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SHEFFIELD RESOURCES LTD (SFX AU, $0.84)

The Dampier Project hosts mineralisation over 60km
Could "Buckfast/Bohemia" be another world class monster?

- Our confidence in the potential for additional discoveries in SFX's 100%-owned Dampier Project has been reaffirmed with today's announcement of three new mineral sand discoveries, south of the Thunderbird project.
- The following plan, which maps total contained heavy mineral in drill holes, demonstrates that the deposits to the south (Buckfast and Bohemia) could be developing into a Thunderbird-sized orebody. In this report we speculate that the 2 deposits could join and contain a resource of over 1 billion tonnes. (The purple-coloured drill holes are the most strongly mineralised).

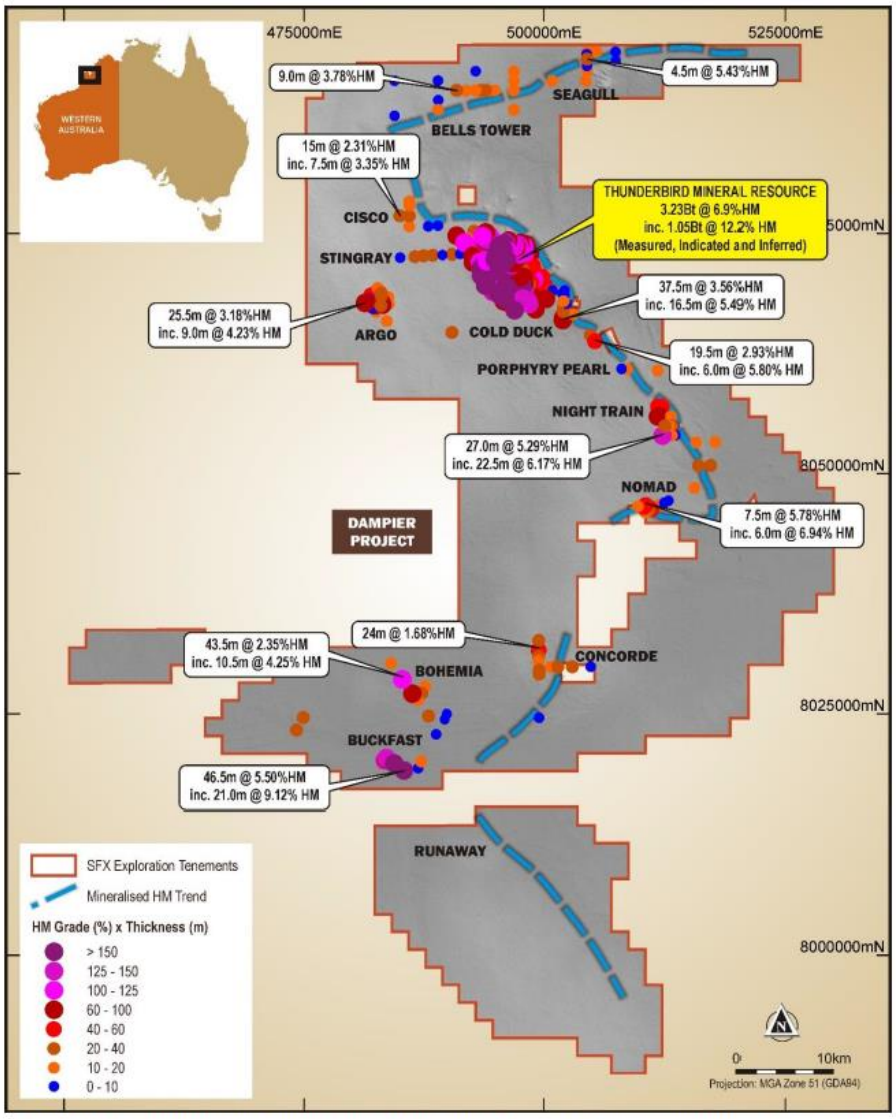

Figure 1: Regional drilling compilation showing grade times thickness[1] and prospect locations

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The detail

The Buckfast discovery:

- Located 13km south of the Great Northern Highway, and 50km south of Thunderbird.
- Exceptionally thick zones of mineralisation have been identified in a single drill section.
- The deposit is now being chased up-dip and possibly toward the Bohemia find.
- Significant results include:

> - **46.5m @ 5.50 % HM** from 57.0m (NLAC025), including **21.0m @ 9.12% HM** from 64.5m
> - **33m @ 4.00% HM** from 61.5m (NLAC023), including **21m @ 5.20% HM** from 66m
> - **37.5m @ 5.01% HM** from 67.5m (NLAC027), including **25.5m @ 5.74% HM** from 75m

- Based on the geometry described in SFX's announcement, Buckfast could already be a resource of 100mt (at a 3% cutoff grade) or 250-300mt at a 1% COG. But it is still very early days.
- We must now wait detailed mineralogical assessment of the mineral assemblage to obtain a grade estimate of valuable heavy minerals (VHM). SFX describes the assemblage as containing zircon, leucoxene, altered ilmenite and intercalated bands with iron oxide.

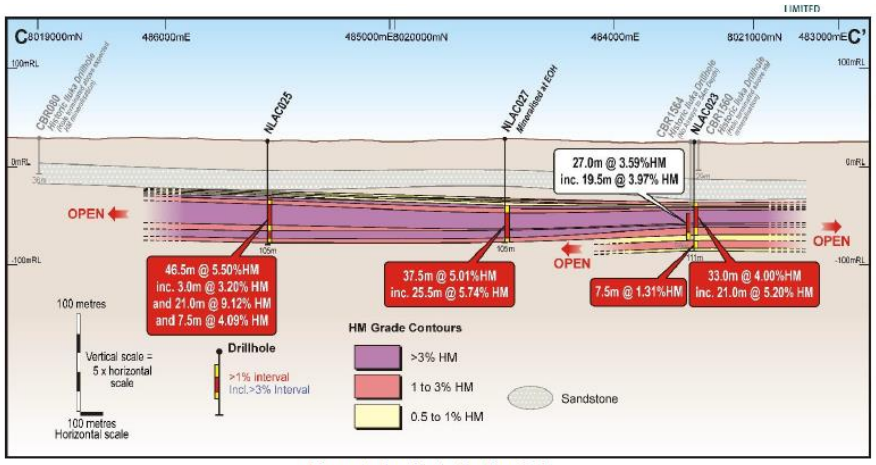

Figure 5: Buckfast - Section C-C'

- In section, we see that Buckfast does not appear to outcrop, and is overlain by perhaps 60-80m of barren overburden. Despite this, the thickness of Buckfast should make it available at a reasonably low strip ratio.
- Astonishingly the previous explorer (Iluka) completely missed Buckfast. This is a testament to the exploration skills held by SFX.

The Bohemia discovery:

- 5km to the north of Buckfast area some 7 drillholes are beginning to delineate another potential resource, called Bohemia. This was another "miss" by a previous explorer.
- Mineralisation is quite thick, as Buckfast (44 to 51m at a 1% COG) with two holes ending in mineralisation.
- HM grades appear to be lower than Buckfast, but it is still early days. Significant results include the following (at a 1% COG):

- **43.5m @ 2.35% HM** from 16.5m (NLAC018), including **10.5m @ 4.25% HM** from 25.5m
- **51m @ 1.85% HM** from 15m (NLAC017), including **6m @ 4.84% HM** from 18m
- **4.5m @ 3.11% HM** from 37.5m (NLAC019)

- SFX comment that the Bohemia assemblage has some similarity with the zircon-rich deposit, Night Train. VHM dominates the assemblage (implying low 'trash' minerals), and is made up of leucoxene, altered ilmenite and zircon. It is stated that the HM is generally free from iron coating (which can devalue a product, or require acid scrubbing).
- Importantly, Bohemia is very shallow.
- We pose the question: is Bohemia an up-dip extension of Buckfast? The next round of drilling will be very interesting.

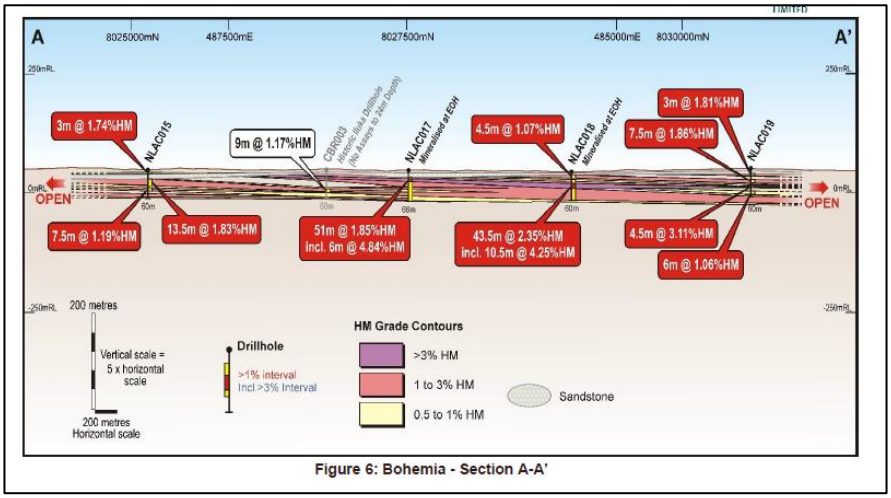

Figure 6: Bohemia - Section A-A'

Our view

- SFX has demonstrated remarkable success in its near-mine exploration efforts. For some 2 years we have been speculating that the Dampier Project, located on the fringe of the Canning Basin, could be the next world class mineral sands province. With exploration success at Night Train (in 2015) and more recently at Buckfast and Bohemia, this thesis is now without question. In 10 years a significant proportion of the world's zircon and ilmenite will likely be derived from the Dampier Project. Investors should now start to draw comparison with the huge deposits of the East Coast of Australia, the Perth Basin and perhaps even the very large deposits on the east coast of Africa. Many of these deposits are now mature and in decline (and many are closed).
- While none of the discoveries to date will change SFX's focus to bring Thunderbird into production, they do enhance future development options.
- In past research we have discussed the possibility of brining on a third mine at Night Train, which could deliver additional high quality zircon to the product stream.
- What if Buckfast/Bohemia is as big as Thunderbird? What then? We speculated above that Bohemia could be the up-dip extension of Buckfast. If that's the case, the area underlain by mineralisation could cover 50 square kilometres. Assume a mineralised interval of say 20 metres (conservative) and a density of 1.8, there could already be over 1 billion tonnes of resources. (As a reminder, Thunderbird contains a resource of 3.2Bn tonnes at a 1% COG).
- We note that SFX has recently applied for a further 600km^2 of ground prospective for mineral sand plays. The geologists haven't finished yet.

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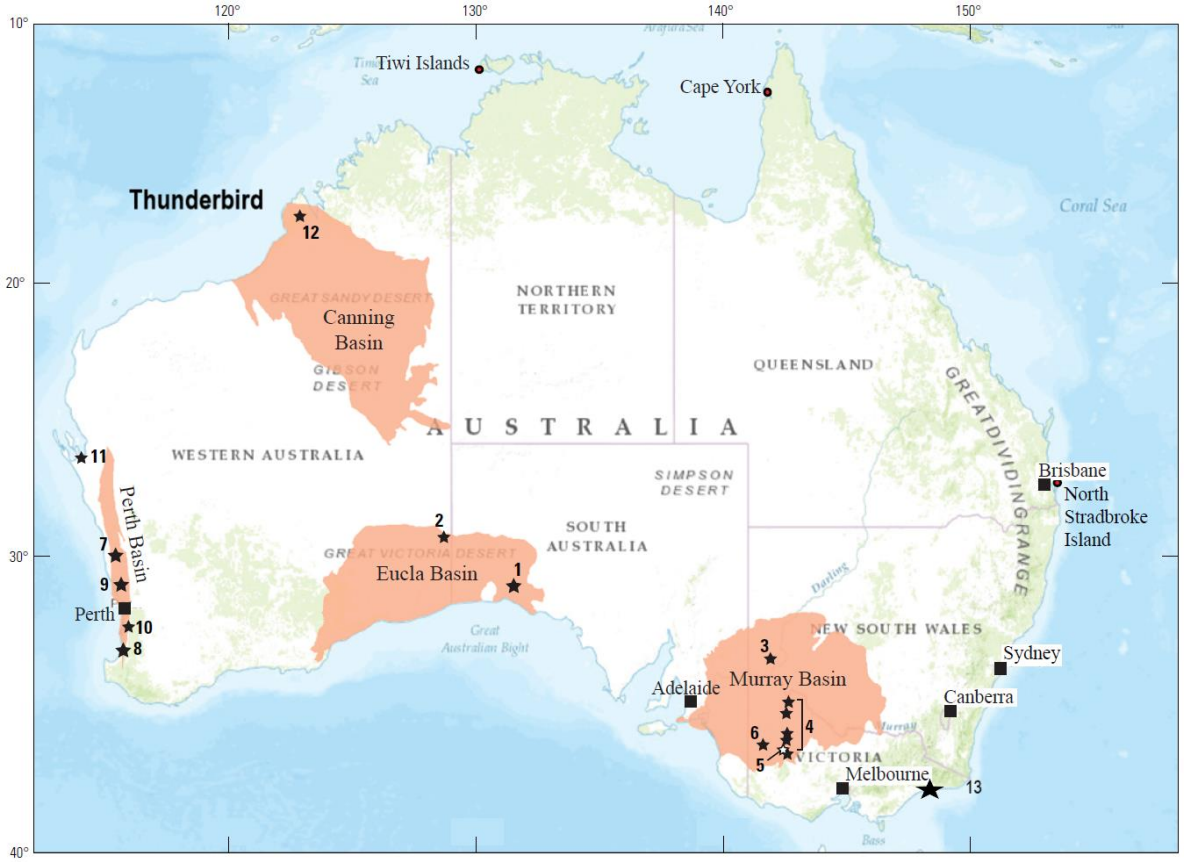
APPENDIX 1

From our August 2018 report

Thunderbird: the first economic discovery of mineral sands in the Canning Basin but probably not the last



Modified from "Deposit model for heavy mineral sand deposits in coastal environments", USGS 2014. See Appendix 1 for key to selected mineral sand deposits

Key to mines:

1. Jacinth-Ambrosia (Iluka). (Note incorrectly plotted on plan above. Should be further north)
2. Cyclone, Cyclone Extended and Monsoon (Diatreme Resources)
3. Ginkgo and Snapper mines (Cristal)
4. Elongate district with several mines, now closed, including Kulwin, Woomack, Rownack (Iluka)
5. Donald (Astron)
6. WIM 150 (Australian Zircon), Avonbank (WIM Resources)
7. Eneabba mining district (Iluka and Tronox)
8. Tutanup South mine (now closed, Iluka)
9. Boonanarring and Atlas (Image)
10. Keysbrooks (MZI Resources)
11. Coburn (Gunson)
12. Thunderbird (Sheffield)
13. Fingerboards (Kalbar)

The Thunderbird deposit is geologically unique. <<*Note added. With the recent discoveries, this might not be the case*>> Most mineral sand deposits are not very far from their origins, an active coastal fringe, where wave action produces a concentration of the higher density minerals, such as rutile, ilmenite and zircon, within their less dense host (typically quartz sand). The world scale mineral sands projects are typified by the coastal deposits of Eastern Australia, now largely exhausted, or sterilised by coastal development or national parks. Deposits of this type currently being mined are those of east Africa, stretching from the massive Richards Bay and Madagascan deposits controlled by Rio Tinto, and the extensive deposits of coastal India and Sri Lanka. All these deposits are just a million years old, or less.

Older shorelines have also been responsive for world class deposits. Examples would include those of the Perth, Eucla and Murray Basins (perhaps 2-50 million years old) located in Australia and the old coastal deposits of the eastern US (located in North Carolina, Virginia and Florida). These deposits are well explored, and mature. All have seen the best deposits extracted over the past 10-30 years.

We believe the Thunderbird deposit is unusual because of its significant age. It is hosted by the lower Cretaceous sediments of the Canning Basin and very much older than its Perth Basin neighbours: likely around 140 million years.

Enclosed within the so-called Thunderbird Formation (an element of the Broome Sandstone) is an unusually large, continuous, very-high grade (>7.5% HM) zone named the GT Zone. This Zone is up to 43 m thick (averaging 15 m) over an area at least 7.5 km × 4 km, strikes approximately north-south, follows the dip of the Thunderbird Formation and is open along strike. The GT Zone extends from surface to a maximum modelled depth of 126 m, the average depth to its top is 35 m and the average mineralised thickness is 16 m.

This high grade zone is interpreted to represent an internal structure to the mineralisation, perhaps a channel. The higher grades are not associated with unit thickening or a change in grain size, and are therefore interpreted to result from deposition in higher energy shoals off-shore influenced by inflow directions of heavy minerals source (e.g. rivers, floodplains). There is some thought that Thunderbird was formed in a similar fashion to the WIM150 deposits of the Murray Basin in Victoria.

The heavy minerals in the Thunderbird deposit are comprised of altered ilmenite, ilmenite, pseudorutile, haematite, goethite, leucoxene, zircon, rutile, anatase, and monazite. There are also very minor amounts (<2%), of tourmaline, spinel, staurolite and andalusite. At a median diameter of 57–90 microns, the valuable heavy minerals are finer-grained than most other Western Australian HM deposits. (Source: Boyd and Teakle, 2016)
The rocks themselves are deeply weathered, with minor quantities of the ilmenite having broken down to leucoxene and anatase with the remnant iron precipitated as the various types of hydrated iron oxides. The high proportion of haematite and goethite in the HM suite is predominantly a result of oxidation of titanomagnetite in the original heavy mineral assemblage as well as some contribution from the more recent weathering environment. This does result in some areas of re-precipitated iron oxide, but these are typically narrow and should represent few challenges to the miners. The weathering of the ilmenite has concentrated titanium at the expense of iron, enabling the production of higher grade, and therefore more valuable ilmenite.

Thunderbird is materially large. At a low cut-off grade (3% HM), the deposit contains some 92.6 million tonnes of contained valuable heavy minerals, within a total resource of over 3 billion tonnes. Within this is a higher grade resource (7.5% HM cut-off grade) of 50.4 million tonnes of contained valuable heavy minerals, largely of zircon and ilmenite. The economics of Thunderbird are enhanced with its very low strip ratio.

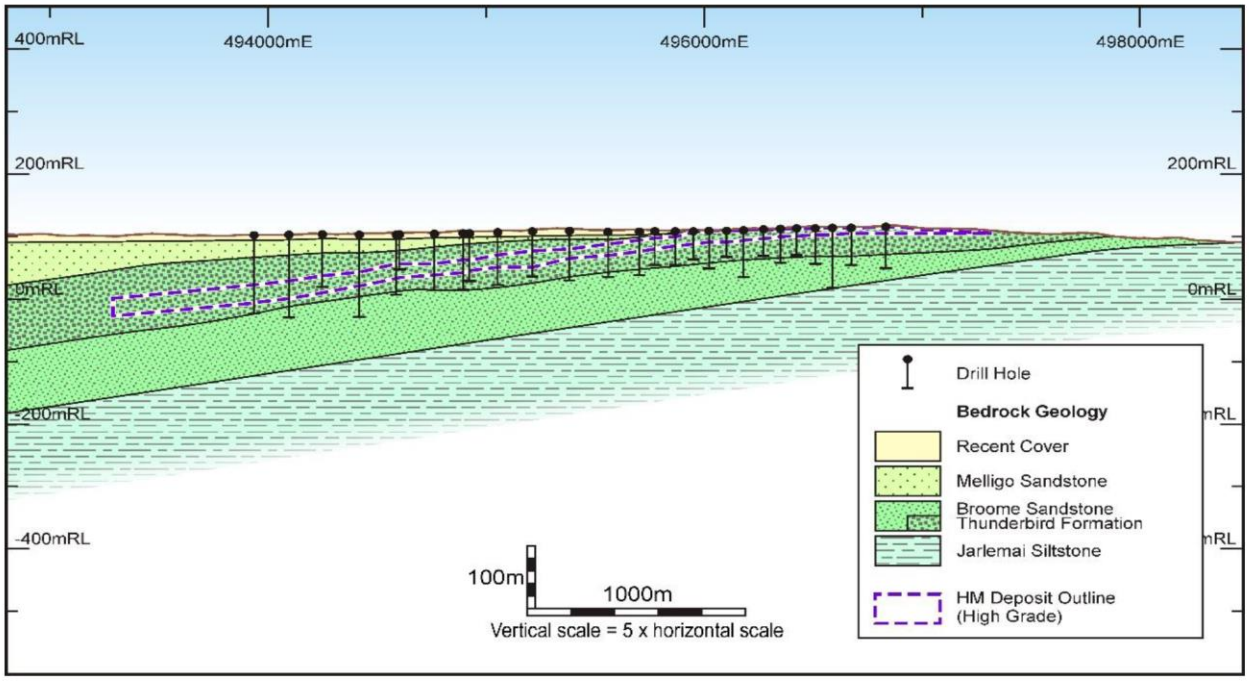


Figure 12-5: Cross-Section Showing Stratigraphic Units Drilled at Thunderbird

The exploration opportunity for Sheffield in the Canning Basin

There are excellent opportunities to identify additional heavy mineral sand deposits around the sub-crop of the Broome Sandstone in the Canning Basin. We are of the view that the Canning Basin will be one of the next global mineral sand provinces. By all measures, the Thunderbird deposit is world class. We see no reason why other satellite deposits will not be discovered in the area. It is certainly a compelling exploration opportunity, and to us it only seems a matter of time before another economic deposit is identified. SFX state that the prospective horizon extends for some 160km.

As highlighted in the documents attached to the Bankable Feasibility study, Sheffield geologists are starting to develop an understanding of the formation of the Thunderbird deposit. Exploration for new targets in the Canning might consider the following features:

- The geological contact between the Broome Sandstone and the overlying Melligo Sandstone, close to what might have been the Cretaceous palaeo-coastline.
- Positioning within the rift valleys (such as the Fitzroy Trough illustrated in the interpretation below), proximal to rocks of the Kimberley craton.
- Near surface concentrations of zircon and monazite. Thunderbird was originally found by radiometric geophysical methods reflecting the anomalous concentration of thorium with the heavy mineral suite.
- Repetitions of the higher-grade channel style mineralisation shown as the so-called GT zone within the massive Thunderbird deposit.
- The potential for high grade strand deposits higher in the stratigraphy.

The following structural interpretation of the north-western section of the extensive Canning Basin, highlights the opportunity to find a sedimentary/geotectonic environment which could be conducive to the accumulation of additional significant heavy mineral sand deposits.

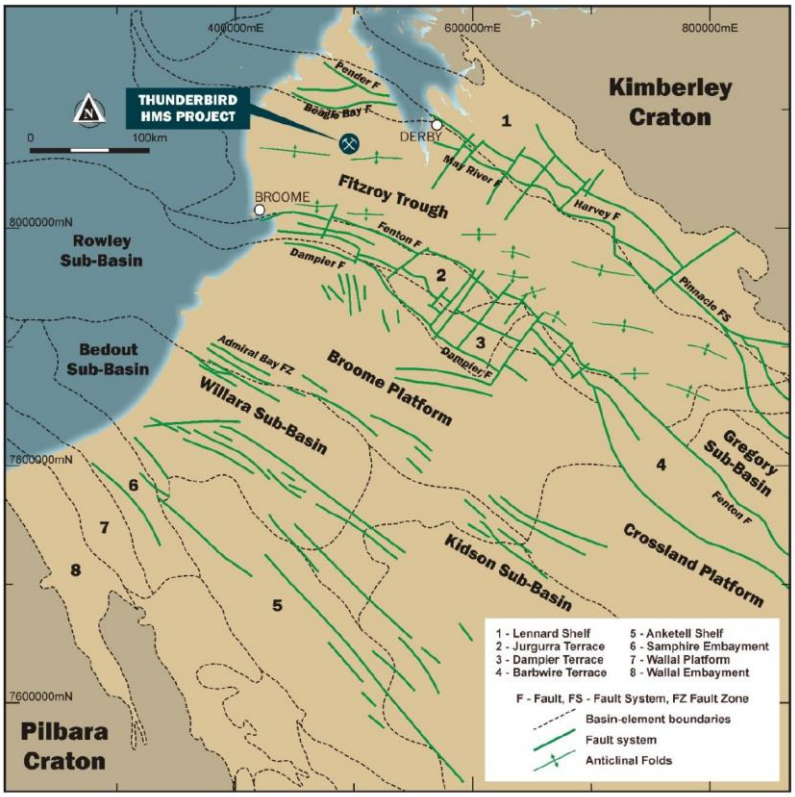


Figure 12-2: Canning Basin Structural Elements (After Parra-Garcia Et Al, 2014)

Source: Thunderbird BFS document 2016

We have been watching the exploration activities of SFX's competitors. Mineral sands-giant, Iluka, has been exploring the southern section of the Canning Basin. Following several encouraging comments made during 2016, and an extensive exploration drilling programme, Iluka announced in 2017 that it would relinquish some 90% of its tenement holdings. We note with interest, that Sheffield has picked up a number of the tenements relinquished by Iluka. To the best of our knowledge, SFX is now the only company exploring for heavy minerals in the Canning Basin.

Sheffield has released a summary of its exploration targets in the Canning Basin (SFX release 1 August 2018) in the lead-up to a reinvigorated exploration programme in the area. As shown in the figure below the activity will mainly be focussed on the mineralised interval of the Broome Sandstone, which hosts the Thunderbird orebody and the recent Night Train zircon discovery. Several of these targets had already been highlighted by SFX. Others are new.

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