



**Southern Ocean Science**  
**Decorative Gravel Project**

**First Annual and Final Report for:**

**Exploration Licence  
1/2005, Mt Vulcan**

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## **SUMMARY**

Hand samples of a pegmatitic gabbro collected from an area west of Beconsfield in northern Tasmania were assessed for their potential for input into the landscaping market. The samples were crushed and tested for size and density and an estimate of the size of the deposit made. Although the rock was well received, it was considered that the small size of the deposit and its difficult access would render the project uneconomic relative to other sources of rock in the region.

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## **INTRODUCTION**

Tasmania is ideally placed to supply the local, national and, possibly, the international market with decorative gravel. This is because Tasmania has;

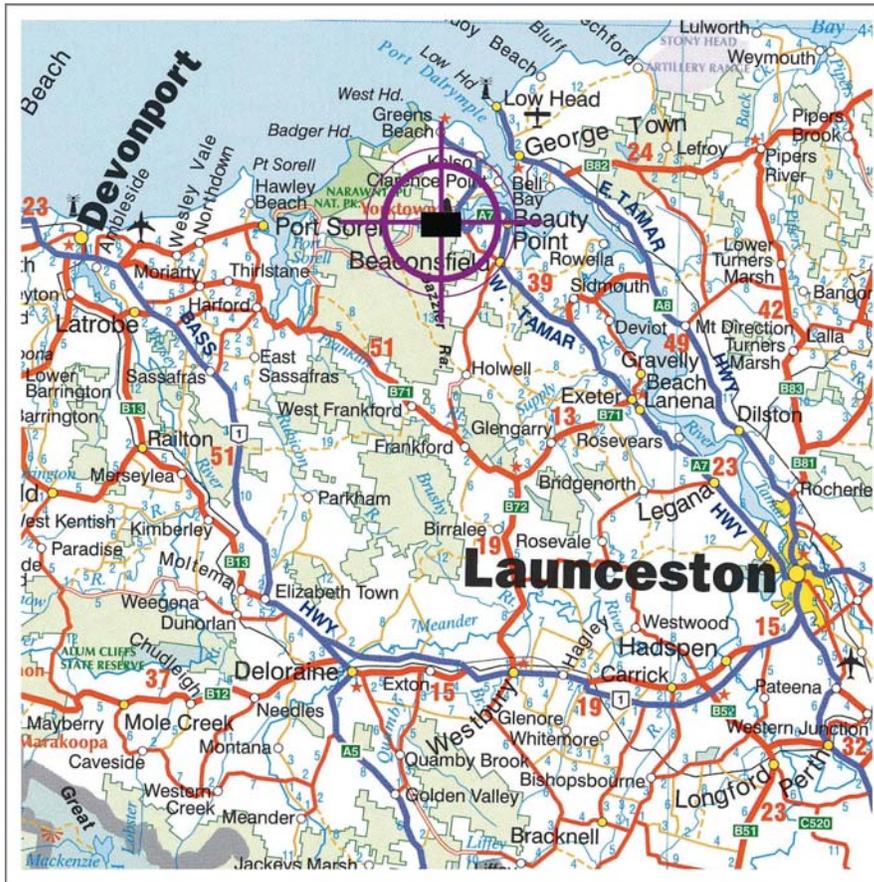
1. A unique geology and, hence, rock diversity not easily duplicated on the mainland, and
2. access to ports whereby material can be cheaply and efficiently shipped to Pacific Ports.

After briefly surveying about 12 rock types around Tasmania, it was decided that the Mt Vulcan area west of Beaconsfield (attached maps) warranted further investigation on the basis that;

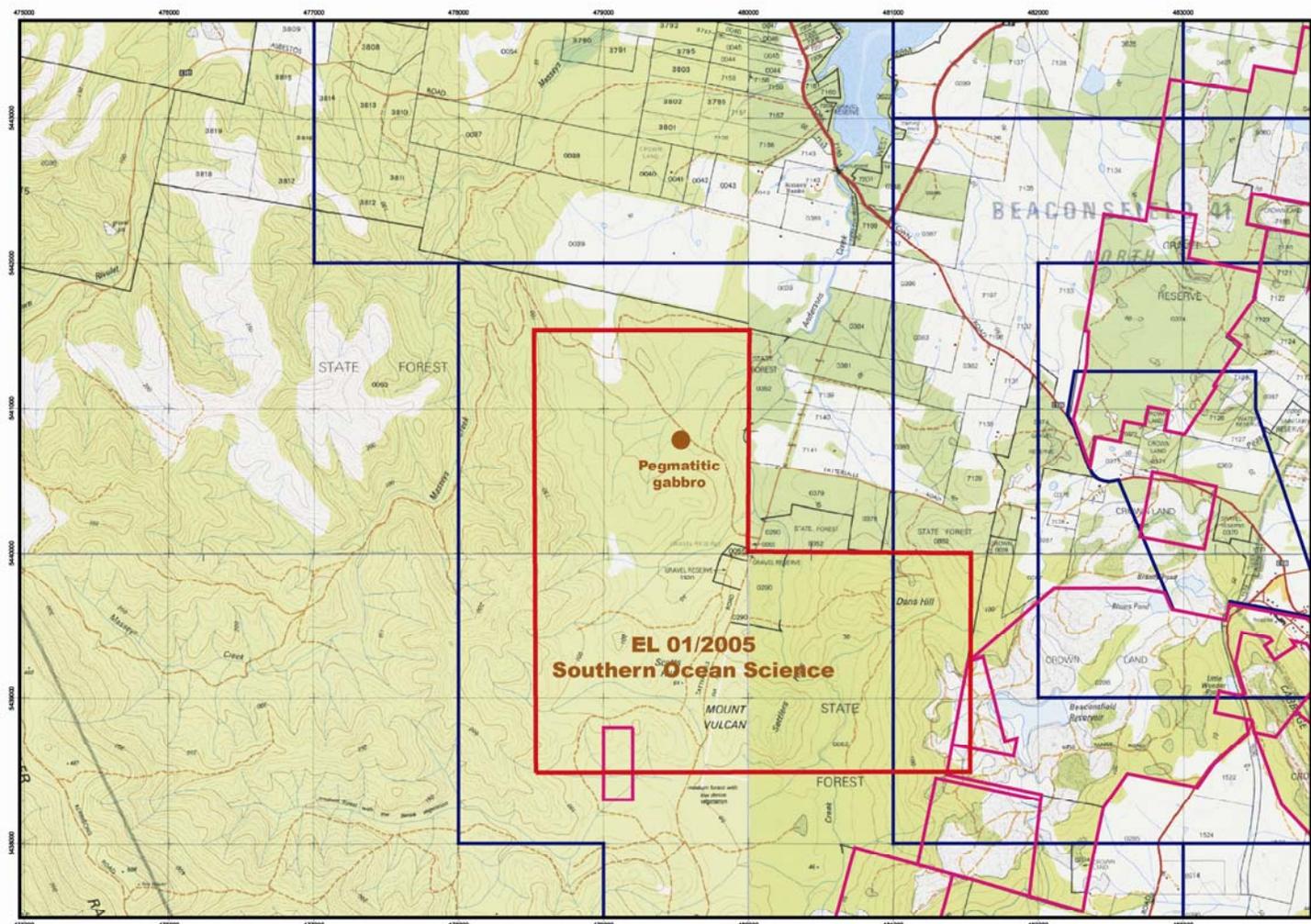
- 1) Landscape designers and product retailers were impressed by hand-specimens of the rock.
- 2) The rock was well-located to ports at Bell bay and Devonport, as well as population centers along the north coast and Launceston.
- 3) The rocks was significant different to anything else available on the Australian mainland.
- 4) The rocks lay on Crown land and within close proximity to an existing track.

An exploration licence covering 6.75 sq km was applied for and granted to Southern Ocean science Pty. Ltd. on the 18<sup>th</sup> October 2005.

The objective of the exploration licence was to assess whether the material available in the licence area was suitable for its intended market, and could be processed and transported to market at profit. If the material proved suitable then the aim was to progress to approval for a bulk sample prior to application for conversion to a mining lease.



The tenement is located about 50km northwest of Launceston and about 4km west of Beaconsfield. Access to the tenement area is by a network of existing forestry roads and tracks.



Map of Exploration Licence 1/2005 showing location of pegmatitic gabbro or 'Snowflake granite'.

## **REVIEW OF PREVIOUS WORK**

The area has been variably disturbed with exploration and small-scale mining for metallic minerals and asbestos. The area is currently the subject of regional gold and nickel exploration. There is no known history of exploration for gravels derived from hard rock sources.

The area has been recently re-mapped by Mineral Resources Tasmania and straddles the Beconsfield, Bell Bay, Harford and Port Sorell 1:25,000 geological maps.

## **EXPLORATION COMPLETED**

Site visits have been made to assess the extent of the rock of interest and hand samples have been collected.

Hand samples were crushed and screened to assess bulk density (for transport purposes and to estimate tonnage per cubic meter for bulk sales). Subjective assessments were also made as to the shape and hardness of the aggregate, and the effect this might have on machinery wear and marketability.

Crush samples have been shown to various retail outlets for comment.

Discussions have also been held with contractors and site visits made to assess road conditions. Talks have also been held with relevant government departments about the proximity of threatened flora species.

## **Results**

The main rock of interest is a poorly outcropping black and white pegmatitic gabbro, presented to the market as the 'Snowflake Granite':

**Snowflake granite** (market name); Pegmatitic gabbro.

Striking black and white very hard granitoid with a mineralogy dominated by white plagioclase and black amphibole crystals to typically greater than 20mm. The rock is extremely hard albeit fractured as a result of orogenesis. The origin of the rock is uncertain but probably a basal cumulate facies to gabbroic rocks within the Andersons Creek Ultramafic Complex.

### **Extent of outcrop**

About 30m x 50m. Depth extent unknown

### **Site tenure**

Crown land. State forest.

### **Physiography**

Northward sloping land at <5 degrees.

### **Site description**

Exposed at surface as rock scatter and located adjacent to track linked to forestry road.

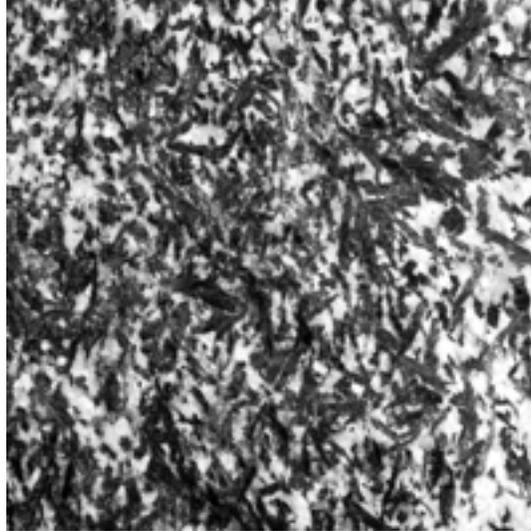


Image showing crushed Snowflake Granite.

### **Distance to market and/or main port**

Transport cost is one of the main constraints to the viability of any operation.

Distances shown are in km, by road, and are approximate. The distances show the shortest (but not necessarily the same) route.

<b>Hobart</b>	<b>Launceston</b>	<b>Burnie</b>	<b>Devonport</b>	<b>Bell Bay</b>
240	47	109	60	37

The rock is well located near to markets in Launceston and for shipment to the mainland from either Bell Bay or Devonport.

### **Processing Information**

Approximately 20kg of sample was collected for crush testing. The way a rock crushes affects the volume of a sized or screened product available for sale.

The following figures should be regarded as estimates only and will vary depending on equipment used. The rocks tested here were crushed using a laboratory jaw-breaker, and then hand screened.

Testing was conducted to indicate;

- the viability of transporting uncrushed product vs using a transportable crushing plant.
- the size distribution of crushed rock product for a machine set to produce a ~20mm coarse aggregate.

Any further testing should be based on an aggregate of 10mm, preferred for market.

### Sample sizes processed (kg)

Crush weights	Description	Fines	3.35 to 5.5mm	>5.5mm	Total
	Snowflake granite (appx)	1.95	0.67	6.9	9.52

This translates in to the following proportions:

Ratios	Description	Fines	3.35 to 5.5mm	>5.5mm
	Snowflake granite (appx)	20%	7%	72%

### Bulk densities

Bulk densities are used to estimate transport costs.

Weights shown in grams are for a conical volume of rock equivalent to 0.5lt, with minimal settling. Figures shown are estimates only (but are consistent with one another when compared to documented solid-rock densities).

weight/volume	Fines	3.35 to 5.5mm	>5.5mm
Snowflake granite	786	686	704

This equates to bulk densities of (t/m<sup>3</sup>):

Density	Fines	3.35 to 5.5mm	>5.5mm	Particle form
Snowflake granite	1.572	1.372	1.408	Flake

### NOTE:

Bulk density variations between rocks and between crush size is strongly influenced by particle proportions. For example, a 10mm aggregate will, in most cases, yield the **most** volume from the **least** amount of rock and will, thus, be the **cheapest** to transport.

Hand samples only were collected during the course of site inspections. There has been no land disturbance.

### Expenditure

Geological support, industry and government consultation, sample collection and preparation.	\$4,950
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## DISCUSSION

The aggregate was well received by landscape suppliers and could probably attract a premium price relative to other materials on offer.

However, a number of factors limit its commercial exploitation;

1. The size of the deposit is limited to an area of about 20m x 30m with an unknown depth extent. The topography is flat making estimation on any minimum depth extent impossible without excavation. The total volume of rock is probably less than 20,000m<sup>3</sup> and can be considered small at best.
2. The rock is located in an area of threatened species known as 'Shy Susan' or *Tetratheca gunnii*. This plant is listed as endangered under the States *Threatened Species Protection Act (1995)* and as critically endangered under the Commonwealths *Endangered Species protection Act (1999)*. Known occurrences of this plant crop out within 400m of the proposed quarry site. Plants also lie adjacent to the main access track and would likely be affected by any planned track upgrade. Any development in the area would necessitate an Environmental Management Plan with no guarantee that approval would be given to quarry.
3. Significant upgrades to the access track are necessary for trucks to access the site and would prove costly for what would otherwise be an intermittent operation.
4. The relatively flat terrain in the vicinity of the gabbro would necessitate a small pit. This would require periodic and perhaps continuous dewatering.
5. The access track passes across serpentinites known to contain asbestos. The track requires an upgrade which may result in creation of asbestos-bearing dust hazard.

## CONCLUSIONS

While the rock is well suited to the intended market, it is difficult to access and limited in extent. It is recommended that no further work is done and that the licence be relinquished.