

THE BROCKMAN PROJECT

1. Introduction

Hastings' Brockman Project (the Project) contains significant Dysprosium, Yttrium, Niobium and Zirconium resources. The Project is 100% owned by Hastings Technology Metals Limited (**Hastings** or the **Company**, ASX:HAS), an Australian Securities Exchange (ASX) listed company with the primary focus of investing in the resource sector through direct tenement acquisition, joint ventures, farm in arrangements and new project generation. Hastings acquired the Brockman Project in December 2010.

The Project currently encompasses Prospecting Licences P80/1626 to P80/1635 covering 1,990 hectares, Exploration Licence E80/4555 and application E80/4970. Hastings has made application for a Mining Lease to cover the area of the ten Prospecting Licences.

The Project is located in the East Kimberley region of Western Australia, 18 kilometres south east of Halls Creek as detailed in Figure 1.

Western Australia has a robust, internationally-competitive mining industry, and there is a low Sovereign Risk. The tenements are in good standing and the Company has a good relationship with the local indigenous and European populations.

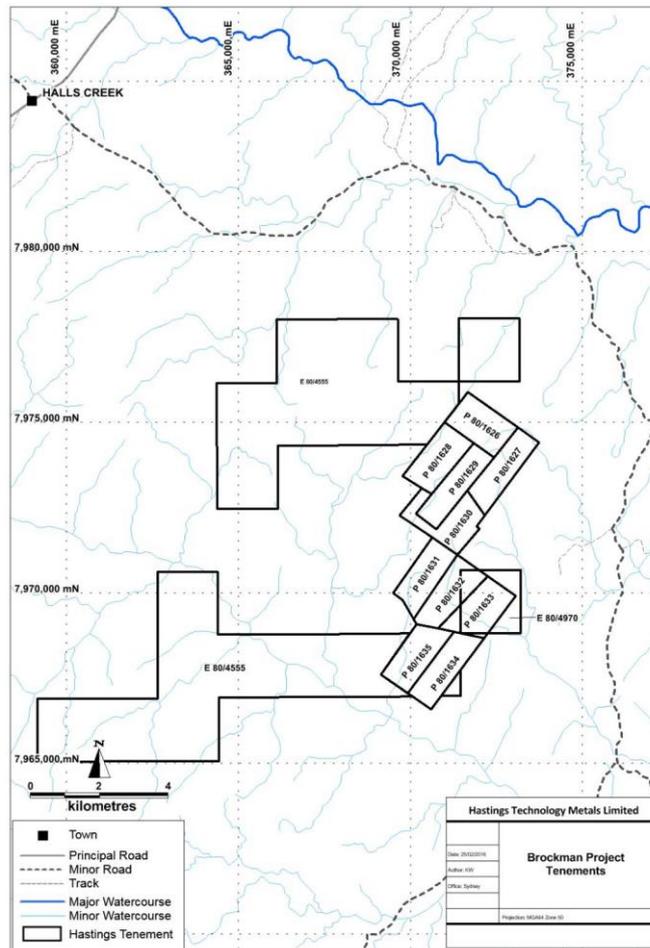


Figure 1: Brockman Project Location

2. Tenements

Tenure over the main project area currently consists of 10 Prospecting Licences (PLs) held by the Company, with adjacent ground held under Exploration Licence E80/4555 as detailed in Table 1. Hastings has made application for a Mining Lease to replace the ten PLs.

Table 1: Brockman Project Tenement Status

Tenement Number	Registered Holder	Holder (%)	Expiry	Area (Ha.)
P80/1626	Brockman Project Holdings Pty Limited	100%	19 March 2017	200
P80/1627	Brockman Project Holdings Pty Limited	100%	19 March 2017	200
P80/1628	Brockman Project Holdings Pty Limited	100%	19 March 2017	200
P80/1629	Brockman Project Holdings Pty Limited	100%	19 March 2017	200
P80/1630	Brockman Project Holdings Pty Limited	100%	19 March 2017	200
P80/1631	Brockman Project Holdings Pty Limited	100%	19 March 2017	190
P80/1632	Brockman Project Holdings Pty Limited	100%	19 March 2017	200
P80/1633	Brockman Project Holdings Pty Limited	100%	19 March 2017	200
P80/1634	Brockman Project Holdings Pty Limited	100%	19 March 2017	200
P80/1635	Brockman Project Holdings Pty Limited	100%	19 March 2017	200
E80/4555	Mallina Exploration Pty Limited	100%	17 September 2017	51.57 sq km

3. Project Geology

The Brockman rare metals deposit is hosted by a fine-grained volcanoclastic unit informally termed the Niobium Tuff. This volcanoclastic unit is the lowermost unit of a sequence of lavas, subvolcanic rocks, and volcanoclastic units of the Brockman Volcanics (Figure 2).

There is ample outcrop within the Brockman area, and the Niobium Tuff can be traced over a strike length of 3.5km. It occurs here on the western flank and northern closure of a major south-west plunging synclinal structure. The Niobium Tuff varies in width to 35m, and has a vertical or steep easterly dip.

Only minor faulting is evident, and drilling has established continuity of the unit to a vertical depth of 250m. Weathering is limited, with oxidation observed only down to depths of 20-30m.

Two cross sections provided as Figure 3 and Figure 4 show the interpreted shape of the mineralised zone towards the southern and northern end of the drilled portion of the deposit, respectively. The major fold structure shown in Figure 3 was intersected in a number of holes providing intersections exceeding 100 metres down hole.

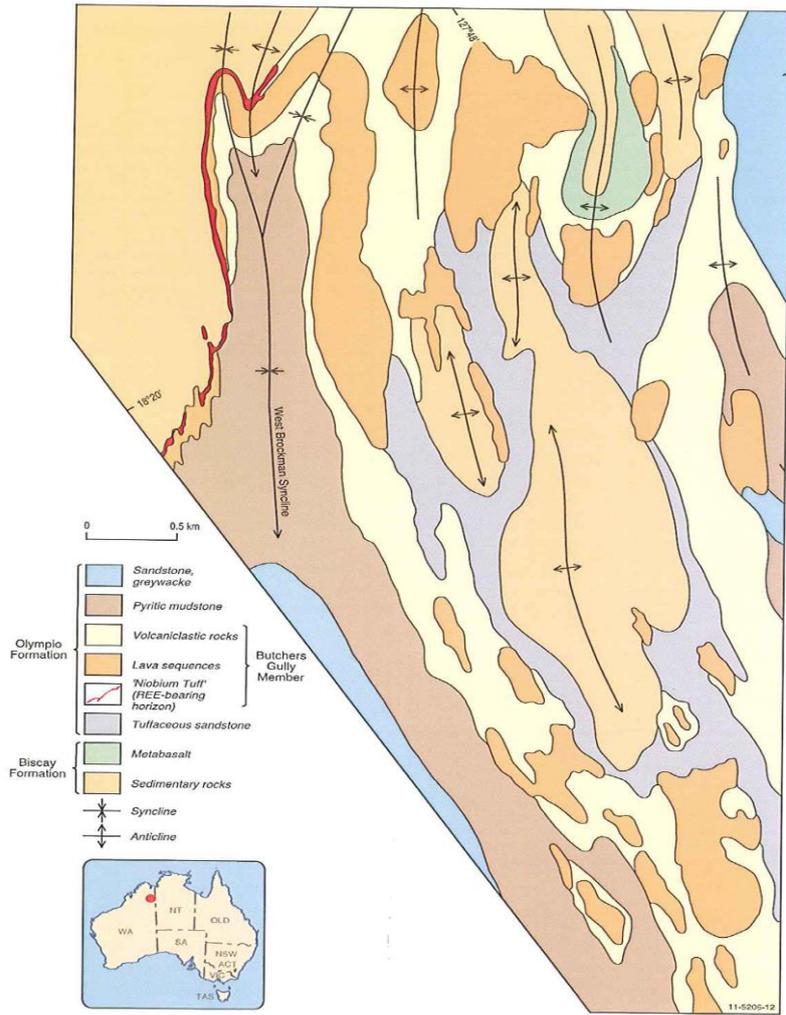


Figure 2 – Brockman Project Simplified Geology Plan

Figure 3: Brockman Cross Section 9400mN

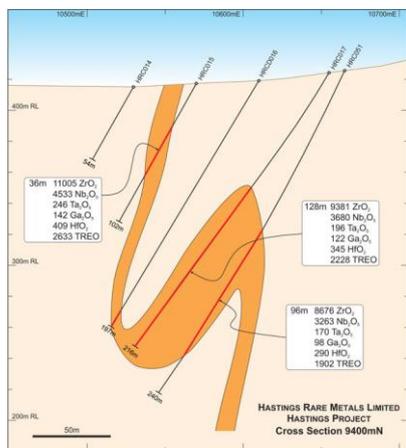


Figure 4: Brockman Cross Section 10200mN

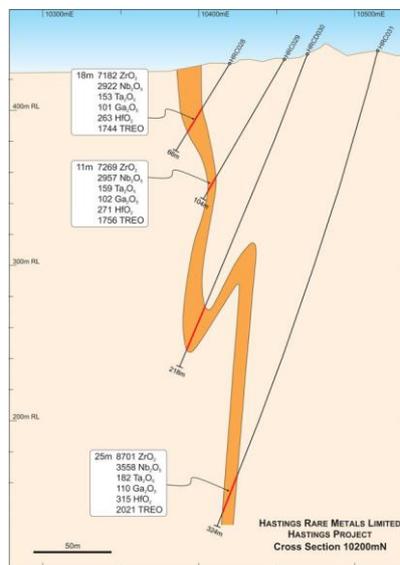


Figure 5 provides a longitudinal section of the deposit showing the distribution of the current JORC resources in the Main deposit.

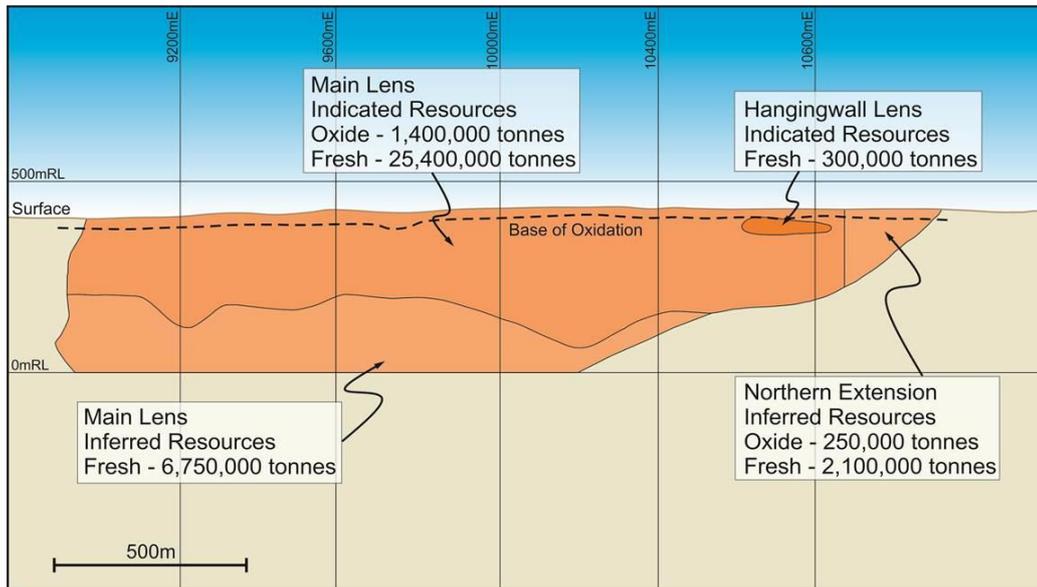


Figure 5: Brockman Longitudinal Section showing resource distribution

Drilling in 2015 tested the Southern Extension to the Main Zone and two regional targets.

Mineralogical studies have defined the ore mineral assemblage as zircon and its unusual hydrous counterpart gel-zircon, along with columbite and yttrium-bearing rare earth niobates.

All the ore minerals are fine grained, with few grains larger than 10 microns. Columbite occurs only in grains of 1-2 micron diameter.

Hastings has had two samples analysed by the Australian Nuclear Science Technology Organisation (ANSTO), an Australian government agency.

The first sample of near surface mineralisation predominantly composed quartz (38%) and muscovite (36%). The elements of interest were typically contained in the niobate phases columbite (Nb, Ta) and titanian samarskite (Y, Ce, Nd, La, Dy, Er, Ta, Nb) and in gel-zircon (Y, U, Th).

The second sample from deeper, primary mineralisation comprised predominantly quartz (45%), muscovite (25%) and albite (11%). The elements of interest were typically observed in the niobate phases columbite (Nb, Ta) and titanian samarskite (Y, Ce, Nd, La, Dy, Er, Ta, Nb), and in gel-zircon (Y, U, Th) and cerianite (Ce, Nd, La, Y, Th).

4. Project History

The earliest geological investigations on the Brockman rare metals deposit were undertaken during the period 1982-85 by Union Oil Development Corporation ((UODC) (now Molycorp Inc. (NYSE: MCP)). In 1983-84, UODC completed detailed geological mapping, and reconnaissance stream sediment, soil and rock chip geochemistry. Nineteen (19) trenches (3,500 metres) were established across the outcrop of the Niobium Tuff, returning grades up to 0.45% Niobium and 0.23% Tantalum.

UODC drilled nineteen reverse circulation (RC) and diamond drill (DD) holes and commissioned mineralogical studies which identified the fine grained nature of the mineralisation, with an average grain size of less than 10 microns.

Later in 1985, UODC passed management of the project to its joint venture partner, West Coast Holdings (WCH) which undertook further drilling in 1988, with an additional 23 RC/DD holes.

WCH commissioned extensive metallurgical test work programmes that led to the establishment of a flow sheet devised to extract all minerals of potential economic interest. At that stage, the project was considered as a rare metals project, and as a consequence the flow sheet was developed to maximise the value of the rare metal elements including zirconium and niobium. The rare earths were only considered as a by-product. In 1990 a pilot plant was established at the Warren Spring laboratory in the UK and 100 tonnes of material was processed to prove up the rare metals flow sheet.

Following the acquisition of the project in December 2010, Hastings completed a 51 hole drilling programme (8,200m) which provided 7 DD and 41 RC intersections of the mineralised zone. These intersections confirmed previous results and provided deeper intersections of the mineralisation. This enabled a new interpretation of the deposit to be completed and allowed resource estimates to be undertaken.

Having established a large resource of heavy rare earths the Company appointed metallurgical consultants to confirm the results of the previous test work. ANSTO completed the first stage of test work on REO recoveries. Low temperature sulphation baking and water leaching tests were conducted to optimise recovery of the valuable components. Recoveries of rare earths (75%), niobium (75%) and zirconium (70%) were obtained. This confirmed the results of the 1990 pilot plant.

The next phase of processing work was to devise a method of separating the valuable components from the waste (non-valuable) components. A solvent extraction circuit similar to the Warren Spring pilot plant was trialled but required additional design work to overcome operational issues. ANSTO developed a two-stage primary solvent extraction circuit, where the rare metals, zirconium and niobium, can be extracted from the water leached sulphation product. The remaining liquor is then processed through another solvent extraction circuit to extract the rare earth values. The waste components are left behind. This separation of the rare metals, zirconium and niobium, from the rare earths and waste is the vital second stage of the process flow sheet development. The valuable components are now separated and work can begin on adding value. It is Hastings' intention to produce high quality dysprosium oxide and yttrium oxide, with remaining rare earths as a mixed oxide, whilst producing rare metal by-products meeting customer specifications.

Although a successful process route has been identified and bench tested, the Company is still considering a number of alternative beneficiation and processing options.

5. JORC Resources

Drilling and testing completed at the Main Zone to date has resulted in the definition of JORC compliant resources of 36.2 million tonnes. The total resources are comprised of 27.1 million tonnes of indicated resources and 9.1 million tonnes of inferred resources. The high ratio of indicated resources to total resources (75%) is indicative of the advanced state of progression of the project relative to its peers. A summary of the Hastings Project resources is presented in Table 2.

In November 2015 a JORC Indicated Resource of 5.2 million tonnes at 2200ppm TREO including 1800ppm HREO plus 3900ppm Nb₂O₅ and 9500ppm ZrO₂ was estimated for the Southern Extension.

The HREO concentration represents 85% of TREO, which is high relative to other rare earths projects.

Table 2: Summary of Brockman Project JORC Compliant Resources

Zone	Category	Oxide/ Primary	Tonnes (’000)	ZrO ₂ ppm	Nb ₂ O ₅ ppm	TREO ppm	HREO ppm
Main	Indicated	Oxide	1,400	8,860	3,510	2,150	1,830
	Indicated	Primary	25,400	8,910	3,550	2,100	1,800
H/Wall	Indicated	Primary	300	9,080	3,630	2,130	1,770
Sthn Ext	Indicated	Mixed	5,200	9,500	3,900	2,200	1,800
Total	Indicated		32,300	9,010	3,600	2,120	1,800
Nth Extension	Inferred	Oxide	250	8,860	3,510	2,150	1,830
	Inferred	Primary	2,100	8,910	3,550	2,100	1,800
Main Deep	Inferred	Primary	6,750	8,910	3,550	2,100	1,800
Total	Inferred		9,100	8,910	3,550	2,100	1,800
Total			41,400	8,990	3,590	2,100	1,800

The high levels of HREOs and higher prices associated with HREOs, and the high niobium content are the key drivers of the value of the Brockman Project, and a major differentiator to other advanced rare earth Projects with lower HREO concentrations. This differentiates the Hastings Project from other rare earth projects.

6. Exploration Potential

Further drilling could increase the resources at the Southern Extension where the majority of the intersections exceed the average grade of the defined resources further north in the Main Zone.

The increased grades for both the rare earths and the rare metals and the potential to increase the defined JORC resource clearly enhance the economics of the Brockman Project.

Rare earths have been defined by limited drilling at Levon and Haig prospects but neither hosts elevated rare metals values.

There is potential to define higher grade portions of the deposit that could be amenable to shallow open pit mining followed by underground mining.

7. Existing Infrastructure

7.1 Town

Halls Creek (population approximately 1,500) is located some 18km from the project site. The town functions as a support centre for remote cattle stations in the area, and is a major community hub for the local indigenous population. Halls Creek’s infrastructure includes medical facilities, schools, police, community facilities, shops and housing. Halls Creek is 366 kilometres from Kununurra (population 3,700) the largest town in Western Australia north of Broome.

Local infrastructure relevant to the mining industry includes the Halls Creek Airport (HCQ) and the Halls Creek Hospital, which is equipped with ambulance and emergency facilities.

Existing mining operations in the area include the Argyle diamond mine, the Savannah nickel mine and the Ridges iron ore mine. Each uses components of the local infrastructure.

6.2 Airports

The Brockman Project site is within 20km of the Halls Creek Airport (HCQ). This airport accepts regular commercial flights from Broome, hosts numerous local light aircraft and is open to charter aircraft. Hence charter flights could easily be arranged from Darwin (approximately 90 minutes) or Broome (approximately 2 hours).

6.3 Roads

The Brockman Project site is accessible from Halls Creek via The Duncan Road heading east. The Duncan Road is an unsealed road which is open to all traffic, including heavy vehicles. The road condition is assessed weekly by the Shire Council of Halls Creek as it is subject to occasional flooding.

The sealed, two-lane, single-carriageway Great Northern Highway links Halls Creek to Wyndham and Kununurra to the north (Figure 7) and to Broome and Derby to the west.



Figure 7: Heavy trucks on road north of Halls Creek to Wyndham

6.3 Ports

Existing port facilities located in the Northern Kimberley include Wyndham Port and Derby Wharf. Wyndham Port is the nearest port to the Project, being around 375 kilometres to the north. Derby Wharf is the second nearest port, being approximately 550 kilometres to the west of the Project. Both Ports are accessible via the Great Northern Highway.

Wyndham Port (Figure 8) is the only deep-water port between Broome and Darwin. The port is used for the export of live cattle, raw sugar, molasses and mining concentrates. The port is also used to import fuel oil, ammonium nitrate for the mining industry (in particular the Argyle Diamond Mine) and general cargo. A number of mining operations located in the Kimberley region use Wyndham Port to ship concentrates overseas. The largest ships that visit the port are fuel tankers at 190m long and 50,000 tonnes deadweight with a draft of 8.5m.



Figure 8: Loading facilities at Wyndham port

Derby Wharf is a smaller shipping port which is also capable of exporting mining concentrates from the Project. It is located 550km to the west of Halls Creek. Derby Wharf is not a deep-water port. Derby Port was originally established for the export of live cattle, and the import of fuel, oil and provisions. The Port was closed in 1994 and re-opened in 1997 to accommodate the export of zinc concentrates from the Cadjebut Mine near Fitzroy Crossing. It is primarily used for tourist craft at the present time.

Darwin Port is a larger commercial port predominantly serving livestock export, dry bulk imports and exports, petroleum and bulk liquids, container and general cargo, cruise and naval vessels, and offshore oil and gas services.

6.4. Water

Immediate water supply can be gained from an existing reservoir some 10km to the southeast of the Brockman deposit, with the Company holding an application for an Exploration Licence providing access to the north-western corner of the reservoir. This reservoir was established to provide processing water for a nearby gold mine that is no longer in operation. Additional water supply can be readily established by the construction of dams to store the high seasonal rainfall. If necessary, the area hosts numerous groundwater bores and additional bores could be used to supplement supply.

6.5 Power

There are no existing power facilities in the immediate vicinity of the Brockman deposit. However, power could be obtained from the grid at Halls Creek by developing lines out to site. More likely on-site power requirements would be met by diesel generators and possibly solar generators.