



**Final Report  
14/11/2007 to 14/11/2008**

**EL 6/2007  
EL 7/2007**

**FLINDERS ISLAND  
TASMANIA**

**DIATREME RESOURCES LIMITED**

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## **ABSTRACT**

Diatreme Resources has conducted one drilling programme over EL 6/2007 and EL 7/2007, Flinders Island, with aim of locating heavy mineral sand bearing beach sands.

Roads that ran in an east-west direction were targeted for the drilling programme. These traverse lines were located between 4-6km apart which would give optimal coverage of the area. Drill spacing's along the traverses were anywhere from 100 metres to a kilometre, depending on the local geology.

The results of this drilling programme were not encouraging. There were three Tertiary beach facies found, which were relatively thin and poorly developed. Closer spaced drilling occurred when these beach facies were located, but were found to be only a few hundred metres wide and generally less than ten metres thick. Very little heavy mineral was found during the programme, which resulted in the early termination of the programme and the conclusion that there is no sizable accumulation of heavy minerals on Flinders Island.

Recommendations that have come from this programme would be to surrender the two exploration licences on Flinders Island, even though heavy mineral host sands were found, but only contained minor amounts of valuable heavy minerals.

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# 1 INTRODUCTION

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Flinders Island is located in Bass Strait above the Eastern corner of Tasmania and is the largest island in the Furneaux Group. It lies approximately 56km north of Tasmania and 145km south of Victoria. It is about 29km wide at its widest point and 64km long and covers an area of 1,333 square kilometres. The highest point on Flinders Island is Mount Strzelecki, which rises to 756 metres.

EL's 6/2007 and 7/2007 are both NW-SE trending tenements with a combined length of approximately 50km. The tenements lie on the eastern side of Flinders Island, from the base of the Strzelecki Range to the coast line. However, Conservation Parks and National Parks have been excised from the licence areas.

For the 2008 drilling programme on Flinders Island, two Diatreme Resources Ltd vehicles and two Wallis Drilling Pty Ltd vehicles mobilised from the Melbourne to Flinders Island via Tasmania. From Melbourne the fleet was transported to Launceston in Tasmania by the Spirit of Tasmania. The fleet was then driven to Bridport, where they were loaded onto a barge, and ferried across to Lady Baron, on the southern end of Flinders Island.

Access to drilling sites was relatively straight forward, since most drilling occurred on public roads. Telstra cable plans were obtained, which helped in finding the location of buried cables. If access was not possible on road verges then property owners were approached and access was granted or declined by them. Generally most landowners were willing to grant access for drilling and were curious to our operations. No clearing or track making was required during the drilling programme.

A Traffic Management Plan was obtained through the Tasmanian Government, which was implemented on a day to day basis whilst drilling on the road verge.

Accommodation for the drilling crew was a holiday house (St John's Park) located central to both EL's, so to cut down on travelling time to and from the drill sites.

The average annual rainfall for Flinders Island is between 600-750 millimetres. The average maximum temperature in summer is mid to low 20's, and the maximum winter temperature of approximately 15 degrees. The average minimum temperature in winter is between 3-5 degrees Celsius. Flinders is situated on the fortieth parallel, and therefore is generally quite windy throughout the year.

## **TENEMENT DETAILS:**

EL 6/2007 (Lackrana), was granted to Diatreme Resources Ltd on the 14<sup>th</sup> November 2007 for a five year period covering an area of 244 square kilometres.

EL 7/2007 ( Memana), was granted to Diatreme Resources Ltd on the 14<sup>th</sup> November 2007 for a five year period covering an area of 245 square kilometres.

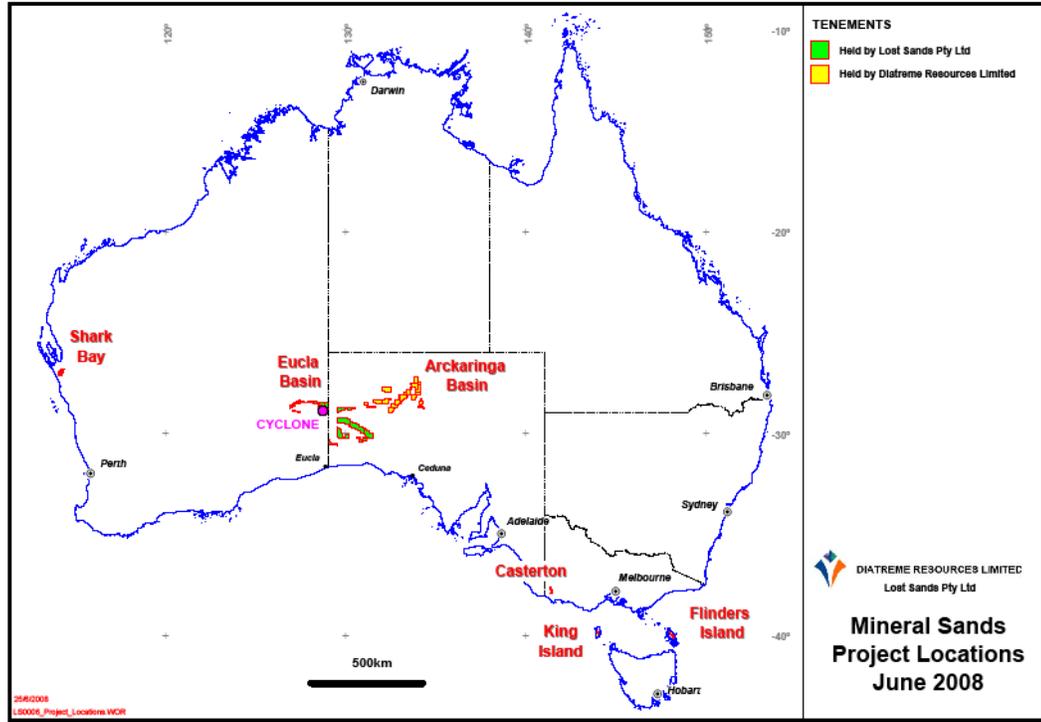


Figure 1: Location Map of Flinders Island, Australia.

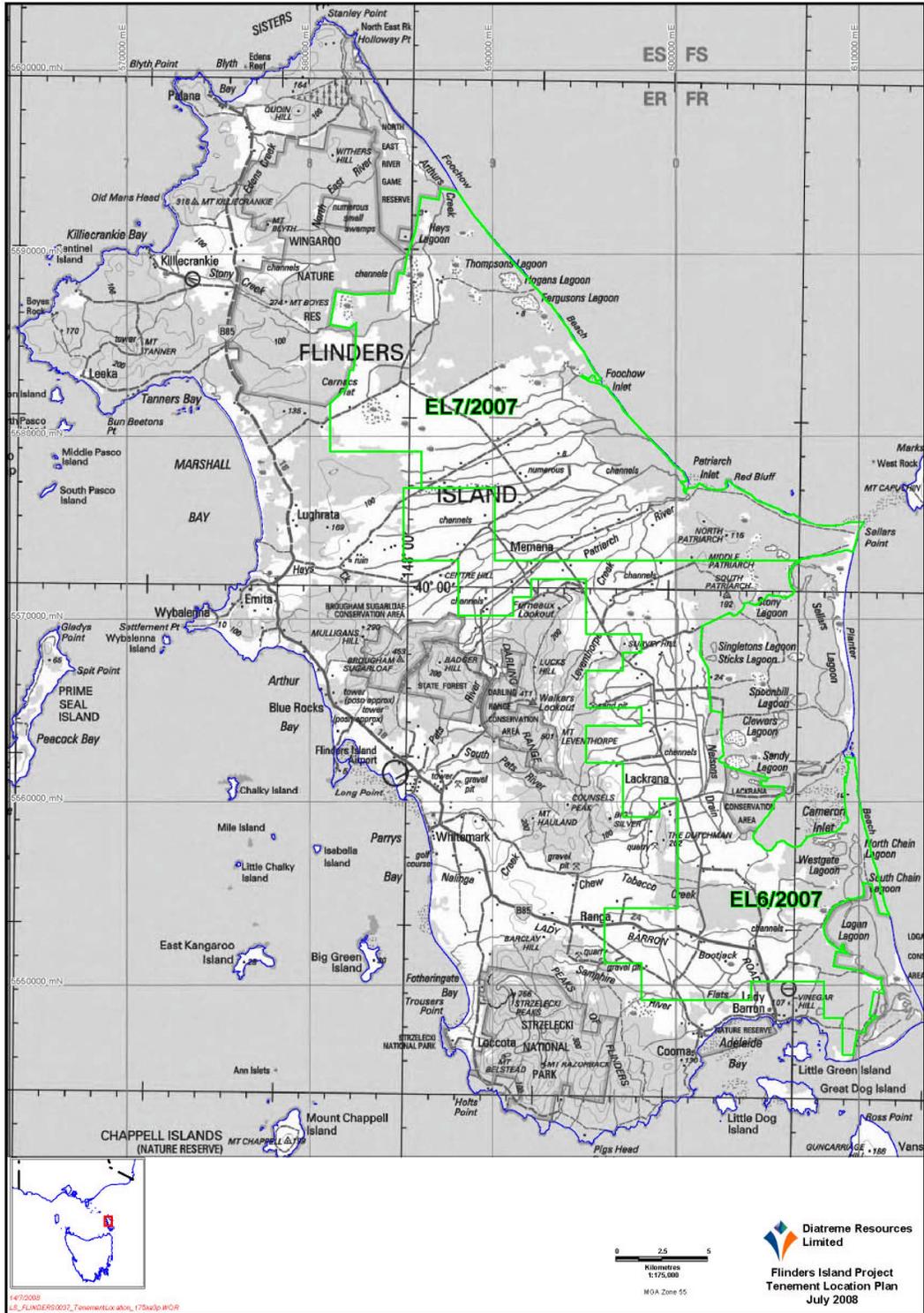


Figure 2: Location Map of Flinders Island tenements, EL6/2007 and EL7/2007.

## **2 REVIEW OF PREVIOUS WORK**

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In 1969, Scamander NL searched the beaches of Cape Barren and Flinders Island for heavy mineral concentrations. No analytical data was provided but the conclusion from visual inspections was that there was no obvious beach placer deposits on Flinders Island.

In 1971, Samedan Australia Ltd conducted visual inspections and auger traverses of the east coast of Flinders Island. Minor heavy mineral concentrations were found in several auger holes which were located on the present day coastline and dune fields. No follow up work was carried out.

In 1989, Yttrium Corporation Pty Ltd also explored the east coast of Flinders Island. Visual inspections of the current day beach system were carried out along with selected sampling. The conclusions from this programme indicated the lack of heavy mineral concentrations in the beach facies. Also, from their findings, a drilling programme, which would be conducted behind the barrier dunes could not be justified.

### 3 GEOLOGY

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Flinders Island is part of the Furneaux Islands of Southern Australia and consists of a central range of Devonian Granite. The Devonian Granite is part of the Tabberabberan Orogeny, which occurred 400Ma. The mountain range is made up of the Strzeleki Peaks and the Darling Ranges.

Tertiary Basalts also cover sections of the Island. Basalt was encountered in numerous holes. These holes were usually located south of the Strzeleki Peaks, to the east and southeast of the Darling Ranges. No Tertiary Basalt was intersected in the northern areas of the Island.

Drilling commenced on the 30 January 2008 with a total of 100 holes and 1,862 meters being drilled across both tenements; 51 holes for 948.5m on EL6/2007 and 49 holes for 913.5m on EL7/2007. Drill spacing varied between 100m to 1km (depending upon geology) and line spacing's were between 4km to 6km apart.

Three beach systems were identified during drilling lying at 15 to 18m, 4 to 6m and 0.5 to 1.5m RL. These systems were thin and poorly developed which is not a favourable environment for abundant heavy minerals to accumulate. Only three samples were collected during the drilling containing an estimated of 1-2% HM. These samples were located only a few hundred metres from the current east coast shoreline, near the Patriarch Hills within thick coastal heath country providing poor access for follow up drilling. Closer spaced drilling occurred around this mineralisation on a beach access road, however, the mineral did not develop into anything greater than 1m in thickness and 2% HM.

The beaches at 4-6m RL and 0.5-1.5m RL are quite different to the beach that was developed against the foot hills of the granite ranges. These beaches tend to be wider and flatter, which can be seen in the present day morphology of the eastern side of Flinders Island. However, only minor heavy minerals were detected within these beaches.

The highest beach which is located at 15-18m RL, may have been the first beach deposited on Flinders Island. This would have overlapped against the foot hills of the Granite Ranges, and also would have covered the newly formed Tertiary Basalts. This Beach system was relatively thin, being only a few metres thick. Drilling close to the foothills of the Darling Range generally found little beach sand, but granite wash (coarse angular grains) commonly occurring above a granite base. Where the beach sand was intersected, it was found that these beaches were thin and less than 200m in width and were devoid of heavy minerals.

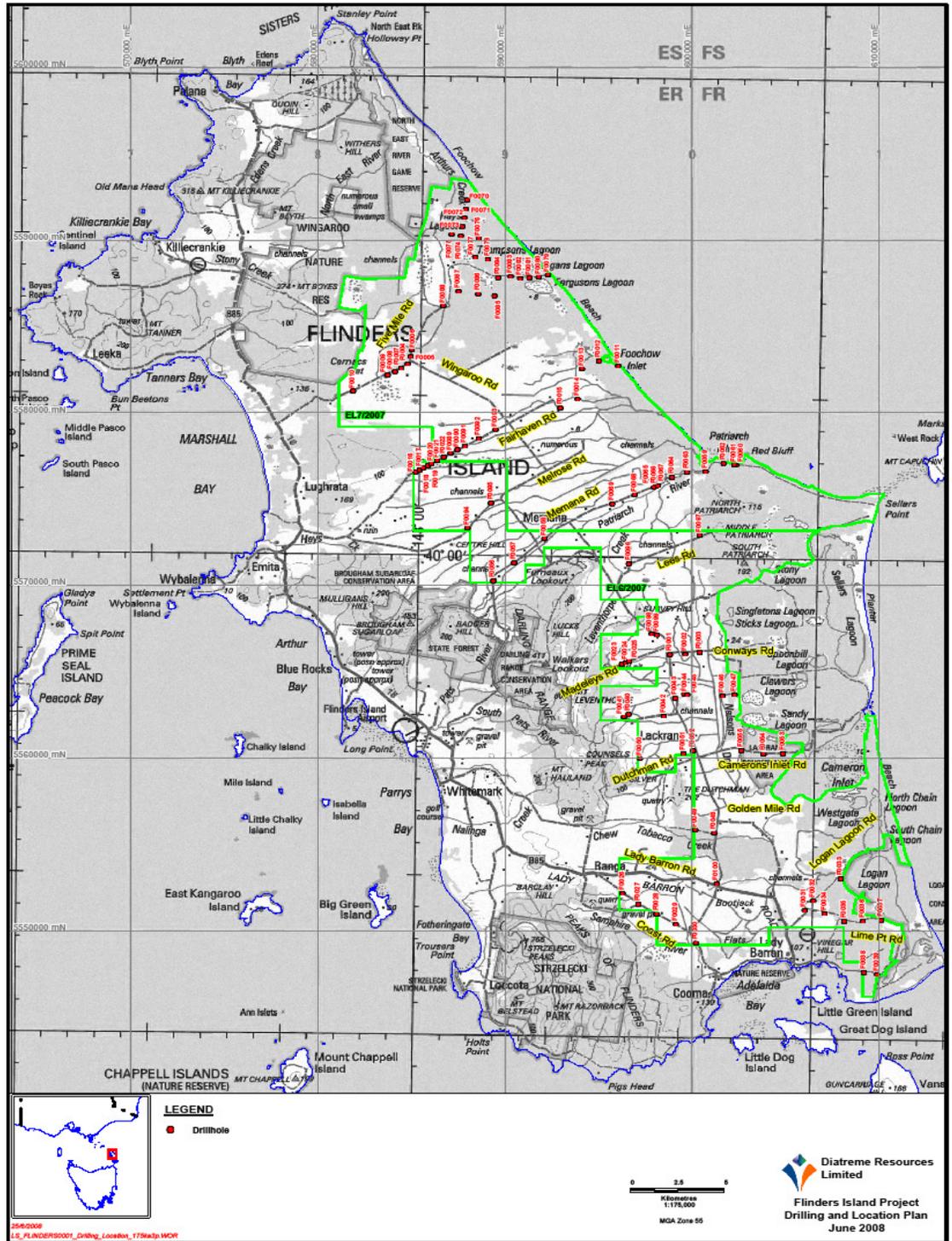


Figure 3: Location map of 2008 exploration drilling.

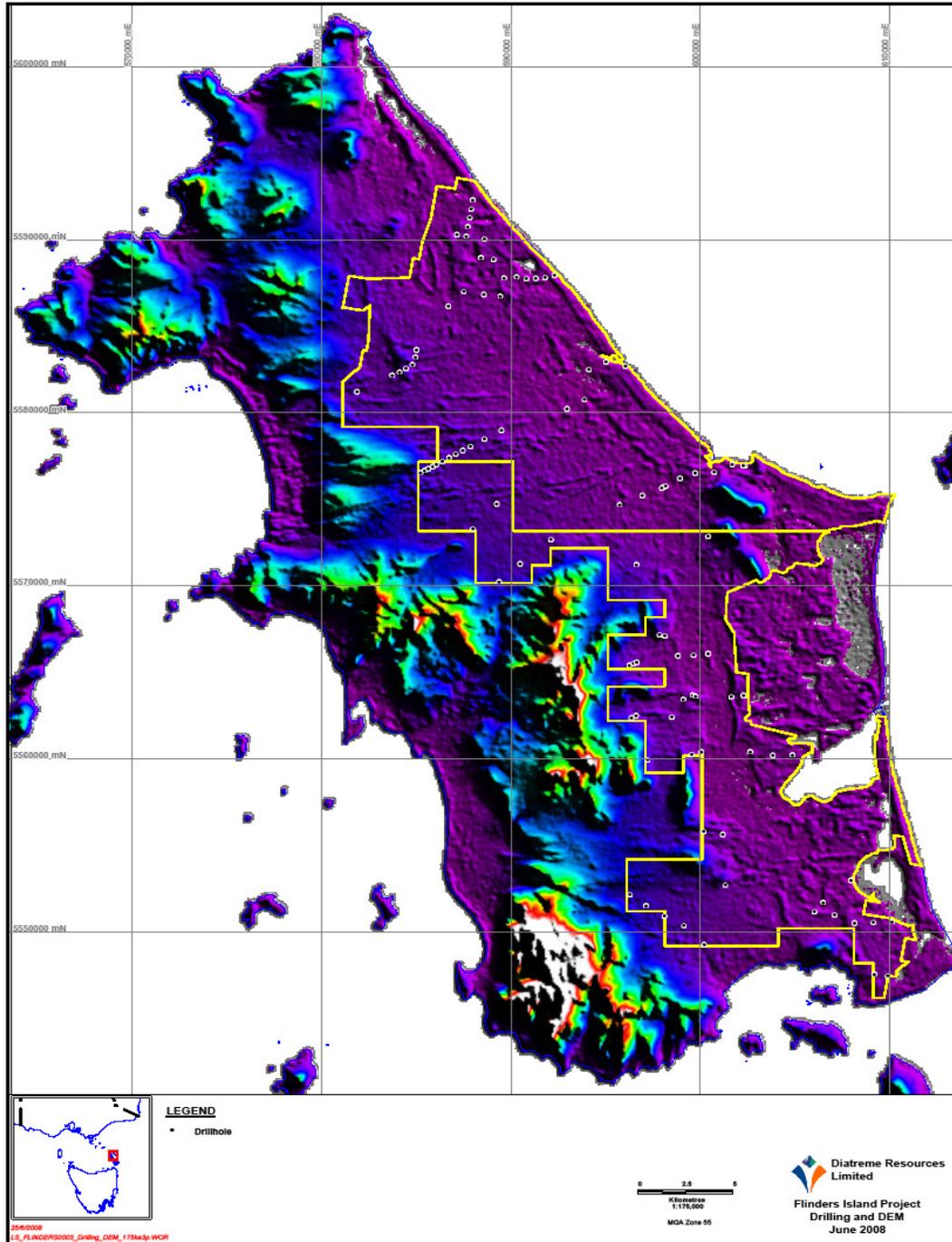


Figure 4: DEM showing drill hole locations.

## 4 DISCUSSION OF RESULTS

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As stated previously, several beach facies were indentified during the 2008 exploration drilling programme. These lay at 15 to 18m, 4 to 6m and 0.5 to 1.5m RL.

The beach which lay at 15 to 18m RL was the most significant beach on Flinders Island. This system was only found at the foot hills of the Strzelecki Range, and always had a thickness of less than 10 metres and a width of less than 200 metres. The beach sand was found to be devoid of any mineralisation. When no beach was intersected, a granitic wash (gravel) was found in its place on the foothills. This gravel has been utilised by the locals for road construction.

The remaining two beach systems at 4 to 6m and 0.5 to 1.5m RL were located on and within a few kilometres of the present day shoreline. These beaches were typically thin, poorly developed, but however, contained small amounts of heavy minerals. Minor traces of heavy mineral accumulation were found from visual inspections of the beach sand in various locations of the eastern shoreline of Flinders Island.

Only one drill hole from the entire programme resulted in a heavy mineral intersection of any significance. Hole number F0060 was found to have an intersection of 1m @ 2.0% HM @ 2m depth. This hole was located to the east of the Patriarch Hills and within a few hundred metres of the current shore line. The mineralisation in this hole would have been deposited with the current beach system, which lies at 0.5 to 1.5 metres RL. A hole was drilled 100 metres to the east of F0060, which was along strike, and had the same result of 1m @ 2.0% HM @ 2m. A third hole was drilled a further 500 metres along strike where no mineralisation was found to occur. Access was limited in this area due to thick vegetation, so drilling was restricted along pre-existing tracks. This factor limited the follow up drilling that could occur around the known mineralisation.

## 5 CONCLUSIONS

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The aim of the 2008 drilling programme was to identify beach facies with an economic accumulation of heavy mineral sands. However, drilling only intercepted thin and poorly developed beaches across the two licences, stretching from the foot hills of the Strzelecki Ranges to the current eastern shoreline of Flinders Island. The lack of heavy minerals within the beach sands downgraded the prospectivity of the island as hosting economic deposit of heavy minerals so the drilling was terminated after only nine days of drilling.

With the poor results from this programme, another drilling programme cannot be justified and therefore both EL's will be submitted for relinquishment.

## 6 ENVIRONMENT

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During the 2008 programme, no Aboriginal artefacts or objects of historic interest were discovered. No clearing of native fauna or flora was undertaken during the course of the programme.

All drilling that was conducted was situated on road verges, but when this became logistically impossible, the drill rig was relocated to another location or otherwise onto private property. All rubbish and other materials used during drilling were removed from the drill site and deposited in a recognised disposal facility.

Rehabilitation of the drill holes was also an important process of the programme. At the completion of the hole, the drill cuttings were shovelled back into the hole, and the hole plugged at a depth of approximately 1 metre. If all of the drill cuttings were unable to fit into the drill hole, then the cuttings were spread evenly along the road verge.

Figure 5 below shows a typical hole being drilled on a road verge, and figure 6 shows the rehabilitation of a drill hole after completion.

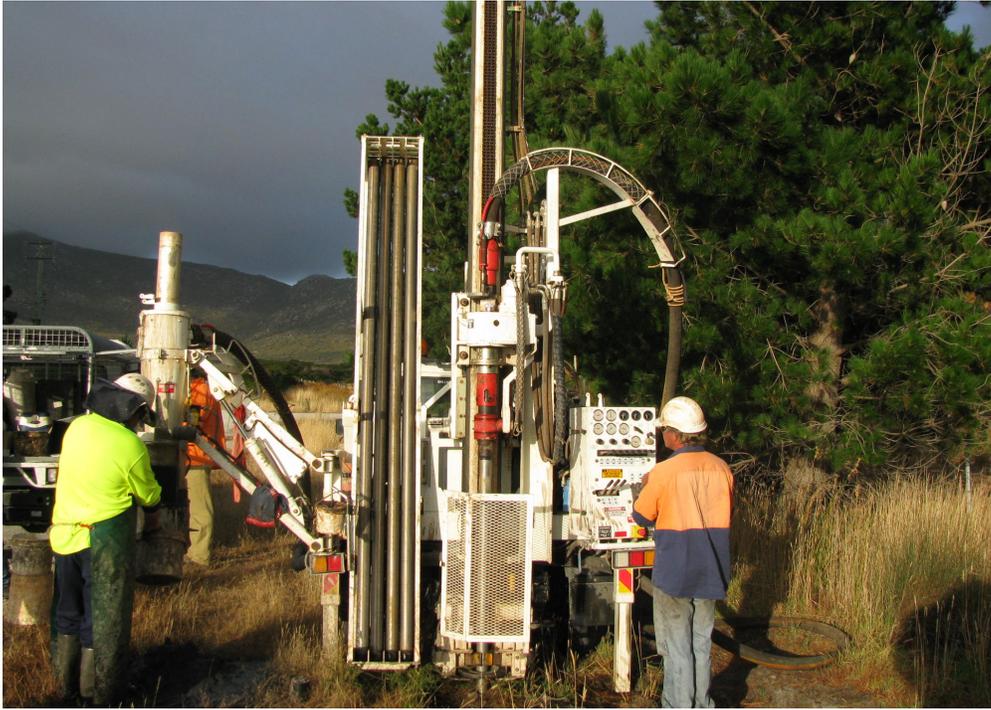


Figure 5: Drilling and sampling on road verge.



Figure 6: Rehabilitation of drill hole.

## 7 KEY PERSONNEL

Personnel involved in 2008 Air core drilling program.

<b>Title</b>	<b>Name</b>	<b>Responsibilities</b>
<b>Diatreme</b>		
Exploration Manager	David Jelley	Planning, Overseeing, Reporting
Senior Geologist	Liam Murphy	Supervising, Planning, reporting, panning, logging.
Logistics	Sam Klug	Traffic Management, Community relations, landowner negotiations, rehabilitation, mixing samples.
Computing Geologist	Rob Lewis	Database management.
Field Assistant	Aaron Daw	Sample collection, Mixing samples
Field Assistant	John Wooley	Sample collection, Mixing samples
<b>Wallis Drilling</b>		
Drill Supervisor	Tony Saunders	Supervising Drilling.
Driller	Grant Cowling	Drilling, sample quality
Drillers Offsider	Terry Smith	Assistant Driller, sample quality

Table 1: Personnel involved in 2008 Flinders Island Air Core Drilling Program

## 8 EXPENDITURE

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A total of \$156,770.00 has been spent over the three tenements (EL 6/2007 & 7/2007) to 14 July, 2008. This is broken down as follows:

### **EL 6/2007**

Wages:	\$27,248
Field Expenses:	\$1,227
Travel & Accommodation:	\$8,259
Administration:	\$4,384
Freight:	\$4,812
Communication:	\$267
Drilling:	\$18,535
Data Compilation:	\$750
Security Deposit:	\$13,630

**TOTAL** **\$79,112**

### **EL 7/2007**

Wages:	\$26,180
Field Expenses:	\$1,178
Travel & Accommodation:	\$7,936
Administration:	\$4,404
Freight:	\$4,624
Communication:	\$257
Drilling:	\$17,809
Data Compilation:	\$720
Security Deposit	\$14,550

**TOTAL** **\$77,658**

## 9 REFERENCES

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Sutherland, F.L., Kershaw, R.C. 1970: The Cainozoic Geology of Flinders Island, Bass Strait: Papers and Proceedings of the Royal Society of Tasmania, Volume 105.

Dimmock, G.M. 1957: The Soils of Flinders Island, Tasmania: Soils and Land Use Series No. 23: CSIRO, Australia.

## **10 KEYWORDS**

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Flinders Island, Heavy Mineral Sands, Beach, Drilling, EL6/2007, EL7/2007, Diatreme Resources Limited, Tertiary.

## **Appendix 1**

# ***DATA COLLECTION AND SAMPLING PROCEDURES***

**2008**

### **A1.1 Sample collection**

After each 1.0m interval was drilled the sample was returned through the cyclone into a calico sample bag. The sample bag for 1.0m sampling was held in place by the drillers offsider who ensured sample consistency and regularly cleaned the cyclone. Samples for assay were transported to Ceduna for analysis. However, due to the log grade of the samples, no samples have been assayed.

### **A1.2 Panning**

After collecting the sample from the cyclone, the field assistant thoroughly mixed the sample and removed a hand full of sand and placed some in both a chip tray and into a pan. The geologist ensured a matchbox size sample was in the pan and added fresh water to cover the sample, which was then massaged to liberate any slime present. Washing was repeated until all slimes were removed from the sample so that the sand could be panned effectively. The clean sand was then agitated to facilitate separation of the light and heavy minerals, and the pan swirled to reveal the heavy mineral tail (if present) above the light mineral fraction. The geologist estimated the %slimes and %HM and described the mineralogy and other characteristics of the sand.

### **A1.3 Rehabilitation**

The drill hole was back filled where possible and plugged with an Octoplug driven into the ground approximately 1m. The hole was then backfilled with topsoil leaving a mound of earth to allow for settling. All drill sites were cleaned up and all rubbish removed.

***Appendix 2***

***PLANS OF DRILLING***

***EL6/2007***

*(File: EL6\_2007\_2008\_F\_02\_Plans\_pdf.zip)*

**2008**

***Appendix 3***

***PLANS OF DRILLING***

***EL7/2007***

*(File: EL7\_2007\_2008\_F\_03\_Plans\_pdf.zip)*

**2008**

***Appendix 4***

***SECTIONS OF DRILLING***

***EL6/2007***

*(File: EL6\_2007\_2008\_F\_04\_Sections\_pdf.zip)*

**2008**

## ***Appendix 5***

### ***SECTIONS OF DRILLING***

#### ***EL7/2007***

*(File: EL7\_2007\_2008\_F\_05\_Sections\_pdf.zip)*

**2008**

## ***Appendix 6***

### **DRILLING CODES**

**EL6/2007, EL7/2007**

*(File: EL6\_2007\_EL7\_2007\_2008\_F\_06\_DrillingCodes\_xls)*

**2008**

## ***Appendix 7***

### **COLLARS DATA**

**EL6/2007**

***(FILE: EL6\_2007\_2008\_F\_07\_DrillCollars.txt)***

**2008**

***Appendix 8***

**COLLARS DATA**

**EL7/2007**

***(FILE: EL7\_2007\_2008\_F\_08\_DrillCollars.txt)***

**2008**

## ***Appendix 9***

### **GEOLOGY DATA**

**EL6/2007**

***(FILE: EL6\_2007\_2008\_F\_09\_DrillGeology.txt)***

**2008**

## ***Appendix 10***

### **GEOLOGY DATA**

**EL7/2007**

***(FILE: EL7\_2007\_2008\_F\_10\_DrillGeology.txt)***

**2008**