



SHEFFIELD PREPARES TO LAUNCH THUNDERBIRD DFS

A recent Pre-Feasibility Study on its Thunderbird mineral sands project, pretty much told Sheffield Resources (ASX: SFX) what it has long suspected.

The PFS confirmed Thunderbird to be a world class project with an anticipated mine-life of 32 years producing high-quality zircon and ilmenite products, boasting robust mine-to-port-to-market logistics.

It was based on a Mining Inventory from the northern central portion of the Thunderbird Mineral Resource of 580 million tonnes at 11.7% heavy minerals (HM), with in-situ grades of 0.94 per cent zircon, 0.29 per cent HiTi leucoxene, 0.29 per cent leucoxene and 3.32 per cent ilmenite from Measured and Indicated Resources.

Kicking off the 32 year run is anticipated for 2018 with forecast life of mine (LOM) revenue of \$9.5 billion and LOM operating cash flow of \$4.3 billion (\$163 million per annum for first 10 years of production).

Average LOM annual EBITDA has come in at \$120 million (\$148 million per annum for first 10 years of production).

The study predicted pre-production capital expenditure of \$367 million,

plus \$26 million of contingency, however some wriggle room has been identified to these costs.

The capital payback period is expected to be only 3.6 years, which when taken into consideration of a 32 life-of-mine run, is pretty good in anybody's money.

Average annual production is projected to be 114,000 tonnes zircon, 439,000 tonnes ilmenite, and 30,000 tonnes of HiTi84 leucoxene.

"The main thing to come out of the Pre-Feasibility Study is that we have been able to firm-up the project's parameters," Sheffield Resources managing director Bruce McQuitty told *The Resources Roadhouse*.

"That includes our logistics chain for the products, so we now have a robust mine-to-market solution by identifying aspects people tend to overlook."
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A PFS tells a company more about a project than just digging up its value and selling it.

It explains how that is to be achieved by highlighting finer details such as how many trucks are required to shift products, how many kilometres of roads will need to be upgraded to take them and, most importantly identifying a port from which to export.



Sheffield is currently in negotiation with the Shire of Derby and the Department of Transport for access to the bulk-handling facility at the Derby Wharf, which would provide the ability, as a miner of bulk products, to get its products to market, which in the end is a very important part of what mining companies do.

Timing is also an essential element to any project and to be in the development and construction phase at present, given the lower scales of associated costs, is advantageous for the company.

"It certainly is, although having said that we didn't factor in current prices to our PFS," McQuitty said.

“We had to use estimates and quotes provided to us, so as we move into the Definitive Feasibility Study we expect we will see some more competitive pricings to work into our cost estimates.”

A project as large as Thunderbird is anticipated to be produces big numbers because it is going to be a big project with a very long mine life and anticipate big paybacks.



The company received some negative feedback in regards to costs in the PFS, particularly those for development capital compared to its Scoping Study, however, McQuitty remains confident when held up against mineral sands projects of similar scale, it does fall into line, especially when you take into consideration those projects were built during a boom time.

“We’re looking at building something of similar size in a time when materials and labour costs have become cheaper and waiting times have shortened,” McQuitty said pointedly.

“We will pick our timing for the development of the project in relation to the market forecasts.

“Currently we are receiving advice that suggests widening supply and demand gaps for both our principal products of ilmenite and zircon around 2018-2019.

“So at this stage our development schedule and targeted first year of production sit in very well with the timing of those predicted supply gaps.”

As impressive as the PFS results were they still require some fine tuning before Sheffield moves into its Definitive Study.

The update is to focus on three areas in particular, the first being a Resource update (due to come out at time of writing) that will form the basis for updated mining studies and mine scheduling.

The second is working on an option to upgrade the produced ilmenite to gain a better price on the market.

Sheffield believes it can produce a higher-grade ilmenite fetching around US\$199 per tonne versus the US\$155 per tonne that ran in the study for the non-upgraded, raw, ilmenite.

Thirdly, the company believes there is scope to greatly improve both operating and capital costs for the project.

“We are working on those three aspects and we expect that PFS update to be ready by the second half on this year,” McQuitty explained.

“We are confident Thunderbird is a project that deserves mining and we have been progressing the permitting in regards to Native Title and Off-take Agreements in conjunction with this Pre-Feasibility work.



“We are also still exploring it to some degree.

“We have completed three Resource upgrades on the project, including the maiden Resource, so we are looking at the fourth Resource for Thunderbird and we are still to close it off.

“What’s important now is for us to firm-up the high-grade zone in the up-dip region, because that is where we will be mining in the initial years during the payback period.”

It is important to recognise the important role zircon plays in the Thunderbird project.

As it stands currently, 64 per cent of the project revenues come from zircon, which sets it apart from other mineral sands projects whose principal revenue driver is ilmenite or ilmenite plus rutile with zircon as a by-product.

Thunderbird is a zircon project first with ilmenite-HiTi leucoxene playing a supporting by-product role.

“There aren’t too many other large zircon projects out there in the development pipeline that look as though they are going to come on stream in the near future,” McQuitty said.

“There doesn’t appear to be too many new discoveries being made that we can see, or are aware of, so Thunderbird is really the next one to be incubated and delivered into the production pipeline in two to three years’ time.

Although Sheffield’s focus is squarely on Thunderbird it caught the market’s attention recently with the identification of 12 substantial new nickel and gold targets on its Fraser Range project.

The tenements are within the northern foreland region of the Tropicana Belt adjacent to the Fraser Complex approximately 240 kilometres south of the Tropicana gold mine and 30km northwest of Sirius Resources' (ASX:SIR) Nova/Bollinger deposit.

Sheffield has identified five new nickel targets, only one of has been drilled, as gold was the principal focus of previous explorers as well as seven gold targets, which were defined by previous explorers targeting Tropicana style gold mineralisation.

"The early stage exploration over these tenements provides some well-defined nickel and gold targets demanding follow up work," McQuitty said.

"We have some very attractive targets there in the Fraser Range and, depending on availability of funds, we would very much like to continue to explore those"

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...The Short Story

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