# FINAL REPORT FOR

**EL’s 8436 and 8437**  
**BULMAN PROJECT**  

**6352, 6353, 6354, 6355 AND 9279**  
**MAINORU PROJECT**  

**NORTHERN TERRITORY**

**Volume 1 of 1**

| 1:250,000 SHEET: | Mount Evelyn SD53-05  
|                 | Mount Marumba SD53-06 |
| 1:100,000 SHEET: | Wilton River 5771  
|                 | Nymbilli 5870  
|                 | Mann River 5671  
|                 | Marumba 5770 |

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ABSTRACT

Exploration Licences (EL's) 6352, 6353, 6354, 6355, 8436, 8437 and 9279 form the Bulman/Mainoru Project in southern Arnhem Land. The licences contain Early to Middle Proterozoic McArthur Basin rocks including Katherine River Group, Mt Rigg Group and Roper Group lithologies transected by the north-west trending Bulman Fault which is associated with Zn-Pb mineralisation near Bulman. Significant areas are covered by Mesozoic and Cainozoic cover.

These licences have been explored for diamonds, base metals and gold. Work included regional reconnaissance heavy mineral drainage sampling for diamonds and stream geochemical sampling for base metals and gold. A number of aeromagnetic surveys were also conducted, as well as limited reverse-circulation drilling.
1 INTRODUCTION

The Bulman/Mainoru tenements are considered prospective for both diamonds and base metals. From a diamonds perspective the tenements location within the North Australian Craton and proximity to the Bulman Fault, a long-lived crustal feature, are regarded as highly prospective. From a base metals perspective, the tenements are regarded as prospective due to the Bulman Zn-Pb occurrences, proximity to the Bulman Fault and potential black shale host rocks in the McCaw Formation.

2 LOCATION, ACCESS AND CLIMATE

The Bulman/Mainoru Project Licences are located on the Mount Evelyn (SD53-05) and Mount Marumba (SD53-06) 1:250 000 map sheets and are centred approximately 200 Kms ENE of Katherine. (Figure 1)

All licences are located on Aboriginal freehold land within the Arnhem Land Reserve.

Access is gained via the Stuart Highway to the south of Katherine and then via the partially sealed Central Arnhem Road which passes through the Bulman community in the east of the project area. Unsealed tracks provide limited access within the tenements.

The climate is monsoonal with mean average rainfall of around 1000mm, most of which falls between December and March restricting vehicle access.

Most field work is carried out in the dry season (May to October). Mean temperature range from 20-34°C.
3. TENURE

3.1 Tenement Details

Exploration Licences (EL’s) 6352-6354, 8436, 8437 and 9279 comprise part of the Bulman/Mainoru Project along with Exploration Licence Applications (ELA’s) 9280 and 6350. The current tenement status is detailed in Table 1.

<table>
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<tr>
<th>Project</th>
<th>Licence No</th>
<th>Name</th>
<th>Blocks</th>
<th>Area Km²</th>
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<td>EL 6352</td>
<td>Wetji River West</td>
<td>480</td>
<td>773</td>
<td>13/11/95</td>
<td>Normandy, Bongoi &amp; Margalkmi</td>
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<td>Mainoru</td>
<td>EL 6353</td>
<td>Wetji River East</td>
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<td>Mainoru</td>
<td>EL 6354</td>
<td>Snowdrop Creek</td>
<td>474</td>
<td>763</td>
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<td>132</td>
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<td>13/11/95</td>
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<td>Bulman</td>
<td>EL 8436</td>
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<td>15/11/95</td>
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<td>EL 8437</td>
<td>McKay Hills</td>
<td>350</td>
<td>1127</td>
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<td>1130</td>
<td>24/03/98</td>
<td>NAIC</td>
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Table 1: Tenure details.

A number of separate joint venture agreements were negotiated between Normandy Exploration Pty Ltd (Normandy), Bongoi Aboriginal Corporation (BAC), Margalkmi Aboriginal Corporation (MAC), Aboriginal Exploration and Development Pty Ltd (AED) and Northern Australian Investment Corporation Pty Ltd (NAIC) covering EL’s 6352-6355, 8436 & 9279 as detailed in Table 2. Normandy Exploration was appointed as the manager of these joint ventures.

<table>
<thead>
<tr>
<th>Licence No</th>
<th>JV Name</th>
<th>JV Partners</th>
</tr>
</thead>
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<tr>
<td>EL 8437</td>
<td>Wilton River</td>
<td>Normandy 90% BAC 10%</td>
</tr>
<tr>
<td>EL 9279</td>
<td>Mount Stretton</td>
<td>Normandy 78.5%, BAC 5%, AED 16.5%</td>
</tr>
<tr>
<td>EL 6354</td>
<td>Snowdrop Creek</td>
<td>Normandy 78.5%, MAC 5%, AED 16.5%</td>
</tr>
<tr>
<td>EL 6352 &amp; 6353</td>
<td>Wetji River</td>
<td>Normandy 78.5% BAC 2.5%, MAC 2.5%, AED 16.5%</td>
</tr>
<tr>
<td>EL 6355 + 9281</td>
<td>Mount Stretton</td>
<td>Normandy 78.5% BAC 5%</td>
</tr>
<tr>
<td>EL 8436 + 9280</td>
<td>Wilton River</td>
<td>Normandy 90% BAC 10%</td>
</tr>
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</table>

Table 2: Joint venture details.
3.2 Tenement History

The Bulman and Mainoru tenements have a long and complicated history, a summary of which follows:

In early January 1990 Poseidon Limited entered into negotiation with Hepside Pty Ltd, a 100% owned subsidiary of Giant Resources Limited, over ELA’s 6711 and 6712 over the Bulman area and the surrounding ELA’s 6350, 6352-6355, subsequently referred to as the Mainoru tenements. Hepside was the applicant for the Bulman ELA’s and were the “preferred co-venturer” in the Mainoru ELA’s with an Aboriginal company, the Northern Aboriginal Investment Corporation (NAIC). In March 1990 a Farm-In offer was signed between Hepside and Poseidon allowing Poseidon to earn 65% in ELA’s 6711 and 6712 and to negotiate an interest in ELA’s 6350, 6352-6355.

In May 1990 Giant Resources Limited went into liquidation.

In July 1990 Poseidon Exploration Pty Ltd successfully entered into a Heads of Agreement with NAIC formalising the ability to earn an interest in the Mainoru tenements plus ELA 6351 located in the Melville Bay area.

In late 1990, Traditional Owner Meetings were held at Eva Valley to consider the western Mainoru tenements and at Bulman to consider the eastern Mainoru and Bulman tenements. As a result, ELA 6350 was vetoed and large areas of the other ELA’s were restricted. Negotiations began with the NLC for Deeds of Exploration.

In March 1991, the liquidators of Giant Resources formally offered the assets of Hepside for sale and, in September, Poseidon was successful in its bid for those assets and became responsible for ELA’s 6711 and 6712. The joint venture over the Mainoru tenements simplified into a two party venture between NAIC and Poseidon Exploration.

In late 1991 the Federal Minister approved the negotiated Deeds for Exploration and in December 1991 the Deeds were formally signed in a ceremony at Katherine.

In 1992 the decision in the “Stockdale Case” held that disjunctive agreements were unacceptable. The Poseidon Deeds for Bulman and Mainoru were disjunctive and Poseidon was advised to renegotiate them. Negotiations recommenced in early 1993 for a conjunctive style of agreement.

During 1993, Poseidon Exploration now known as Normandy Exploration became aware of the fact that Hepside had been deregistered and dissolved on 10 July 1992. As ELA’s cannot be transferred in the NT, “sleeping” transfers had been lodged by Hepside and Normandy Exploration that would be triggered on grant to Hepside. But NT law forbids grants to a dissolved company so it appeared that the initial grant could never take place. So in October 1993 two new Bulman ELA’s were lodged; ELA’s 8436 and 8437 and the NTDME cancelled ELA’s 6711 and 6712.

During 1993 and 1994 a number of innovative joint venture arrangements were negotiated whereby the Traditional Owners could directly acquire equity in the tenements.

In May 1995, ELA 6355 was split into 3 separate licence applications, namely ELA 6355, ELA 9279 and ELA 9281 while ELA 8436 was split into 2 licence applications, ELA 8436 and ELA 9280. This action separated the “restricted” from “unrestricted” land which enabled the unrestricted portions EL’s 8436 and 6355 to be granted in November 1995 along with EL’s 6352, 6353 and 6354. EL’s 8437 and 9279 were granted in March 1998.
4 PHYSIOGRAPHY

The Project area contains three major physiographic divisions, the Gulf Fall, the Arafura Fall and the Arnhem Land Plateau.

The Gulf Fall includes all the country drained by streams flowing into the Gulf of Carpentaria and covers the bulk of the Project area. Most of the Gulf Fall consists of hilly, dissected country but includes a flat, elevated area in the central-west area named the Lindsay Tableland. The topography in the rest of the Gulf Fall is dominantly controlled by the differential erosion of the underlying strata. In the headwaters of the Wilton River sandstones of the Katherine River Group form strong strike ridges and plateaux while the shales, carbonates and volcanics tend to underlie valleys and depressions. Rocks of the Dook Creek Formation generally form rounded hills while Roper group rocks form cuestas and hogback ridges among low, gently undulating country. Elevations range between 100 and 380m with local relief reaching 120m.

The Lindsay Tableland is mostly flat and soil covered but contains numerous hills and rises of Proterozoic and Mesozoic rocks. Most of the Tableland is underlain by flat lying Mesozoic strata and laterite.

The Arafura Fall covers minor areas in the north east and comprises the country drained by streams flowing into the Arafura Sea and includes two sub divisions, Undifferentiated Arafura Fall and Guyuyu Plain.

The Undifferentiated Arafura Fall is similar to Gulf Fall but relief is more subdued with local relief rarely exceeding 30m and elevation ranges of 80-180m.

The Guyuyu Plain has elevation ranges of 80-200m. Most of the area is covered by sand and soil. Numerous sink holes indicate that carbonates of the Dook Creek Formation underlie much of the Plain.

The Arnhem Land Plateau occurs over the westernmost licences and ranges in elevation up to 430m with local relief rarely exceeding 100m. Most of the Plateau is comprised of sandstones of the Katherine River Group, where they are exposed in low rises, mesas and broad craggy hills and ridges. Narrow gullies and clefts, which have developed along joints, are common in the Plateau.

The Gulf Fall is drained by the Wilton, Phelp and Mainoru River Systems. The principal drainage is through the Wilton River which flows southwards to join the Roper River.

The Arafura Fall is drained by the north flowing Mann, Blyth and Goyder River Systems.

The Arnhem Land Plateau is drained by the west flowing Katherine River System and the south flowing Waterhouse River system which joins the Roper River.
5 GEOLOGY

5.1 Regional Geology

The licences are located in the north-western McArthur Basin on the Arnhem Shelf (Figure 2).

The McArthur Basin comprises the principal element of the North Australian Platform Cover, a group of mid-Proterozoic basins which unconformably overlie the Palaeoproterozoic North Australian Orogenic Province.

The basin outcrops over an area of about 200,000 km² and contains up to 12,000 m of relatively undeformed and unmetamorphosed sedimentary rocks which are subdivided into four groups or mega sequences, separated by regional unconformities.

Lowermost is the Katherine River Group–Tawallah Group, which mainly consists of sandstones with subordinate volcanics, fine-grained clastics and rare carbonates, up to 4,500 m thick and about 1700-1800 Ma old.

Overlying this are the McArthur and Mt Rigg–Nathan Groups which both largely comprise evaporitic and stromatolitic cherty dolostones interbedded with dolomitic sandstone and shale, totalling up to 5,500 m. The McArthur Group hosts the giant McArthur River (HYC) shale-hosted Zn-Pb-Ag deposit. (102 Mt @ 14.0% Zn, 6.4% Pb, 64 g/t Ag) The McArthur Group is estimated to be between 1600-1700 Ma old.

Uppermost is the significantly younger Roper Group which consists of up to 5,000 m of alternating quartz-rich sandstones, siltstones and mudstones, estimated to be at least 1430 Ma old.

The McArthur Basin overlies and is bounded to the north-west, north-east and south-east by basement, but it is concealed by younger basins to the east, north and south-west. The Arnhem shelf is shown in Figure 2 juxtaposed with the major structural and tectonic elements identified in the Tawallah and McArthur Groups, which are attributed to a rift model in which a north-south trough and adjacent shelves are dissected by north-west trending faults (including the Bulman and Mallapunyah Faults) and a west-north-west trending basement rise, the Urapunga Tectonic Ridge (UTR). A cratonic sag basin or platform setting is preferred for the Roper Group.

5.2 Local Geology

The summarised geology for the Tenements area is shown in Figure 3 and displays package of Katherine River Group (north-west area), Mt Rigg Group (Central area) and Roper Group (south-east area) lithologies gently dipping to the south-east, intruded by late Proterozoic dolerite sills and dykes.

The oldest rocks within the licences belong to the Katherine River Group which includes the following formations:

- Kombolgie Formation - base of the McArthur Basin, dominantly medium to coarse grained sandstones and lesser mafic volcanic units.

- McKay Sandstone - conformable on the Kombolgie Formation, includes ferruginous, fine to medium grained quartz sandstone, feldspathic sandstone and quartz greywacke.
Cottee Formation - conformable on the McKay Sandstone, includes red and green mudstones, fine grained ferruginous, feldspathic and glauconitic sandstones and dolostone.

Shadforth Sandstone - conformable on the Cottee Formation, includes medium to coarse grained sandstones.

McCaw Formation - conformable on the Shadforth Sandstone, includes carbonaceous mudstone, dolostone, medium to coarse grained sandstone, minor conglomerate lenses.

Diamond Creek Volcanics - conformable on the McCaw Formation, includes vesicular and amygdaloidal mafic lava, minor tuff and volcanic sandstone.

Gundi Sandstone - unconformable on the Diamond Creek Volcanics, includes medium to coarse grain lithic and quartz rich sandstone and lesser conglomerate lenses.

West Branch Volcanics - unconformable on the Gundi Sandstone, includes volcaniclastic sandstones and lesser conglomerate, massive to vesicular and amygdaloidal mafic lavas and quartz-feldspar porphyry with microgranite and pegmatite dykes. This felsic intrusive unit is known as the Jimbu Granite and had previously been interpreted as Pine Creek age or basement to the Katherine River Group. Recent work by Rawlings (1996) however suggests that an intrusive emplacement is more likely with the porphyry causing localised diapiric doming of the surrounding Katherine River Group lithologies.

The Katherine River Group is unconformably overlain by the Mt Rigg Group, which is represented by two formations in the project area:

The Bone Creek Sandstone unconformably overlies several of the Katherine River Group lithologies in the area and is composed of fine to medium grained quartz sandstone.

The Dook Creek Formation is conformable on the Bone Creek Sandstone and includes a range of dolomitic lithologies, quartz sandstone and chert breccia.

The Mt Rigg Group is unconformably overlain by the Roper Group, the lowermost units of which occur within the project area and include:

Limmen Sandstone - consisting of a conglomeratic base overlain by fine to medium quartz sandstones.

Mainoru Formation - conformable on the Limmen Sandstone, includes cherty and dolomitic siltstone, micaceous shale and glauconitic sandstone.

Numerous late Proterozoic dolerite sills and dykes intrude the McArthur Basin lithologies. The sills are generally bedded parallel with dykes commonly intruded along faults.

The Bulman and Mt Marumba Faults transect the area trending northwest. While the displacement within the McArthur Basin rocks is small the faults appear to be deep seated features and are related to Pine Creek age mineralisation to the northwest of the project area.

Other fault trends include north, north-north-east and north-east but show little displacement. A series of domes in the northern tenement are interpreted to be due to doming caused by porphyry emplacement as discussed previously.
Remnant areas of lateritised Cretaceous Mullaman Beds occur throughout the area and include siltstones, claystones and sandstones.

Considerable areas are covered by Cainozoic and Quaternary laterite, sand and soil.
6 PREVIOUS EXPLORATION BY OTHER COMPANIES

The Bulman Pb-Zn deposits were discovered in 1908 and worked intermittently up to 1925 with low tonnages of hand picked, high grade ore extracted.

Enterprise Exploration (CRA) in the period 1952 to 1962 drilled 8 holes and calculated a reserve of 375,000 tonnes @ 15% Zn and 2% Pb for the Bulman deposits. Some reconnaissance exploration was also undertaken but results were not reported.

Western Nuclear (Australia) Pty Ltd undertook a range of exploration activities in the period 1965-1970. This included detailed stream and soil sampling, the drilling of 16 holes (mainly around the known Bulman mineralisation) and airborne EM, magnetics and radiometrics with follow up ground based EM, magnetics and IP surveying.

The 1:250,000 Mt Marumba sheet has been fully covered with NTGS airborne magnetics and radiometrics as a result of three surveys in 1989, 1992 and 1994. The flight line spacing was 500m with lines flown east-west. This data has been purchased from the NTGS.

No records have been found of any exploration over the tenements prior to 1996, however, Stockdale Prospecting Ltd undertook a regional reconnaissance stream sediment sampling program for diamonds in the early 1970's.
7 WORK UNDERTAKEN

7.1 Summary

1996

In May 1996, Normandy commenced exploration on the Bulman/Mainoru project. EL's 6352, 6353, 6354, 6355 and 8436 were covered by regional stream reconnaissance sampling programs over areas with suitably developed drainages. Heavy mineral, Bulk Leach Extractable Gold (BLEG) and stream-sediment geochemical samples were collected from most sites. Follow-up sampling was also conducted over selected areas of EL's 6352 and 6354.

Four anomalies were interpreted from the initial reconnaissance work with Anomaly 1 the most significant. Anomalies 1 and 3 also had swamp filled depressions (airphoto features) located upstream. The follow-up sampling provided additional support for Areas 1 and 2 based on broad clusters of positive chromite micro-probe results and one diamond chip. The BLEG Au, Ag and Cu results and the -180µm multi element geochemical samples returned generally subdued results. Some low order multi element anomalism was defined by statistical analysis.

1997

EL's 6352, 6353, 6354, 6355 and 8436 were sampled in 2 stages to follow up results and interpretations made during the 1996 field season. Geochemical samples were taken at all sites, and rockchip samples collected from stream float and outcrops of interest. The first phase of sampling took place in May, over Areas 1 and 2. A detailed aeromagnetic survey was flown in August over these areas, defining a total of 33 anomalies. These anomalies were then sampled during the second stage of the sampling program.

These programs further defined anomalies 1 (in Area 1) & 5 (in Area 2), identifying the following:

- 3 diamonds: 2 micro-diamonds (<.5mm) and 1 + 0.8mm (0.008cts) noted as a "distorted, stepped octahedra, clear".
- 93 confirmed/possible Kimberlitic chromites, variably weathered.

Geochemical results were generally not significantly anomalous.

1998

The EL 8437 work program during this initial year of tenure included airborne magnetics and radiometrics, as well as surface sampling for diamond and base metal exploration. This surface sampling comprised regional and follow-up heavy mineral drainage sampling for diamonds, and stream and soil geochemical sampling for base metals and gold.

Five diamond anomalies (MH1-5) were defined by the occurrence of three diamonds and numerous chromite grains with kimberlitic affinities. Three of these anomalies contain chromites with excellent chemistry. More detailed sampling is required to test these diamond anomalies.

Base metal results have outlined strong soil responses for Cu, Pb, Zn over anomalies BM1 and BM2 and for Cu and Zn over BM3 (detailed below). It is considered that this sampling has failed to identify a large coherent anomaly and is in response to the bedrock lithology.
No further work for BM's is recommended.

**BM1** – Strong soil responses for Cu, Pb, Zn are apparent with lower level backup from Mo (16ppm) and Cd (3ppm). These generally coincide with the Western Nuclear McCaw geochemical anomaly but the potential exists to extend the anomaly to the east and west for a total strike length in excess of the current 1.5km. In detail the Cu response is slightly offset from the Pb and Zn which may reflect a primary metal zonation. The maximum values detected were 460ppm Cu, 600ppm Pb, 900ppm Zn, 9.33% Fe, 4550ppm Mn and 16ppm Mo.

**BM2** – A moderate to strong, well defined 2km+, north trending Cu, Pb and Zn anomaly is outlined with potential to extend the anomaly to the north and south. The isolated response on the western end of the northern line was interpreted to be caused by lateritic enrichment however a rock chip sample of the lateritic duricrust did not return similar high results. A rock chip sample of weathered, ferruginous, maganiferous dolomitic siltstone returned 850 ppm Zn. The maximum soil values detected were 1000ppm Cu, 490ppm Pb, 650ppm Zn, 10.5% Fe, 7350ppm Mn and 16ppm Mo.

**BM3** – Elevated Cu and Zn soil results were detected downslope of a lateritic plateau of possible cretaceous sediments. However proterozoic dolomitic siltstones also returned values of Cu (320ppm) and Zn (230ppm). The Maximum soil values detected were 410ppm Cu, 400ppm Pb, 1200ppm Zn, 4.14% Fe, 4850 ppm Mn, 4ppm Mo.

In **EL 6354** a program of ground geophysics, sampling and drilling was carried out. This involved drill testing of 8 magnetic anomalies defined from the 1997 aeromagnetics survey. A ground magnetics survey was carried out over each anomaly prior to the grading of access tracks. Anomalies 28, 16 East, 16 West and 16A also had a gravity survey completed. Anomalies 28, I, J, K & G were downgraded and not drilled as a result of the ground magnetics. These anomalies were attributed to surficial noise from lateritic profiles.

Six drill pads and approximately 5km of access tracks were cleared. 351m of reverse-circulation drilling was completed over 6 holes using a Gaden-Rockdrill UDR 650.

The primary objective of the drilling program was to intersect kimberlite or lamproite intrusions that may have been the primary sources of chromite indicators and diamonds recovered from the loam and stream sediment samples. No diamonds or indicators were recovered from any of the drill samples. Petrological work conducted by Pontifex concluded that the lithologies intersected were not of kimberlitic or lamproite origin. No further field work is recommended in this area.

No on-ground exploration was carried out on **EL's 6352, 6353, 6355 and 8436**.

In **October 50% of licences was relinquished.**

**1999**

Exploration on **EL 9279** included regional heavy-mineral drainage sampling for diamonds and stream geochemical sampling for base metals and gold. No on-ground exploration occurred on **EL's 6352, 6353, 6354, 6355, 8436 and 8437**.

Results from the sampling were all of a low order and did not require follow up. In addition an assessment of the NTGS aeromagnetic data did not highlight any anomalies worthy of sampling.

A review of exploration by Normandy over all the Bulman/Mainoru licences was conducted. A reassessment of Normandy Exploration's priority targets combined with the isolated
nature of the project both in a geographical and commodity sense led to the conclusion that 
the project was better suited to joint venture. Subsequently Rio Tinto entered into 
negotiations with Normandy Mining in December to acquire the Bulman/Mainoru tenements.

2000

A letter of agreement with Rio Tinto was signed over the Bulman / Mainoru tenements in September. Work during the year comprised a review by Rio Tinto of Normandy’s work.

2001

Work during the year comprised a review by Rio Tinto of Normandy’s work.

It was hoped that the exploration deeds would be ratified by the NLC by mid-year, allowing 
Rio Tinto ground access to assess the prospectivity of the project area. Unfortunately this 
did not occur, and Rio Tinto subsequently withdrew from the JV.

7.2 Sampling methodology

7.2.1 Sample collection

Reconnaissance sampling utilised a Jet Ranger helicopter on charter from Rotor Services in Darwin. Up to 4 samples were collected from each pre-selected sample location along 
major drainages and their tributaries. These included a heavy mineral (diamond) sample, a 
5-10kg BLEG sample (base metals), a geochemical sample (base metals) and a rockchip 
sample if available. In addition, heavy mineral loam, geochemical and rockchip samples 
were collected from areas of interest identified in aerial photos and aeromagnetics.

Heavy mineral samples comprised approximately 15-26kg of -1.6mm material. In many 
instances the sample locations were altered depending on the availability of good trap sites 
and in some cases proposed sample sites were cancelled where no suitable sample sites 
could be found. In locations where material was too damp for sieving, samples were sieved 
under water. In a few cases, where no water was available for sieving, a coarser (4.8mm) 
screen was used. In poorly developed “wash” areas a loam sample was collected instead.

Larger bulk samples were collected from drainages with no satisfactory trap sites for up to 
20km upstream, or which consist of silty material with very little gravel (eg larger flat 
meandering river systems). Each bulk sample comprised an estimated 80 to 250kg of 
minus 1.6mm material from good trap-sites, to be examined for diamonds alone rather than 
indicator minerals. Much larger samples would however be required to conclusively 
evaluate the diamond potential of these catchment areas.

The geochemical samples comprised 200-400g of -180µm clay-grade material. At a 
number of localities in EL8437, a soil and stream sediment sample were collected (-
120µm).

Reverse circulation drilling was conducted using a Gaden-Rockdrill 350psi/650cfm UDR 
650 Drill Rig. Samples were collected from the cyclone at 2m intervals and placed beside 
the drilling rig. Each 2m interval was logged. A representative sample was collected for 
future reference. In addition approximately 30kg of material was sampled from the base of 
each hole within the target zone. These samples were despatched to Diatech Laboratory in 
Perth for heavy mineral processing and analysis as per heavy mineral drainage samples 
(see below). Representative samples were also taken for this section preparation and 
petrological description. Full details of the drilling including drill logs are contained in 
Appendix 2.
7.2.2 Sample analysis

All diamond samples were forwarded to Diatech Heavy Mineral Services in Perth for processing. A heavy media concentrate is produced by a series of methods. Each concentrate sample is then visually examined for heavy mineral species, which may be indicative of kimberlites or lamproites. Potential indicator minerals such as chromites, picrolilmonites and pyrope garnets are electron microprobed and results analysed to determine their kimberlitic/lamproitic affinities.

All BLEG samples were forwarded to Normandy's laboratory in Welshpool, WA. Samples were subjected to a 24-hour static leach in a weak cyanide solution. Activated carbon is then added to the decanted solution. The carbon collectors were analysed by Analabs in Perth for the following elements using an aqua regia digest:

- Au (0.001 ppb D.L.), Cu (0.01 ppm D.L.) and Ag (0.5 ppb D.L.)

The -180 µm samples and rock chip samples were analysed by Amdel Laboratories in Darwin for varying combinations of elements from the following table (ppm detection limits in brackets).

<table>
<thead>
<tr>
<th>ELEMENTS</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr(2), Cu(2), Fe(100), K(10), Mg (10), Mn(5), Na(10), Ni(2), Pb(5), Zn(2), V(2), Ba(5), Ti(10)</td>
<td>IC3E (ICPOES)</td>
</tr>
<tr>
<td>Ag(0.1), As(0.5), Ba(0.1), Bi(0.1)Cd(0.1), Ce(0.5), La(0.05), Mo(0.1), Nb(0.5), Pb(0.5), Zn(0.5), Y(0.05), Zr(0.5) V(0.02), W(0.1)</td>
<td>IC3M(ICPMS)</td>
</tr>
<tr>
<td>Au(1)</td>
<td>AA9 (aqua regia with carbon rod finish)</td>
</tr>
</tbody>
</table>

7.2.3 Geophysical surveys

Detailed aeromagnetic surveys were flown both in 1997 and 1998. The surveys’ specifications are detailed below. Both the aeromagnetic survey data and the 1998 ground magnetics and gravity data are contained in Appendix 2.

Survey Specifications:

- **Contractor:** World Geoscience
- **Aircraft:** Cessna 206
- **Magnetometer:** Scintrex VIW2321/CS2 split beam cesium vapour sensor
- **Resolution:** 0.001nT
- **Cycle Rate:** 0.1 seconds
- **Sampling Interval:** ~6.0m
- **Spectrometer:** Picodas PGAM 256 channel self calibrating spectrometer
- **Volume:** One 16.75 Litre NaI crystal sensor
- **Cycle Rate:** 1 second
- **Sampling Interval:** ~60m
- **Data acquisition:** Picodas PDAS 1000 acquisition system
- **Traverse Line Spacing:** 100m
- **Direction:** North-South
- **Tie Line Spacing:** 1000m
Direction: East-West
Mean Terrain Clearance: ~50m
Navigation: Differential GPS satellite navigation system

7.3 Samples collected

Table 3 below summarises the details of samples collected across the projects.

<table>
<thead>
<tr>
<th>Collection year</th>
<th>EL’s collected from</th>
<th>Sample types</th>
<th>Sample ID</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996 6352 / 6354</td>
<td>D/L B G</td>
<td>332601-332944 (Bleg’s 3322874-944 lost in transit)</td>
<td>252 D, 14 L, 273 G, 259 B &amp; 7 rock</td>
<td></td>
</tr>
<tr>
<td>1996 6352 / 6354</td>
<td>Rockchips</td>
<td>332614, 332815, 332609, 332839, 332873, 332652, 332827</td>
<td>213 HM, 134 G &amp; 14 rock</td>
<td></td>
</tr>
<tr>
<td>1996 6353 / 6355 / 8436</td>
<td>D/L B G</td>
<td>332946-333131</td>
<td>252 D, 14 L, 273 G, 259 B &amp; 7 rock</td>
<td></td>
</tr>
<tr>
<td>1998 6354</td>
<td>Reverse Circulation drilling-derived heavy mineral samples</td>
<td>1015701-1015712</td>
<td>12 HM</td>
<td></td>
</tr>
<tr>
<td>1998 8437</td>
<td>D/L B G</td>
<td>354501-354813</td>
<td>226 D, 15 L, 228 G &amp; 6 rock</td>
<td></td>
</tr>
<tr>
<td>1998 8437</td>
<td>SOIL G Rockchips</td>
<td>1015501-1015698</td>
<td>226 D, 15 L, 228 G &amp; 6 rock</td>
<td></td>
</tr>
<tr>
<td>1999 9279</td>
<td>D/L B G</td>
<td>354814-354920</td>
<td>105 D, 1 L, 104 G, 107 B, &amp; 1 rock</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Summary of samples collected over the Bulman/Mainoru projects.
8 REHABILITATION

An environmental audit of the rehabilitation of drill access tracks and drill sites was completed during July 1999.

At the completion of drilling (September 1998) all drill holes were capped below surface and work areas cleared of rubbish. Erosion control measures including contour barriers were put in place using vegetation and rocks to divert water away from tracks and drillsites thus minimising the effect of the wet season. Vegetation was placed on tracks to encourage the trapping of seed and inhibit any further use of the access.

This work was successful with virtually no erosion from the high rainfall in the last wet season. The sites have revegetated naturally extremely well.

9 EXPENDITURE

Table 4 below summarises the expenditures by EL over the Bulman and Mainoru projects. Expenditures for EL’s 6352-6355 & 8436 encompass the period Nov 1995 – Feb 2002. The expenditures for EL’s 8437 & 9279 are for the period Mar 1998 – Feb 2002.

<table>
<thead>
<tr>
<th>Description</th>
<th>EL6352</th>
<th>EL6353</th>
<th>EL6354</th>
<th>EL6355</th>
<th>EL8436</th>
<th>EL8437</th>
<th>EL9279</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration Employee Costs</td>
<td>$77 742</td>
<td>$47 389</td>
<td>$162 380</td>
<td>$39 409</td>
<td>$19 371</td>
<td>$87 345</td>
<td>$44 875</td>
</tr>
<tr>
<td>Overheads and Allocation</td>
<td>$33 179</td>
<td>$22 488</td>
<td>$68 391</td>
<td>$18 322</td>
<td>$7 691</td>
<td>$32 250</td>
<td>$22 691</td>
</tr>
<tr>
<td>Operating Costs</td>
<td>$96 548</td>
<td>$20 432</td>
<td>$167 615</td>
<td>$48 696</td>
<td>$12 818</td>
<td>$138 360</td>
<td>$67 791</td>
</tr>
<tr>
<td>Laboratory Costs</td>
<td>$70 766</td>
<td>$53 854</td>
<td>$158 485</td>
<td>$3 531</td>
<td>$12 866</td>
<td>$247 238</td>
<td>$61 867</td>
</tr>
<tr>
<td>Drilling Costs</td>
<td>-</td>
<td>-</td>
<td>$16 498</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Specialist Services</td>
<td>$55 019</td>
<td>$35 032</td>
<td>$99 250</td>
<td>$24 840</td>
<td>$11 878</td>
<td>$65 287</td>
<td>$11 258</td>
</tr>
<tr>
<td>Total</td>
<td>$333 254</td>
<td>$179 195</td>
<td>$672 619</td>
<td>$134 798</td>
<td>$64 624</td>
<td>$570 480</td>
<td>$208 482</td>
</tr>
</tbody>
</table>

Table 4: Summary expenditures for Bulman and Mainoru projects.
REFERENCES


Walker, P.J. EL 8437 and 9279 combined Annual Report for the year ending 23/03/01. Rio Tinto Exploration Report No 24526.


# BIBLIOGRAPHIC DATA SHEET

<table>
<thead>
<tr>
<th><strong>REPORT NUMBER</strong></th>
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<tr>
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<td>Final Report on Exploration Licences 8436 and 8437 Bulman Project &amp; 6352, 6353, 6354, 6355, and 9279 Mainoru Project</td>
</tr>
<tr>
<td><strong>PROJECT NAME</strong></td>
<td>Bulman/Mainoru Project</td>
</tr>
<tr>
<td><strong>TENEMENT NUMBERS</strong></td>
<td>EL 6352, 6353, 6354, 6355, 8436, 8437 and 9279</td>
</tr>
</tbody>
</table>
| **OWNER/JV PARTNERS** | Normandy Exploration Pty Ltd  
Northern Aboriginal Investment Corporation Pty Ltd  
Aboriginal Exploration and Development Pty Ltd  
Bongoi Aboriginal Corporation  
Margalkmi Aboriginal Corporation |
| **COMMODITIES**     | Diamonds, Copper, Lead, Zinc, Gold |
| **TECTONIC UNIT**   | McArthur Basin |
| **STRATIGRAPHIC UNITS** | Katherine River Group  
McCaw Formation |
| **1:250,000 MAP SHEET** | Mt Evelyn SD53-05  
Mt Marumba SD53-06 |
| **1:100,000 MAP SHEETS** | Wilton River 5771  
Nymbilli 5870  
Mann River 5671  
Marumba 5770 |
| **KEYWORDS**        | Indicator Minerals, Proterozoic, Heavy mineral analysis,  
Geophysics, Aerial magnetic surveys, stream sediment  
sampling, BLEG, Rock Chip Sampling, diamonds, base  
metals, gold, aeromagnetic survey, groundmagnetics survey |