a low-lying sandy coastal plain that is dominated by Tertiary silts and sands with no pre-Cretaceous basement outcrop (Figure 3). The tenement lies in the Mount Young 1:250,000 NTGS geological map sheet. Previous drilling programs conducted to the north and south of the tenement have gained information regarding the underlying basement.

North Exploration intersected a flat-lying shallow marine sequence of glauconititc sandstones and mud-siltstones correlated with the Mainoru Formation of the Lower Roper Group and quartzarenite correlated with the Abner Sandstone or Limmen Sandstone, also belonging to the Lower Roper Group. One diamond hole, PCD-001 (623127mE, 8263696mN) outside the southwestern margin of the tenement, was drilled by BHP to a depth of 307.4m. Cretaceous clays, sands and silts were intersected from the surface to a depth of 36.1m. Interpreted Proterozoic stratigraphy was intersected from 36.1m to the end of the hole and is though to be Balbirini Dolomite of the Nathan Group.

Despite the previous drilling surrounding EL24401 no mineralisation has been discovered in the vicinity.

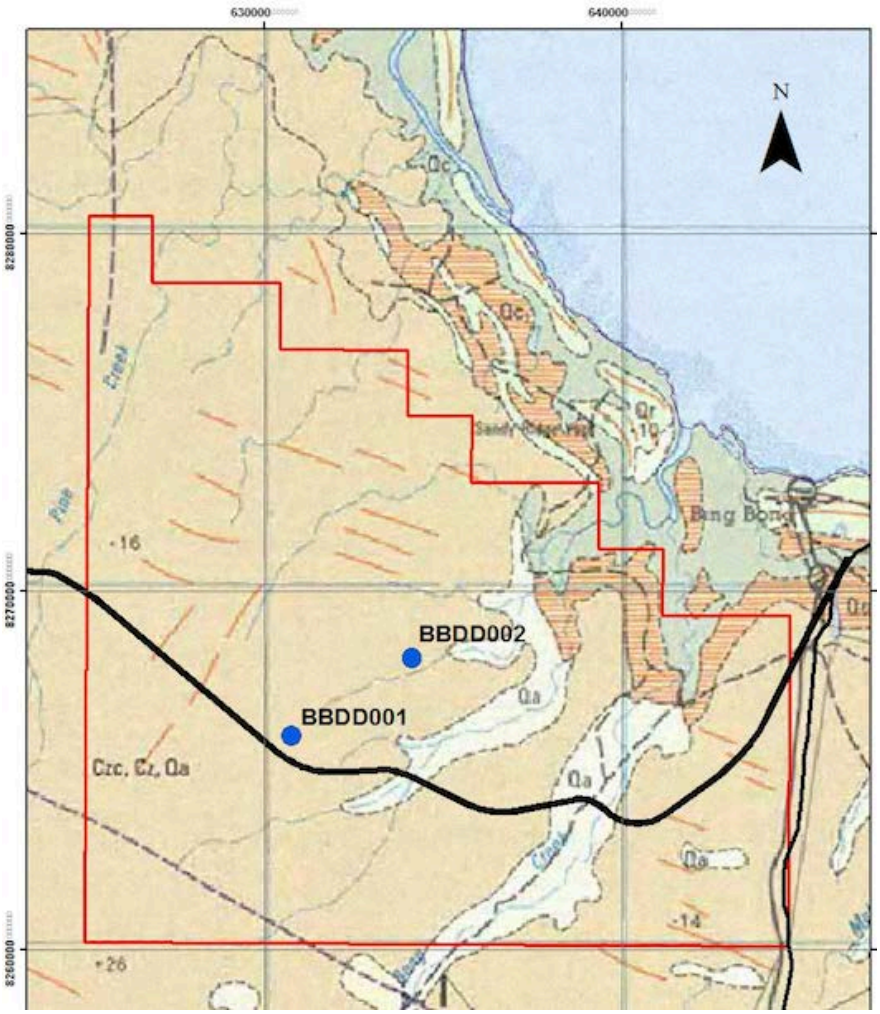

Figure 3. Geology covering EL24401 and collar locations, Mt Young 1:250,000 NTGS Geological Map Sheet

Previous Exploration

In the immediate vicinity of EL24401 BHP and North Exploration have completed drilling in the south and north respectively during the early 1990's, a location map of all drilling in proximity to the tenement is shown in Figure 4.

BHP conducted drilling in the early 1990's in which 95 RC percussion holes (average depth 58m) and one diamond hole PCD-001 were completed (Figure 4). Drill lines 7, 10 and 11 occur on EL24401 whilst line 4, 6 and 12 are located outside the tenement on the western margin.

Diamond hole PCD-001 was a stratigraphic control for the percussion-drilling program and reached a total depth of 307.4m. Cretaceous clays, sands and silts were intersected from the surface to a depth of 36.1m. Proterozoic sediments consisted of dololutites and

dolarenites with minor interbedded tuffaceous sequences of the Balbirini Dolomite.

A percussion drilling program of 69 holes totaling 3,397 m was completed in 1992 and a following 26 holes totaling 1,506 m in 1993. Drill holes were spaced at 200 m intervals and each line was 2 km long. The drill lines were centered on three faults interpreted from aeromagnetic and ground magnetic data. Cretaceous cover varied from 2 to 64 m with an average 32 m. Holes intersected approximately 10m of Proterozoic rocks, predominately dolomite, siltstone and sandstone.

North Exploration in 1994 completed five diamond holes and two water bores totaling 590 m. Only MBD-06 is on EL24401 in the northern most corner (refer to figure 4).

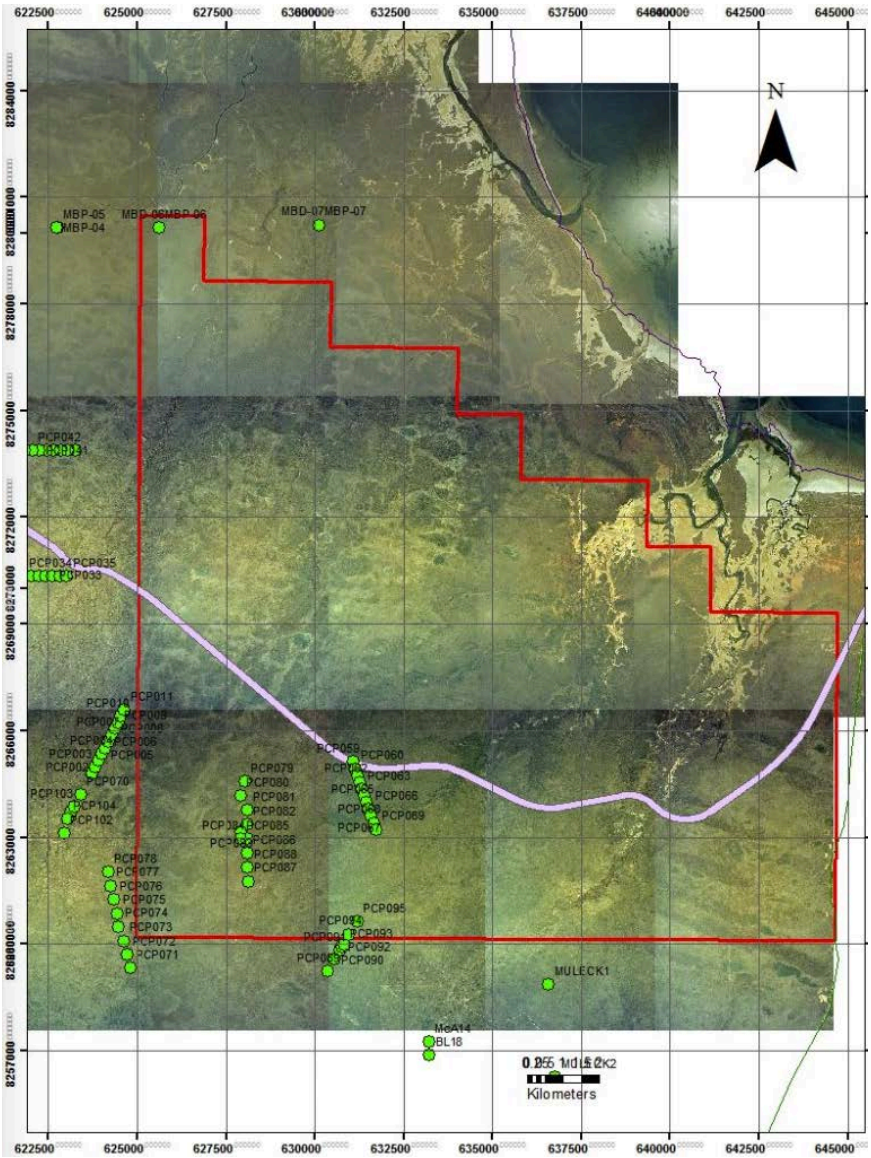

Figure 4. EL24401 showing previous drill hole collars

Relatively detailed magnetic and radiometric information over the Batten Trough, which includes tenement EL24401, was acquired during an airborne survey flown by Aerodata Holdings Ltd for the NTGS in 1989. Flight lines were oriented east-west with a line spacing of 500m and elevation of 100m. BHP also conducted detailed aeromagnetic surveys by Geoterrex (line spacing 300m and elevation 80m) over the area between 1983 and 1985.

Sandfire Resources conducted helicopter-borne VTEM survey by Geotech Airborne Ltd over EL24401.

PGN Geoscience reinterpreted the available geophysical data sets for Pacifico Minerals, and has identified potential targets by using 3D inversion modeling.

NTGS Reports

BHP Drilling: CR1993-0476 and CR1995-0679
BHP Aeromagnetic Surveys: CR1984-171, -183, -188 and -240
North Exploration Drilling: CR1994-0817

Exploration Concept

PGN Geoscience Pty Ltd conducted 3D geophysical and geological inversion modelling over EL24401 using available data sets sourced from the NTGS. Interpretations suggest the presence of an intrusive complex (Mornington Suite??) that could be part of a prominent trend of Permian – Carboniferous intrusive complexes that extend from northern Queensland. Previous drilling by BHP within the licence has recorded intersections of small coarse-grained trachyte plugs, confirming the potential for igneous complexes within the tenement as suggest by geophysical modelling.

A high conductivity anomaly with a ‘pipe like’ shape extends at depth and reaches the bottom of the AEM inverted models. The conductivity anomaly may be located at the intersection between EW and NE-SW structures. Accompanying this, the anomaly sits on the edge of a major change in the magnetic character of the area (Figure 5) (PGN, 2013). The objective of the diamond drilling was to intersect mineralisation with copper and/or gold, or indicative alteration, in the ‘pipe like’ structures indicated by the VTEM within an interpreted intrusive complex.

Porphyry copper-gold, breccia gold, and skarn mineralisation is associated with the Permian - Carboniferous intrusive complexes in Queensland e.g. the Mount Leyshon Intrusive Complex.

In the Redbank area of the Northern Territory copper mineralisation is contained in pipe shaped bodies associated with trachytes and trachy-andesite lavas.

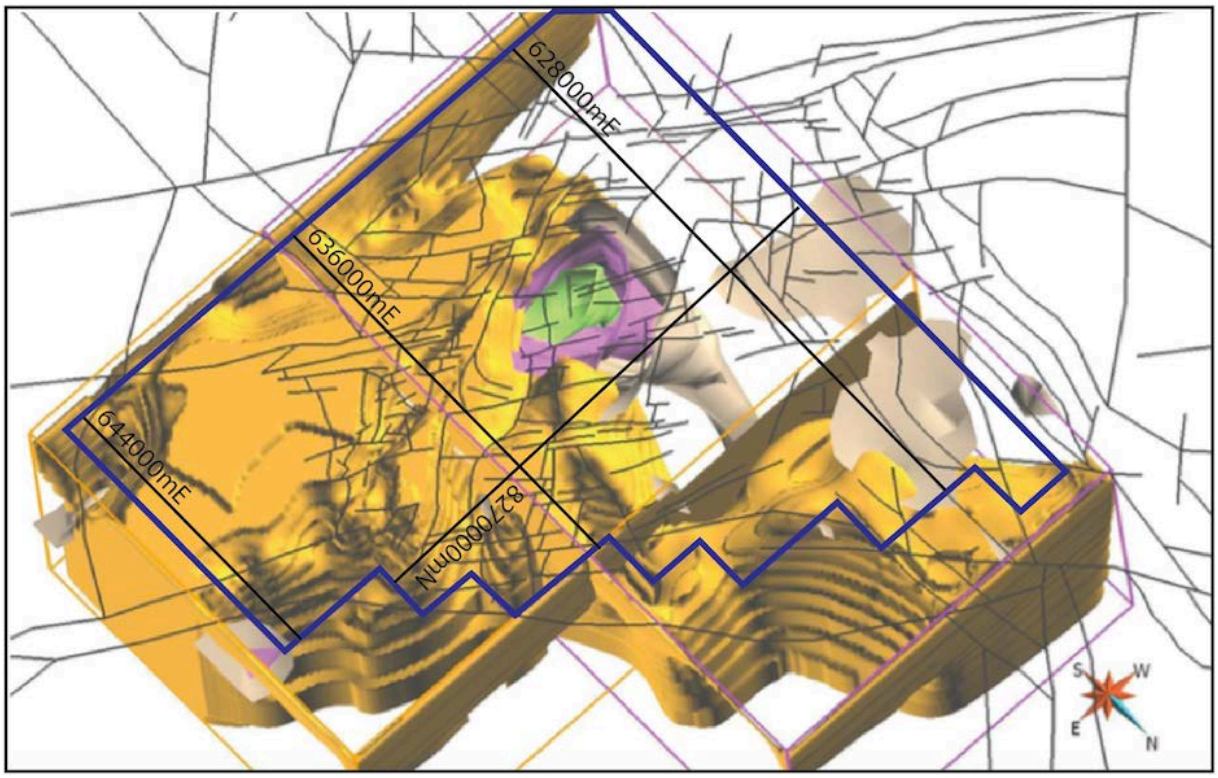

Figure 5. Iso-surfaces of the conductivity data over EL24401 (Blue outline). Drilling program was designed to intersect the 'pipe like' structure (VE = 10) in the centre of the tenement. Note surface anomalies have been removed for visualization. Light grey 30mS/m, pink 41mS/m & green 50mS/m.

Details of the Collaborative Program

The drill program was contracted to DDH1 who used a Sandvik 1200 multipurpose truck mounted rig capable of both reverse circulation (RC) and diamond drilling. Water was sourced from an existing water bore located on the WDR Haul Road approximately 3 km from site using an 8WD water truck.

Drilling was conducted from the 6th to the 13th of July 2015, working double shifts. Two holes, BBDD001 and BBDD002, were drilled on EL24401 totaling 206.5m of RC and 493.5m of diamond drilling were completed. Drill hole collar specifications are listed in Table 1. Originally two 400m holes were planned; however due to no significant signs of alteration and/or mineralisation the second hole, BBDD002, was stopped at 300m.

Single shot directional surveys were carried out every 30m on the diamond drilling to maintain control on the hole. The entire hole, including RC sections, was surveyed using a multishot instrument, with readings every 6m, once the drilling had been completed and the casing pulled.
An ACT Mk2 NQ core orientation tool was used on every diamond drill core run (6m). Successful readings and marks were made on about 80% of the runs.

Collar positions were surveyed using a handheld Garmin 62s GPS accurate to about 4m.

Table 1. Bing Bong – Drill Hole Collars (GDA94 Zone 53)

Hole ID	Easting	Northing	Type	Dip	Azimuth	Total Depth
BBDD001	630641	8266023	RC pre-collar to 104.9m, then NQ diamond core	-75	90	400
BBDD002	634095	8268144	RC pre-collar to 101.6m, then NQ diamond core	-75	90	300

A portable X-Ray Fluorescent instrument (“pXRF”) was utilized to test all 1m interval RC samples and selected diamond core samples for any signs of mineralisation. RC samples of ferricrete from both holes were sent to ALS Minerals in Townsville to test for gold.

Results and Interpretation

Two diamond holes with RC pre-collars (BBDD001-02) were drilled on EL24401 in an attempt to intersect an interpreted intrusive complex from existing geophysical surveys, with the potential to host copper and/or gold mineralisation or an associated alteration assemblage.

A highly weathered Cretaceous cover sequence of clays, sands, and silts were intersected from surface to a depth of 46m and 52m in BBDD001 and BBDD002 respectively. Both holes intersected a flat-lying (< 5° dips), shallow marine sequence of interbedded glauconitic, fine-grained sandstone and siltstone-mudstone correlated with the basal Mainoru Formation of the Lower Roper Group. Summary geological logs with pXRF determinations for BBDD001-02 are presented in figures 6 – 7.

Very fine-grained, grey-green sandstone (glauconitic) interbedded with dark grey-black micaceous siltstone define the upper sequence to a depth of 276.2m and 225.2m in BBDD001 and BBDD002 respectively. Sandy interbeds commonly display low angle cross-bedding with minor sediment loading features (flame structures) and stylolites occurring at the sand-mud interfaces.

Below this, both holes intersected a red-brown hematitic, finely bedded siltstone with irregular, thin interbeds of very fine-grained white-grey sandstone. Haines et al (1993) describes this as the main rock-type in the basal sequence of the Mainoru Formation. This follows on into a finely bedded to laminated, green-grey siltstone which indicates a change in redox conditions from the overlying hematitic siltstones. This sequence of siltstones occurs from 276.2 – 334.5m in BBDD001 and from 225.5 – 269.85m in BBDD002.

The siltstones then gradually grade into a grey-white, finely bedded, dolomitic siltstone with irregular micaceous dark grey-green silt-mudstone interbeds. BBDD001 continues until the end of hole (400m) in the dolomitic siltstone with irregular bands of hematitic siltstone and minor gritstones. Whilst BBDD002 has a sharp contact at 269.85m with a massive, medium grained sandstone that continues until the end of the hole. This has been correlated with the underlying Limmen Sandstone, which forms the basal unit of the Roper Group.

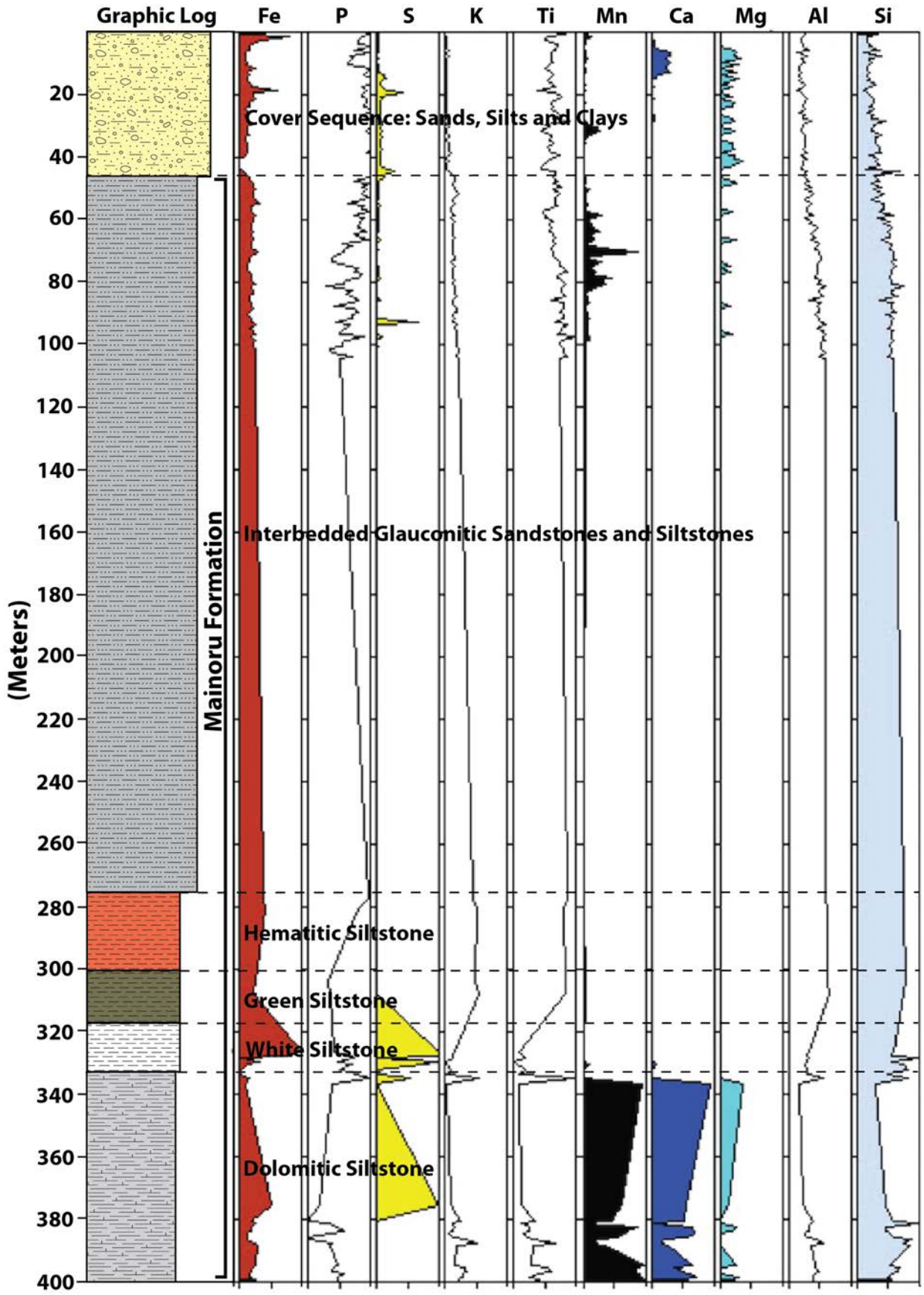

Figure 6. Summary geological log BBDD001 and pXRF data

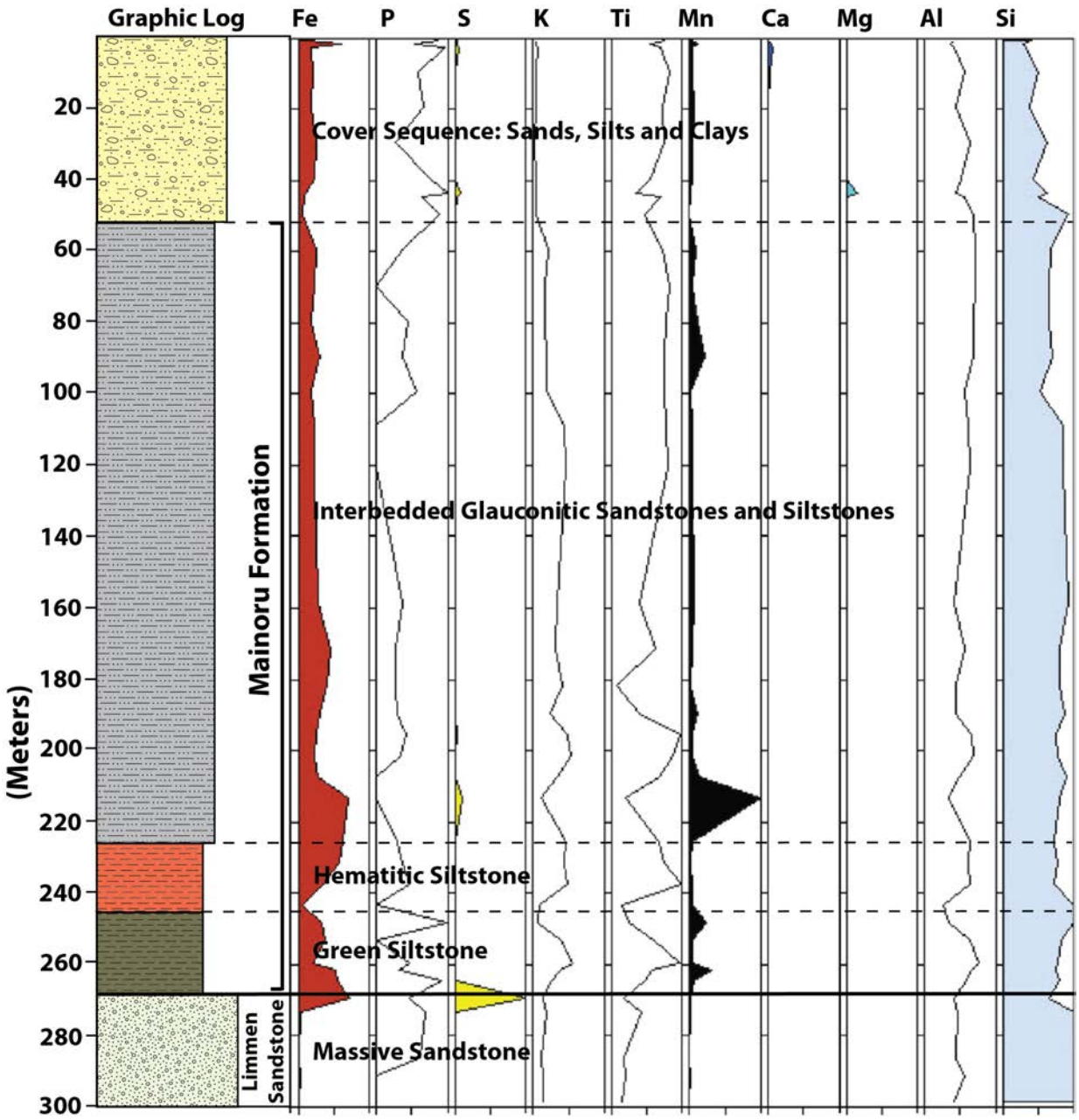

Figure 7. Summary geological log BBDD002 and pXRF data

BBDD001-02 did not intersect the interpreted intrusive complex or any potential associated alteration/mineralisation. Rare trace amounts of euhedral pyrite occurred in vugs and along fractures, pXRF analysis did not return any anomalous concentrations of base metals. Analysis of ferricrete samples for gold from the top five meters of both BBDD001-002 returned concentrations of < 0.002 ppm Au. This suggests that if the interpreted intrusive complex is real it may reside at a significant depth.

The drilling has not explained the high conductivity anomaly seen in the Tempest and VTEM surveys, as no significant sulfide concentrations were intersected or substantial amounts of saline groundwater.

Diamond hole PCD-001 drilled by BHP located 10 km to the west of BBDD001 intersected flat lying Balbirini Dolomite (Nathan Group) suggesting an overall trend of easterly younging. North Exploration drill hole MBD-06 located on EL24401 intersected the flat lying Mainoru Fm of the lower Roper Group. This along with the easterly younging trend suggests that Lower Roper Group sediments blanket the majority of EL24401.

Conclusion

Diamond drilling has intersected a flat lying shallow marine sequence of interbedded glauconitic sandstone and mud-siltstone correlated with the Mainoru Formation and massive sandstone correlated with the underlying Limmen Sandstone both of the Lower Roper Group. Previous diamond drilling in the immediate vicinity of EL24401 and the results obtained from this program indicate that the tenement is blanketed by a thick sequence of the Lower Roper Group sediments. The interpreted intrusive complex was not intersected and no signs of associated alteration or mineralisation were observed in the drill core. This suggests the intrusive complex may reside at a significant depth and may not be a viable exploration target; no new targets have been generated from the program.

References

PGN Geoscience (2013). 3D Geophysical and geological modelling over the Lorella, Berjaya and Bing Bong prospects, McArthur Basin, NT. Unpublished report for Pacifico Minerals Ltd

Haines, P.W., Pietsch, B.A., Rawlings, D.J. and Madigan, T.L. (1993). 1:250,000 Geological Map Series, Mount Young. *Northern Territory Geological Survey, Explanatory Notes* SD 53-15