

Thunderbird

Mineral Sands



October 2016 : Information Update 3 – Derby Port

THUNDERBIRD MINERAL SANDS PROJECT

The Thunderbird Mineral Sands Project, located between Broome and Derby, is being developed by Western Australian company Sheffield Resources Limited.

Thunderbird is a large-scale, mineral sands mining and processing project with low environmental impacts and long term benefits, with a mine life of more than 40 years.

Sheffield is undertaking a Bankable Feasibility Study and Public Environmental Review of Thunderbird, scheduled for completion in 2017. Commencement of construction is scheduled to follow immediately thereafter with first exports through the ports of Derby/Broome targeted for 2019.

Sheffield believes that Thunderbird can help transform the community through the creation of 140 permanent and many indirect local jobs. Income would stay in the region supporting families, business, cultural values and lifestyle.

FROM MINE TO MARKET

OVERVIEW

During operations, it is envisaged that the Sheffield team will live in Derby, Broome, and nearby communities. Employees will be bused to site, 140kms from both Derby and Broome, and lodge at permanent camps on-site, during rosters.

The mining and processing of the mineral sands will be a 24x7 operation. Valuable mineral sands products will be processed and separated at the Thunderbird site. The finished products (ilmenite, zircon and HITi leucoxene) will be stored in bulk storage load-out bins at the on-site mineral separation plant. The road transport facilities onsite will incorporate weigh-bridge, truck driver rest area, truck wash down area and a truck turning area.

PRODUCT DESPTACH AND SHIPPING

Most of the production (ilmenite) will be transported in bulk from the mine to the Derby Port in road trains consisting of up to four covered trailers, with bowl side tippers. The ilmenite will be stored at the Derby Port, and then loaded in bulk onto barges and transshipped to vessels waiting 30kms off shore near Point Torment. Ocean-going vessels will transport the products to markets in nearby Asia, the Middle East and Europe.

The zircon and leucoxene may be packaged (bulka-bags or containerized), and options continue to be studied including location of a bagging plant, transfer and shipping arrangements that may include Broome Port for these products.



DERBY COMMUNITY

The wharf area hosts several businesses and is frequented by the general public for fishing, boat launching, recreation and sightseeing.

It is the main access point to coastal waters in and around Derby and utilized for transport, marine and fuel services, fishing charters, and the Derby Volunteer Marine Rescue service.

The Wharf Café and viewing deck, located at the port, is a popular destination for locals and tourists alike.

An administration office shall be constructed at the Derby Port, from where logistics shall be managed for product storage, shipping and export.

With the shipping of mineral sands product through Derby Port, activity will increase in the area: road trains, drivers, administration and warehousing staff, customer visits.

The new activity shall present opportunities to services and businesses, whilst management plans shall address safety, environmental and amenity impacts.



Bulk transport to Derby: product conveyed from the storage shed at Derby Port, to the wharf, and loaded onto barges for transshipment 30km offshore, onto handymax vessels.

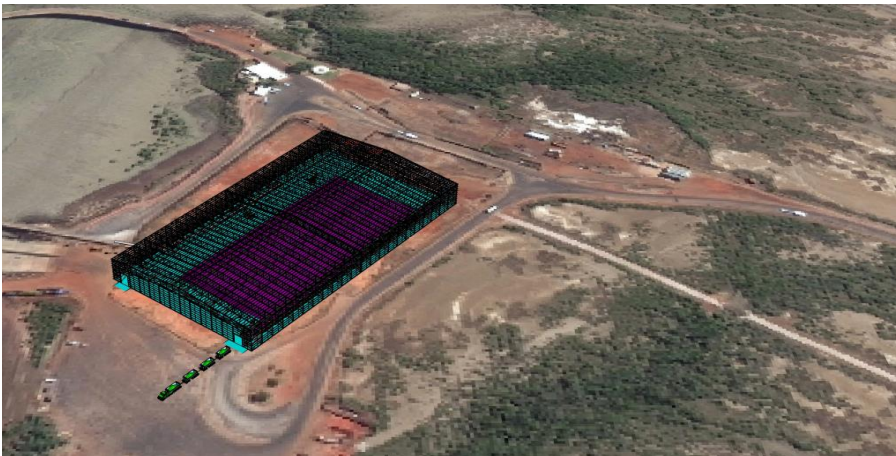
DERBY PORT

Owned by the State, the Derby wharf is vested in the Kimberly Port Authority and managed by the Shire of Derby West Kimberley under a lease agreement.

The Shire of Derby West Kimberley and Sheffield's engineering consultant reviewed the wharf in 2016 and whilst observing some maintenance requirements, found it to be structurally sound, and allowing operation.

A 5,000m² bulk shed will be built near the port and will store up to 40,000 tonnes of product (equivalent to 16 days production). Road trains will drive through, tipping over a wall into the drop area. A front end loader is used to move product and feed the existing ship loading conveyor, which will be refurbished.

Although well suited to small ports, the *handymax* ocean-going vessels cannot sail with the tide and depth restrictions at Derby, and will be loaded from barges at sea near Point Torment.



Port storage shed at Derby

TRANSSHIPMENT

It is estimated that between 30 and 40 ships shall sail each year, dependent on vessel capacity.

Barge moorings will be established in King Sound where there is sufficient depth at low tide to accommodate a fully laden barge. In advance of the arrival of a vessel, barges shall be loaded and moored in King Sound within two nautical miles of the sea transfer point 30 kms offshore.



Handymax: the smallest bulk carriers in operation today, typically 150-200m with 5 cargo holds and 4 cranes of 30 metric ton lifting capability. Capacity is usually between 35,000 and 50,000 DWT.

ROADS AND TRUCKING

The road train route consists of approximately 25km of off-highway site access road based on the existing Mt Jowaelenga Road which joins the Great Northern Highway (GNHW) at the midway point between Derby and Broome.

The existing road will be upgraded and extended to meet the requirements of carrying heavy vehicles whilst the intersection with the GNHW will include acceleration and turning lanes, signage and other requirements of Main Roads WA. All remaining roads on the route to the Derby Port are suitable for road trains.

Drivers will perform two round trips per shift, with the cycle time per trip estimated at 5.5 hours. The truck fleet will likely operate 24 x 7, with 10-12 cycle movements daily. The intent is to base the trucking operations in Derby.

A Traffic Management Plan, designed with community and local authorities, will be implemented to manage trucking impacts, and addressing speed, timing, route, safety, noise, dust and community information.



Community information session in Derby, discussing the nature of mineral sands.

Non-reactive and non-toxic, mineral sands products are used every day, in your toothpaste, medicines, sunscreen and food colouring; in artificial joints, crockery and porcelain.

For more information contact:

Kim Pervan

Senior Advisor - External Affairs

KPervan@sheffieldresources.com.au

sheffieldresources.com.au