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Spectrum Rare Earths Limited (SPX)

August 2015

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Spectrum Rare Earths Limited (SPX)

Company Shares Metrics	
Shares on Issue	176.72M
Share Price at 31 August 2015	$0.007
Market Capitalization	$1.24M
Financial Postion @ 30 June 2015	
Cash on Hand	$0.197M
Debt	$0M
Sept. Quarter Expenditures (5B)	$0.075M

Non-renounceable entitlement issue at A$0.004/sh

On 19th August 2015, Spectrum announced a 1:1 non-renounceable entitlement issue, issuing up to 176.72M new shares at A$0.004/sh to raise up to A$0.71M. The issue is not underwritten, and will be subject to a shareholder vote. In addition, the company will be seeking shareholder approval to issue a further 54.98M shares repay outstanding subordinated loans to directors for fees, and 9M share as compensation to various contractors. If fully taken up, the shares on issue would increase from 176.72M to 417.42M shares.

Valid exploration prospects need further investment

Since mid 2014, Spectrum has spent A$1.35M on exploration and metallurgical testing at Skyfall, and the results to date have to be described as encouraging. The meagre exploration spent to date has generated an exploration target of 17-21Mt at 0.4-0.6%TREO, of which 36-38% of the contained rare earths are magnet related, with forecast strong demand. The metallurgical testing indicate a path to market and a capital cost competitive with other rare earth projects, and of an order of magnitude within the reach of a small company.

Skyfall and Stromberg plant capital cost estimate looks realistic

We benchmark Spectrum's scoping study against Northern Minerals' Browns Range Definitive Feasibility Study. The Spectrum scoping study has costed the beneficiation and separation plants at A$81.72M or A$100.82M, for two flowsheets, including plant specific indirect costs and contingencies. This compares with the A$102M direct cost excluding contingency for the equivalent plant proposed for Browns Range. This would point to the final Definitive Feasibility Study cost of a Skyfall project being in the range of A$200-400M.

Skyfall and other exploration targets

Spectrum's rare earth exploration potential should be seen under three scenarios:

1. **What you see is what you get**. The mineralization of Skyfall as well as other targets (Largo, Knightfall) form an extensive, thin (1-4m) layer of rare earth mineralization rich in higher value rare earth elements, but which require cracking to recover the rare earths into a saleable product.
2. **Possible ionic clays targets**. The mineralization has elevated heavy rare earths and resides in a tropical region similar to where ionic clays are found in China, but metallurgical test work has found virtually no evidence to date. Ionic clays have been cracked by natural processes, and can be very low cost sources of the rare earth.
3. **Higher grade feeder zone**. This was the target of the one deeper hole drilled in 2014. The theory is that the surface mineralization has come from a deeper source, and that source is likely to be higher grade, and possible different mineralogy.

PROSPECTS WORTH MORE INVESTIGATION

Spectrum has focused on the Skyfall prospect since being granted access in 2013. Previous exploration at Quantum, Stromberg, and other prospects generated rare earth targets that are prospective for rare earths, but significantly smaller than Skyfall.

The company was granted land access to the Skyfall Largo lease (ELA27151) on 15th May 2013. Prior to that, Spectrum had conducted airborne radiometric surveys, and some on ground chip sampling, but major on ground exploration did not start until July 2013.

At 30th June, the company had A$0.506M in cash, to which was added A$1.4M from Widetop Mining at between 4.5 and 5cps in the December half of 2013, A$0.625M was raised on 16th June 2014 from asset sales, and a further A$0.8M at A$0.045/sh to investors in the September 2014 quarter.

The Skyfall exploration and metallurgical testing to date has been conducted on a very limited budget (ie A$1.35M on exploration and metallurgy from July 2013 to December 2014), and should be seen as a first pass in the assessment of the potential of both Skyfall, and the region.

Out of that work, the company has generated two major elements of data.

1. An Exploration Target
2. A Scoping Study and process flow sheet.

The combination of both these elements suggest that there is a target worth exploring for, and that if proven, there is a processing route to commercialization, at a capital cost that is competitive with other potential rare earth projects.

In addition, there remains potential for other exploration targets apart from the estimated Skyfall target, including the large Largo anomaly, deeper exploration for a high grade feeder zone, and potential ionic clay targets.

Overall, the exploration prospects identified to date have a number of very attractive characteristics:

1. The rare earth distribution is heavily biased to magnet related elements, which are forecast to experience strong demand growth (ie 8-12%pa to 2020 as forecast by IMCOA at July 2015 Argus Rare Earth Conference).
2. The mineralization appears to be a surface laterite and therefore very low cost to mine. Rehabilitation will probably be the largest mining cost.
3. Uranium and Thorium concentrations in ore are low.
4. The process flowsheet is likely to be relatively simple and conventional.

The capital cost estimates in the scoping study look realistic for the plant components costed. We are very reluctant to draw any conclusion on operating costs, until there is more clarity on actual life of mine head grades, concentrate grades and recoveries.

METALLURGY: A CRITICAL FIRST STEP IN EXPLORING FOR RARE EARTHS

Spectrum has conducted a number of metallurgical tests over 2014 to assess the processing characteristics of the Skyfall and Stromberg mineralogy, even though the exploration is still at a very early stage. This is consistent with rare earth exploration practice, where it is seen as very important to ensure that what is being discovered is actually worth exploring for.

Because of the number of rare earth projects being investigated in recent years, the consultants available to Spectrum have considerable experience in both the process routes available, and the estimation of cost. A number of projects are in the Bankable Feasibility stage, giving a high degree of visibility on component costs and final project costs.

The flowsheet design and costings have been compiled by Gavin Beer of Met-Chem Consulting Pty Ltd, based on test work largely from NAGROM, an organization that has tested probably all the Australian projects to concentrate stage or further, as well as a number of offshore projects. Gavin Beer has been involved in the detailed metallurgical work for Arafura's Nolan Bore and Peak's Ngualla projects.

That said, the processing results and the costings announced by Spectrum in its 10th July 2015 release, "Processing Study and Cost Estimates" should be seen for what it is, namely a first step in what is still an exploration story.

KEY CONCLUSIONS

1. The rare earth assemblage is relatively high value.
2. A processing route involving flotation, sulphuric acid cracking, leaching and solvent extraction recovering 43.1% to 62.9% of RE into final product. In its BFS, Lynas expected to recover around 61% into product.
3. The known Skyfall and Stromberg mineralization is initially relatively low in Uranium and Thorium, and the processing routes examined to date reduce U+Th to very low levels (1.3ppm and 0.4ppm respectively).
4. 28.3% of the final product from Skyfall is elements used in the high demand growth magnet industry. High demand growth tends to resolve any oversupply problems in favour of producers.
5. Initial costings of the concentrator and separation plant point to initial capex of A$81.7M or A$100.8M depending on scenario, and operating costs of around A$15/kg, for the processes being costed. While we expect additional costs, this starting cost base suggests that a final project has a good chance of being competitive with new projects outside China.

PUTTING THIS INFORMATION IN CONTEXT

1. The cost estimates are for those elements of the project that the consultants have visibility on, and exclude a number of cost items, which in sum would probably increase the overall projects capital cost by a factor of 2-4x, as discussed on Page 4.
2. The operating cost estimate exclude the mining, royalties, marketing costs and selling discounts, and general overheads. It would also be significantly impacted if head grades were closer to the lower exploration target grades (Page 5, 6).
3. The Skyfall and Stromberg test samples were composites from test pits, representing the material available for testing, rather than a representative sample of either project. The head grade of 0.95% REO is higher than the exploration target range of 0.4-0.6% REO published in the release of 8th August 2014. Additional exploration might reveal sufficient tonnage of 0.95% REO material to support a mine plan at that grade. Also, we note that diamond drill core loss tended to occur in sections of higher grade, so drill grades may understate in situ grades, which we discuss further on Page 13.
4. The metallurgical test work is still at a preliminary stage, and we would expect further refinement, particularly in the concentrating stage, with potential for improvements in concentrator recovery and concentrate grade. If a lower head grade were to be necessary, we would expect throughput and flow sheet changes to adapt to those grades.

CAPEX COMPARISON WITH NORTHERN MINERALS BROWNS RANGE (TABLE 1)

Northern Minerals have moved the Browns Range project from a scoping study in 2012 to a bankable feasibility study in 2015, and along the way, the capex estimates moved from scoping estimates of A$89M in 2012, to A$329.4M in 2015. The Browns Range scoping estimate excluded a number of costs (eg mining, tailings dam, overheads), and the estimate of indirect costs and contingencies related to only the costs estimated. As a result, the all inclusive DFS cost is 3.7x that of the scoping study.

Note that there was not a big difference between the Browns range PFS (A$313.7M) and DFS (A$329.4M). There was change within the cost breakdown, the biggest was the allocation of the PFS contingency out to the various component cost centres, as one would expect to occur.

We would expect to see the Skyfall capital cost estimate follow a similar path, but there are a number of reasons why the Skyfall costs will increase less than at Brown's Range:

1. The industry is more experienced estimating rare earth projects costs.
2. The Skyfall mine will be much simpler than the Browns Range open pit and underground combination.
3. The Skyfall concentrator is not planned to have magnetic separators.
4. The Skyfall ore is decomposed laterite, vs fresh underground ore at Browns Range, which will require more grinding.
5. Skyfall is a four hour drive from Darwin, the capital of the Northern Territory, and probably does not need an airstrip, nor a number of other cost elements that the more remote Browns Range project requires.

Against this, we note that the Skyfall separation plant will be processing 30Ktpa to 79Ktpa of concentrate vs Browns 16Ktpa, so we would expect more significant increases in that cost element as cost studies progress to PFS stage.

Table 1 Skyfall processing and cost metrics vs Northern Minerals

	NTU Browns Range Scope 3/12	NTU Browns Range PFS 6/14	NTU Browns Range DFS 2/15	SPX Skyfall Low Yield Scope	SPX Skyfall High Yield Scope
Ore Mtpa	0.750	0.504	0.585	0.450	0.450
Ore Grade % TREO	0.50%	0.73%	0.68%	0.95%	0.95%
Concentrate Recovery	87.7%	87.7%	87.0%	50.8%	74.2%
Concentrate Grade REO		20.0%	20.0%	7.2%	4.0%
Concentrate Ktpa		16.1	16.7	30.2	79.1
Tailings Grade % REO		0.093%	0.112%	0.501%	0.297%
Tailings Ktpa		487.6	568.3	419.8	370.9
Separation Plant recovery	94.0%	88.0%	93.0%	84.8%	84.8%
Product Grade % REO	99.0%	99.0%	52.1%	92.0%	92.0%
Product Ktpa		2.9	6.0	2.0	2.9
REO in Product Ktpa	8.0	2.84	3.13	1.84	2.69
REO Basket Value US$/Kg		36.57	36.57	31.35	31.35
AUDUSD		0.73	0.73	0.73	0.73
Recovered value A$/t ore		163	152	176	257
Gross value A$M		142.2	156.7	79.1	115.6
Selling Costs 30% of gross		42.7	47.0	23.7	34.7
Net Revenue A$M		99.5	109.7	55.4	80.9
Mining Costs A$M		33.3	39.2		
Concentrator A$M	24.0		23.8	13.3	16.0
Separation A$M		79.0	37.8	12.1	22.6
Shipping A$M		0.5	0.3	0.2	0.2
Site Services A$M		9.7	15.0	2.1	2.1
Total A$M		122.5	116.2	27.6	40.9
Capex A$M					
Mine	0.0	3.1	13.3	0.0	0.0
Concentrator	0.0	35.6	55.0	16.5	18.1
Separation	0.0	37.8	47.0	16.7	25.3
All processing plant	51.0	73.4	102.0	33.2	43.4
Infrastructure	12.0	130.4	120.0	7.3	7.3
General	0.0	0.0	7.4	0.0	0.0
Indirect	13.0	63.5	57.8	20.1	24.0
Contingency	13.0	43.3	28.9	21.2	26.1
Total A$M	89.0	313.7	329.4	81.8	100.8

Source: NTU, SPX, Rare earth prices as at 8th August 2015 from Asia Metals, AUDUSD is a Harwind assumption

WHAT IF THE HEAD GRADE IS 0.4-0.6% REO AS PER THE EXPLORATION TARGET?

The main driver of concentrator costs is the ore throughput, and the major driver of separation plant costs is the concentrate input, so if those rates do not change the costs will largely be unchanged also.

That means on an unchanged ore throughput, a lower head grade will result in less product and less revenue, impacting economics negatively, in a fairly straight line relationship. In reality, the project volumes would be reassessed, and the ultimate impact of lower grades may be offset in ways that we cannot estimate on the current information base.

OPERATING COST COMPARISON BETWEEN SKYFALL AND BROWNS RANGE

Table 2 Operating costs v Browns Range

	NTU Browns Range PFS 6/14	NTU Browns Range DFS 2/15	SPX Skyfall Low Yield	SPX Skyfall High Yield
Mining Costs	33.30	33.70	0.00	0.00
Mess costs for Employees	0.00	6.90	0.00	0.00
Labour	19.40	18.00	7.11	7.11
Power	14.30	14.95	3.15	3.57
Reagents	28.60	23.20	13.65	26.49
Consumables	10.60	7.20	1.73	1.73
Maintenance Materials	6.10	7.70	1.23	1.32
Transport	0.50	0.30	0.18	0.18
G&A	9.70	4.30	0.50	0.50
Total opex	122.50	116.3	27.56	40.90
Total opex excl mining	89.20	82.60	27.56	40.90
Source: NTU DFS March 2015, SPX Scoping release 10th July 2015				

Major differences between the more advanced Browns Range PFS/DFS estimates and those of the SPX Skyfall scoping study are across the cost categories. In some cases, there are just cost elements that have not yet been estimated (mining, tailings disposal, site administration). In other cases, the Skyfall project may well enjoy a competitive advantage.

Overall, we would expect an increase in Skyfall's A$M operating costs to cover the functions as yet uncosted (mining, tailings disposal), as well as the addition of additional overhead costs, and support functions.

At this stage, the orebody geometry is unknown, the head grade is unknown, and the actual ore throughput is also unknown. Likewise, the final recoveries, product specifications and marketing discounts are also unknown, so we are reluctant to comment conclusively on the all up operating costs at this stage.

In summary, we expect the Skyfall operating costs in total to be considerably higher than the specific but limited costs currently available, and the unit costs will depend on throughput and plant efficiencies.

Browns Range has operating costs of A$113M pa including A$33M pa for mining, and is planned to produce 3.13Ktpa of REO. In the current market, the selling prices are about the same on a basket of REO basis, and the low yield Skyfall case is expected to produce 1.84Ktpa or 58% of Browns Range, and would have close to 58% of its revenues. 58% of Browns Range operating costs is around A$67M pa. It would be reasonable to believe that Skyfall's final all up cash costs at 1.8Ktpa REO output would be less than that number.

SKYFALL MINING COSTS WILL BE MUCH LOWER THAN BROWNS RANGE

Skyfall as envisaged in the exploration target estimate is a flat lying, at surface, surface mining proposition which may not even require blasting. Browns Range will source a major part of its ore from the Wolverine underground mine, and the rest from 13:1 average strip ratio open cut sources.

We would expect Skyfall mining costs to be under A$5M pa ore to mill, significantly less than the A$33.3M pa for Browns Range.

SKYFALL POWER COSTS TO BENEFIT FROM SOFTER ORE

The drill core from Skyfall suggests that the higher grade mineralized zones are quite soft and would require no crushing and a modest grinding energy input. Of the A$18M pa Browns Range energy cost, A$6.03M is in ore processing, and we would expect Skyfall costs to be a fraction of that.

However, Browns Range has allowed for power use in mining, and in general site use, which is likely to be additional to the current Skyfall estimate.

REAGENT USE IS HIGHLY PROJECT SPECIFIC

Because each projects reagent use is so unique, there is very little point comparing projects at this level. We would accept the reagent costing as being relatively reliable, given the volume assumptions, and the current level of project knowledge.

Consumables include a large component that is grinding related, and Skyfall should benefit here from softer ore.

LABOUR: PROBABLE REQUIREMENT FOR ADDITIONAL COSTS

In terms of the number of employees, Skyfall has a simpler concentrator, simpler logistics, and a simpler to administer and supervise mining operation, so the total headcount is likely to be lower. However, the head count budget relates to the processes covered by the scoping study, and there will need to be additional costs for mine supervision, tailings disposal, infrastructure, and general administration. We would also expect to add in the Mess (catering) costs.

MINERALOGY: THE DRIVER OF FLOW SHEET DESIGN

In the case of the Skyfall prospect, the rare earth host minerals are crandallite family minerals containing some 87% of the RE, and xenotime, containing the balance (SPX release 8th October 2014). Xenotime is a rare earth mineral with a well understood process path. Crandallite is less mainstream. It is a secondary source of rare earths inside China, but Skyfall would probably be the first deposit developed where the primary RE mineral was of the crandallite family. This means there is scope for further concentrator recovery improvement from trialling new reagents.

The Skyfall mineralization also appears to be particularly fine (rare earth minerals 15 micron, vs Browns Range 63 micron), which can assist processing in the separation stage, but generally causes problems in the beneficiation or concentrator stage.

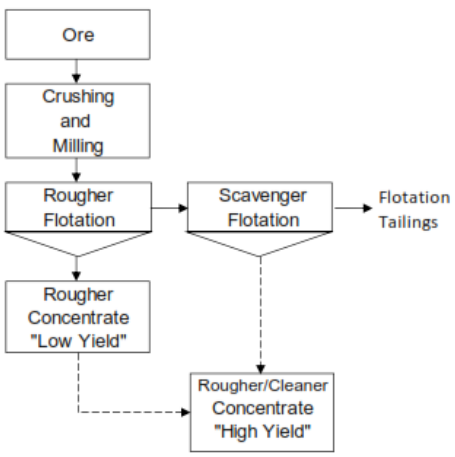
CONCENTRATOR: SKYFALL HAS A SIMPLER FLOWSHEET

The Browns Range concentrate is predominantly xenotime, with some florencite (a mineral of the crandallite family). The Skyfall concentrate is largely crandallite family (possibly florencite), with some (15%) xenotime (SPX release 8th October 2014).

Xenotime is a primary rare earth containing mineral with a well understood process path. Crandallite is less mainstream. It is a secondary source of rare earths inside China, but Skyfall would probably be the first deposit developed where the primary RE mineral was of the crandallite family. This means there is scope for further concentrator recovery improvement from trialling new reagents.

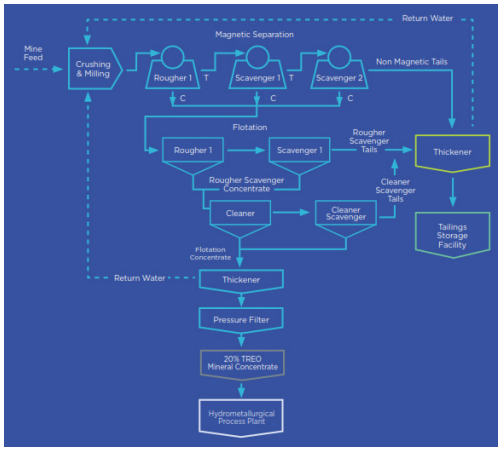
Initial test work has indicated that a single stage flotation circuit will recover 50% of the REO into a 7.2% concentrate, and that the addition of a scavenger flotation circuit would lift recovery to 74.23% but with a reduction in concentrate to 4.01%. The lower the concentrate grade, the more costly will be the separation stage, primarily because to the higher cracking acid requirement.

Figure 1 Skyfall concentrator



Source: SPX 10 July 2015 release

Figure 2 Browns Ra. concentrator



Source: NTU February 2015 DFS Study

The concentrator flowsheet option for Skyfall are shown in Figure 1, with the high yield option including the scavenger flotation circuit, and the low yield (but higher concentrate grade) option excluding the scavengers.

The Northern Minerals flowsheet (Figure 2) includes three stages of magnetic separators, which add additional capital and operating costs, as well as a scavenger flotation circuit. The Browns Range rare earths are xenotime related, which responds to magnetics, allowing that project to achieve the 87% recovery into a 20% concentrate.

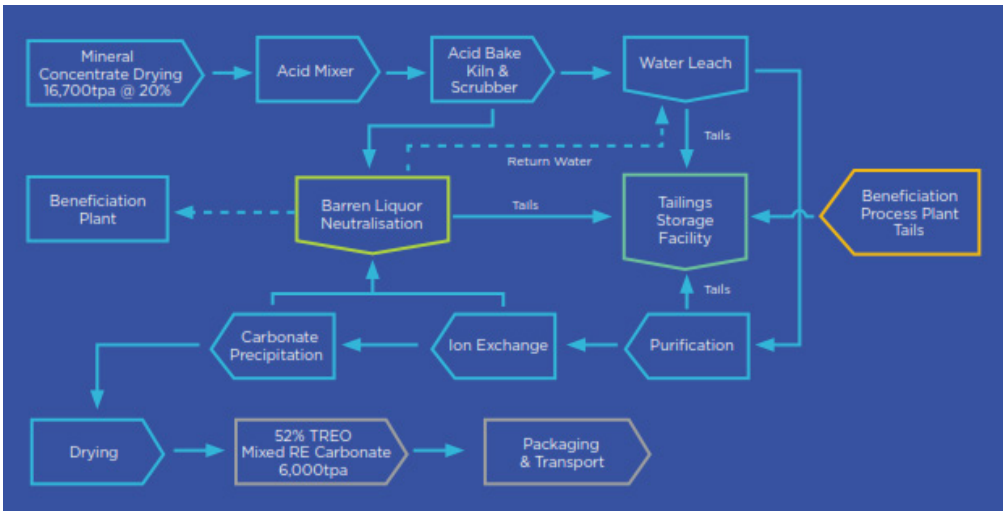
Magnetic separation has not assisted rare earth recovery from Skyfall ores in testing to date, and was not included in the initial flowsheet.

SEPARATION PLANT FLOWSHEET

As a general introduction, both plants follow a similar processing path in the separation plant. The concentrate is dried, and combined with sulphuric acid, and the resultant slurry is added to the kiln. The kiln temperature has to be tightly managed, because temperature determines how much of the rare earths are taken up into soluble sulphides, and how much of the gangue (waste) material is taken up into insoluble sulphides, which can be rejected to tailings.

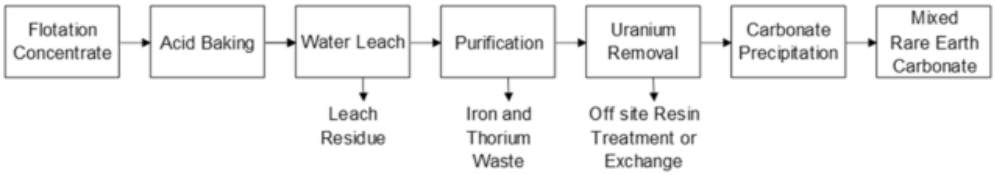
Both separation plants use a sulphuric acid cracking stage at elevated temperatures, followed by leaching, solvent extraction (ie ion exchange), to produce a rare earth carbonate containing 50-52% Rare Earth Oxides.

Figure 3 Browns Range separation plant



Source: NTU DFS February 2015

Figure 4 Skyfall separation flowsheet



Source: SPX release 10 July 2015

URANIUM - PROBABLY NOT ENOUGH TO BE A BYPRODUCT

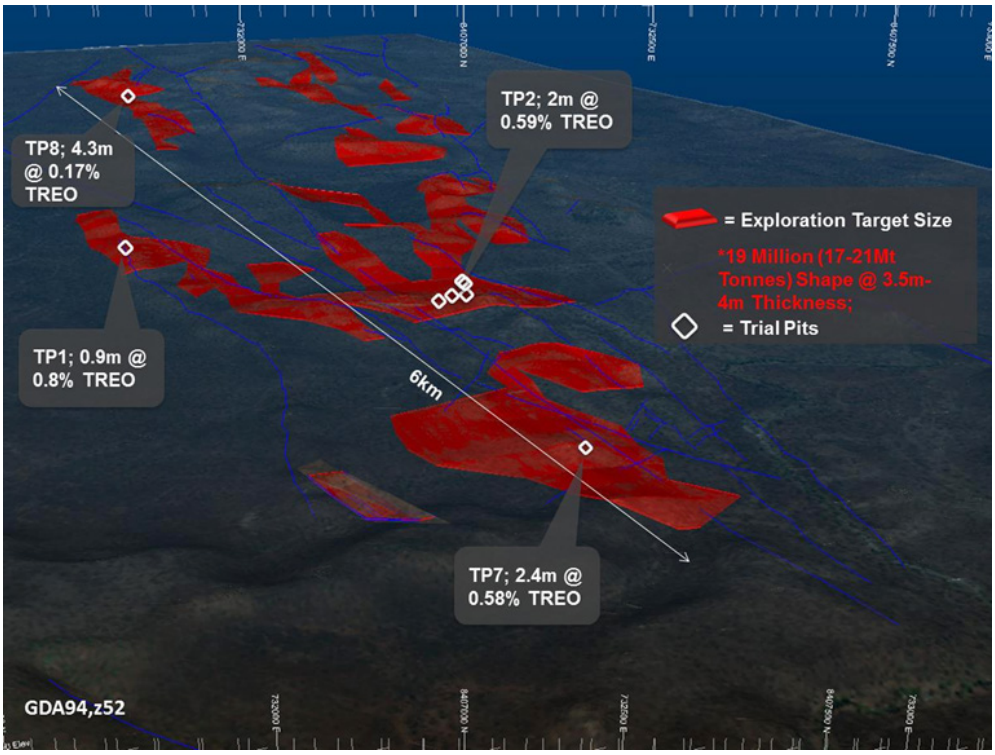
Both Browns Range and Skyfall deposits contain Uranium and Thorium. In the flow sheets of both projects, the thorium exits with the solid waste residue from the leach circuit. The Uranium is dropped out of the ion exchange part of the separation plant, and recombined with the tailings at Browns Range, while at Skyfall it is extracted as a product, but in volumes too low to be economic.

SKYFALL TARGET: 17-21MT AT 0.4-0.6%TREO, 36-38% MEU

The publication of exploration targets by listed Australian explorers is controlled by the JORC 2012 Code, representing an opinion by someone deemed under the Code to be competent to make such estimates, and has to be supported by data, which must be disclosed.

The Skyfall exploration target was announced in a release on 8th August 2014, and was compiled by the then managing director, Ian Bamborough, who was suitably qualified to make such estimates.

Figure 5 Determination of Skyfall exploration target



Source: SPX website as at 5th August 2015

The following explanation of the Exploration target is reproduced from the company's website, and it repeats the text of the 6th August 2014 release:

> Trial pit and drilling results to date now indicate an 'Exploration Target' of approximately 17 to 21 million tonnes @ 0.4%-0.6% Total Rare Earth Oxides (TREO). Of this, 36% to 38% are Magnetic End Use Rare Earth Oxides (MEU REO). The target is estimated to contain between 68,000 tonnes and 126,000 tonnes of rare earths (as defined by 2012 JORC Code).
>
> This 'Exploration Target' has been derived from a 3D modelling exercise of geology, field mapping, drilling (4 diamond holes on a typical cross section), trial pits (8 pit profiles), outcrop, cliff face exposures, sampling and geochemistry (700 samples). Drilling and sample pit spacing is noted in plan form in Figure 1. The potential quantity and grade is conceptual in nature, that there has been insufficient exploration to estimate a Mineral Resource and that it is uncertain if further exploration will result in the estimation of a Mineral Resource.

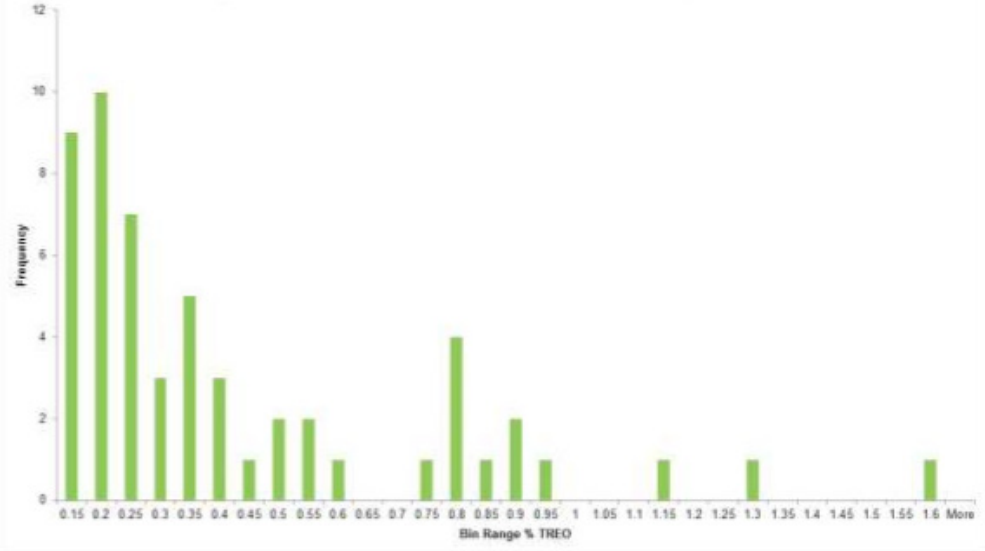
Table 3 Basis of grade estimate in the Skyfall exploration target

Activity	TREO %	MEU TREO %	HREO /TREO %	Th ppm	U ppm
Drilling to Aug.	0.29	36	29	12	55
Trail Pits 1-8	0.44	38	38	6	36
All Drilling & Pits	0.35	37	3	7	34

Source: SPX release 6th August 2014

Table 3 above is the weighted average of the total rare earth oxides from all drilling and pitting activities a Skyfall, and Figure 6 shows the distribution of drilling and pitting grades, with both data sets including results to August 2014, using a 0.1% TREO cutoff.

Figure 6 Grade distribution of drilling and pitting to August 2014



Source: SPX release 6th August 2014 exploration target release

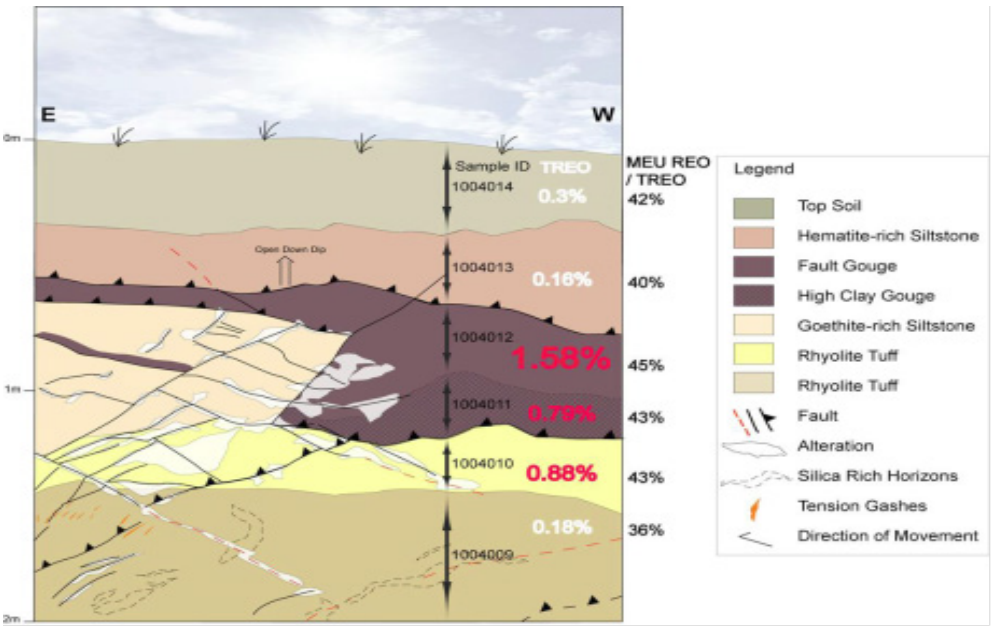
Drilling since August appears to confirm the grade distribution seen in Figure 6, with a range in grade from 0.12% TREO (using 0.1% TREO cutoff) and a high of 0.61%. The raw data is shown in Table 6. We note that diamond drilling may under report grade as discussed below (Page 10).

Table 4 Indication of target estimation parameters

	Length Km	Width Km	Thickness m	SG t /cm	Factor	Expln Target Mt
Stromberg	2.3	0.1	3.5	2.8	67%	1.5
Stromberg	0.61	0.1	3.5	2.8	100%	0.6
Skyfall	6.0	0.5	3.5	2.8	67%	19.6

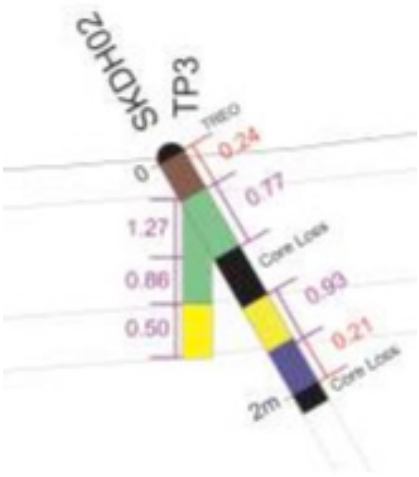
Source: Harwind estimates

Figure 7 Section through Trial Pit 2 (TP2)



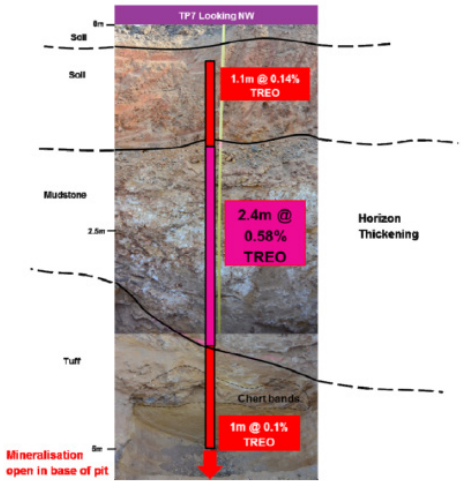
Source: SPX release 24th March 2014

Figure 8 Trial Pit 3 vs a matching drill core which under reported



Source: SOX release 28th July 2014

Figure 9 Section through Trial Pit 7



Source: SPX release 6th August 2014

Table 5 Summary of Trail Pit results

Trial Pit	From m	To m	Interval m	TREO %	MEU / TREO %	HREO / TREO %	Easting	Northing
TP1	0.2	2.0	1.8	0.17	29	64	730635	8408538
TP2	0.0	2.0	2.0	0.59	44	34	731730	8408390
TP3	0.4	1.8	1.4	0.93	44	16	731722	8408380
TP4	0.6	1.5	0.9	0.20	36	8	731754	8404429
TP5	0.0	2.0	2.0	0.66	42	32	731850	8408503
TP6	0.0	1.8	1.8	0.43	34	55	731849	8408504
TP7	1.6	4.0	2.4	0.58	38	47	732234	840758
TP8	0.0	4.3	4.3	0.17	31	47	729132	8411163

Source: TP1&2 24th March 2014, TP2-6 28th July 2014, TP7,8 6th August 2014

DIAMOND DRILLING MAY UNDER REPORT GRADE

The average grade of the trial pits was 0.47% TREO (Table 5) vs 0.28% for diamond drilling (Table 6), and probably more significantly, Trial Pit 3 was significantly higher grade and more continuous that the results from diamond drill hole SKDH02 (Figure 8). The inconsistencies have two elements:

1. The core lost in the diamond drill hole is likely to have contained grade.
2. The higher (green) drill intersection grading 0.77% REO is significantly lower than the 1.26% REO seen in the pit on the same horizon. Alternately, the lower (yellow) drill intersection of 0.93% REO is higher than the pit at the same horizon (0.5% REO). There appears to be an inconsistency, which may be due to very high variability within the deposit (pit and drill hole sampling different parts of a variable system), or the drilling is not collecting a representative sample of the in situ mineralization.

The metallurgical test work noted that the rare earths report largely to the finer fractions of the samples, and in pit sampling (eg TP2 Figure 7) indicated that the best grade was in the fault gouge and high clay gouge, both of which could be susceptible to being flushed out of the drill core by drilling fluids.

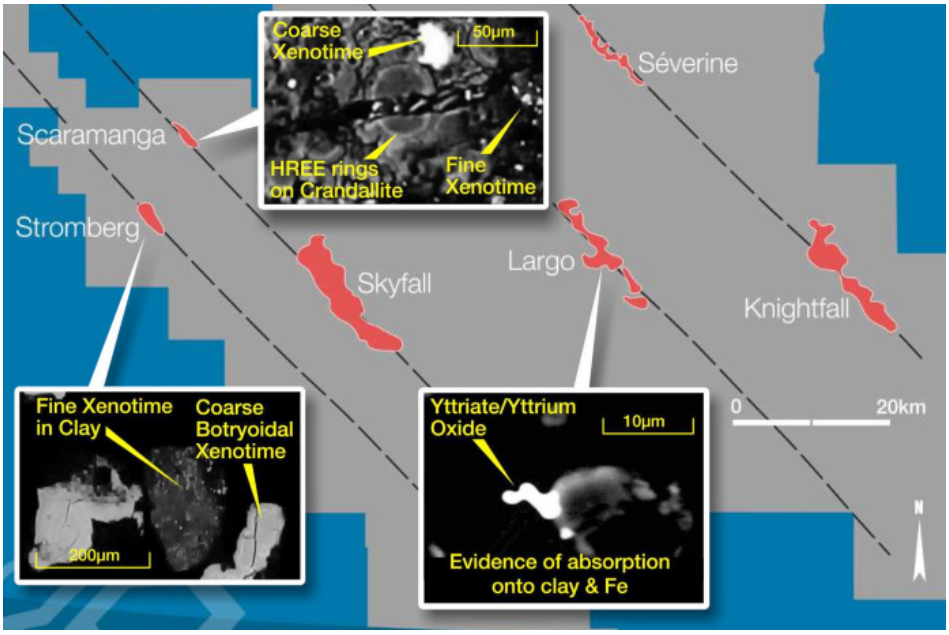
Table 6 Summary of diamond drilling results

Hole	From	To	width	TRE 0%	MEU REO/ TRE 0%	HREO/ TREO %
SKDH01	0.0	1.0	1.0	0.14	38.0	27
SKDH01	1.0	2.0	1.0	Core	Loss	.
SKDH02	0.0	1.0	1.0	0.56	39.0	14
SKDH02	1.0	1.5	0.5	Core	Loss	.
SKDH02	1.5	2.4	0.9	0.61	42.0	32
SKDH02	2.4	2.6	0.2	Core	Loss	.
SKDH02	2.6	3.8	1.2	0.16	30.0	86
SKDH02	3.8	5.8	2.0	Core	Loss	.
SKDH02	6.3	7.2	0.9	Core	Loss	.
SKDH02	7.2	7.9	0.7	0.28	21.0	73
SKDH02	8.4	9.2	0.8	0.10	15.0	83
SKDH03	0.0	1.0	1.0	0.39	40.0	6
SKDH03	1.0	1.5	0.5	Core	Loss	.
SKDH03	1.5	2.2	0.7	0.45	47.0	6
SKDH03	2.2	2.5	0.3	Core	Loss	.
SKDH03	2.5	4.6	2.1	0.29	42.0	66
SKDH03	4.6	5.1	0.5	Core	Loss	.
SKDH03	5.1	7.1	2.0	0.47	26.0	69
SKDH04	0.0	2.0	2.0	0.27	38.0	12
SKDH05	0	0.8	0.8	0.12	39.9	
SKDH05	1.2	2	0.8	0.12	38.4	
SKDH06	2.4	4.4	2	0.29	36.0	
SKDH06	0.5	2.2	1.7	0.27	39.6	
SKDH07	10	11	1	0.17	32.1	
SKDH07	1.6	2.2	0.6	0.16	31.3	
SKDH07	7.9	8.7	0.8	0.12	43.5	
Average			1.2	0.28	35.49	

Source: SPX various drilling updates

REGIONAL EXPLORATION POTENTIAL

Figure 10 Other rare earth targets in region



Source: SPX presentation to AusIMM Critical Materials conference 4th June 2013

The Spectrum exploration ground contains a number of exploration targets apart from Skyfall. Skyfall appears to be the largest target as measured by geochemical and geophysical signatures, and appears to be the richest in magnet elements neodymium and praseodymium. The other deposits are richer in yttrium, and in specific heavy rare earth elements.

The variation from deposit to deposit in rare earth element mix and in host mineral suggests multiple host sources and/or enrichment mechanisms. Until the genesis of these targets are better understood, there is always scope for a positive exploration surprise.

Table 7 Rare Earth assemblages at different prospects

	Stromberg	Scaramanga	Largo	Skyfall	Skyfall Concentrate
La2O3	0.0%			8.0%	5.2%
CeO2	0.0%			26.0%	22.0%
Pr6O11	0.0%			4.0%	3.8%
Nd2O3	1.0%		8.0%	18.0%	18.6%
Sm2O3	1.0%			5.0%	4.4%
Eu2O3	0.0%		2.0%	1.0%	1.1%
Gd2O3	3.0%			6.0%	5.4%
Tb4O7	1.0%		2.5%	1.0%	0.9%
Dy2O3	7.0%		10.8%	6.0%	5.0%
Ho2O3	2.0%			1.0%	0.9%
Er2O3	5.0%		4.0%	2.0%	2.5%
Tm2O3	1.0%			0.0%	0.3%
Yb2O3	5.0%			2.0%	1.7%
Lu2O3	1.0%			1.0%	0.2%
Y2O3	73.0%		30.0%	27.0%	27.9%
Thorium ppm	4.3	6.2	2.8	1.9	

Source: SPX presentation to Ausimm Critical Materials Conference June 2013

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