Single-minded approach to rare earths offers compelling proposition to large investors

Peak Resources Limited (ASX: PEK) is a company that I've always liked as I found that management has a single-minded approach to developing the Ngualla project as well as very clear communications with stakeholders, which makes Peak's proposition compelling to large investors. Consequently, the project has managed to attract strategic partners including Appian Natural Resources Fund (Appian) and the International Finance Corporation (IFC).

In July Peak received its A$1.3m stage 2 investment funding from "Appian" and IFC, which will be used to complete the bankable feasibility study by 1Q17.

Over the second quarter, Peak continued to advance the project. The final pilot plant of the three stage-process has now been successfully commissioned and the piloting facility is now underway. In addition Peak has identified a number of potential sites in Europe for a rare earth refinery which is expected to be close to transport and key infrastructure to enable the supply of reagents.

From a regulatory perspective, the Company's ESIA Scoping Report has now been received from the National Environment Management Council (NEMC) in Tanzania. This is an important milestone as acceptance of the NEMC is necessary for the issuance of an Environmental Certificate (EC), which is in turn is needed to obtain a mining license.

We expect that when the Company reveals their third quarter activity that there will be clarification on whether a new

investor is expected to come on board as well as whether management has been able to secure off-take agreements with strategic partners. The Company's share price has come off around 15% over the last quarter and 5.36% since the beginning of September and we feel that clarity on both these issues are expected to restore investor confidence.

Rightsizing as a Prelude to Project Liftoff for Peak Resources

For those needing reminding, Peak Resources Ltd's (ASX: PEK) main asset is the Ngualla Rare Earth project that is located in southern Tanzania, some 147 kilometres from the city of Mbeya on the edge of the East African Rift Valley. The project is centred upon the Ngualla Carbonatite and was prospected for phosphates in the 1980s by a joint Tanzanian-Canadian university team. The rare earth element (REE) component is a relatively recent discovery with Peak having identified this in 2010. In the company's opinion it is one of the highest grade of the large undeveloped rare earth deposits in the world.

Premises of the Revised PFS

A couple of weeks back Peak came out with its long-awaited revised PFS. In this day and age of "rightsizing" of projects for the new exigencies the "updated PFS" is becoming a more regular feature. While that is one of Peak's motivations another is that it has rethought several of its key premises

and changed it technological focus and as well as its processing location. A key element of the revised PFS involved a focus on the production of Neodymium and Praseodymium to meet demand for high powered permanent magnets.

With a focus on Neodymium and Praseodymium, the Study was based on extensive metallurgical flow sheet development work and pilot plant programs completed since delivery of the PFS The study also included engineering simulation and mass balance modelling conducted in conjunction with lead engineers, Amec Foster Wheeler.

The base-case scenario envisaged production of approximately 2,300 tonnes per annum of Neodymium and Praseodymium rare earth oxide, 250 tonnes per annum of mixed Samarium, Europium and Gadolinium Rare Earth carbonate and 5,900 tonnes per annum of Cerium/Lanthanum carbonate. Production forecasts are based on the weathered Bastnaesite Zone Mineral Resource estimate at a 1% Rare Earth Oxide lower grade cut-off (Measured and Indicated portions only).

The Process

It would be useful to expand on the new process which the company sees as a key factor in reducing opex. The previous PFS leach recovery flowsheet was based on treating a medium grade (~17% REO) concentrate with a high content of acid soluble iron. A “Double Sulphate” route was employed to reject the dissolved iron whilst increasing the Rare Earth concentration in the feed to the solvent extraction (SX) separation feed solution. The new scenario employs Alkali Roasting which is a four-part process designed to eliminate the low value Cerium component early on. The Alkali Roast Process has been developed and optimised for Ngualla’s concentrate at both Nagrom and ANSTO test facilities and has been demonstrated at bench scale as a viable flowsheet.

The key advantages are:

- Reduced plant capital cost through a smaller plant of modular design
- Lower operating costs due to reduced reagent consumption
- Focus on the extraction and recovery of the high value magnetic metals praseodymium and neodymium
- Significant reduction in the extraction of low value cerium, further reducing reagent costs in the leach recovery circuit and also the size of the downstream separation plant
- Minimises the extraction of deleterious elements thereby simplifying the purification process

These four phases are:

Alkali Roasting – The bastnaesite concentrate is mixed with a common alkali and roasted in a standard tube furnace at approximately 700°C for one hour. This is a dry, free flowing process in contrast to the “sticky” acid baking process employed for monazite or xenotime hosted rare earth concentrates.

Water Wash – The fluorine present in the bastnaesite, which would be problematic to downstream purification and separation processes, has been converted to a soluble form during the alkali roast process and is removed using a simple water wash. The filtered solid is then suitable for selective leaching.

Selective Leaching – A low strength (<1%) hydrochloric acid leach selectively targets the desired high value rare earths (neodymium and praseodymium) whilst rejecting large amounts of the low value rare earth cerium along with gangue elements such as iron. The low leach temperature of 80°C and mild acidity means that low cost polymer tanks can be used both in the pilot plant and on a commercial scale.

Purification – Residual leach impurities are removed by precipitation using lime slurry. The waste precipitate is

removed from the solution using simple filtration. The filtrate is depleted in cerium but high in neodymium and praseodymium and is suitable for direct feeding to the SX Separation circuit.

ANSTO has been selected for the piloting of approximately two tonnes of high grade (>40% REO) concentrate produced from the beneficiation pilot plant. The pilot plant setup at ANSTO is nearing completion.

Rightsizing the PFS

The Study has updated operating costs to US$97 million per annum, an 18% reduction (US$21 million per annum) compared with the PFS. The operating cost reductions have been achieved through optimisation of the flowchart using the aforementioned Alkali Roast process.

Capex was also reduced by just over 10% from $367mn to around $330mn. This still contains a mighty contingency factor which in these days of mining cost deflation would hopefully come down of be eliminated. Our back of the envelope estimate of how this might be apportioned looks like:

This is not the end to potential Capex reductions as a number of capital cost items currently included in the revised Capex estimate (Power Plant Gensets US$8mn, Accommodation Camp US$12mn and Mining Fleet US$10mn) will be reviewed as part of the Bankable Feasibility Study. The company claims that It is likely some or all of these capital costs could be moved into operating costs through Build, Own, Operate, Transfer (BOOT) style contracts. The site layout is shown below:

We gather the idea is that there will be some competition in European circles to achieve the plant siting in particular countries which should expedite the financing of that portion, leaving the company with the task of funding the minesite via

offtakes. We would note the past history of the Japanese (JOGMEC) having funded REE exploration in East Africa. If one combines output from Ngualla with that of Lynas, then the Japanese would be pretty much free of Chinese dependence in the key magnet REOs.

The Resource & Mining Inventory

The latest total Mineral Resource estimate for the Ngualla Project using a 1% REO cut-off consists of 214.4 million tonnes at 2.15% REO, for 4,620,000 tonnes of contained REO. Included in the total Mineral Resource is the weathered Bastnaesite Zone which forms the core of the development study. At a 1% REO lower grade cut-off the Mineral Resource estimate for the weathered Bastnaesite Zone is 21.3 million tonnes at 4.75% REO, for 1,010,000 tonnes of contained REO.

The improved mine plan included a Mining Inventory which was essentially the material within the pit-shell outline.

This is shown below:

As can be noted the grades are exceptionally high within the pit-shell to maximize upfront revenues. It’s worth noting that, as well as being high-grade, Ngualla’s rare earth mineralisation has a high proportion of the important permanent magnet metals, Neodymium and Praseodymium, a significant advantage over other rare earth deposits.

Catching Some Big-Fish Partners

The winnowing of the Rare Earth space has meant that the few players standing are generally those that have found credible partners.

In the case of Peak, its strategic partnership is with the

resources fund manager, Appian Natural Resources Fund LLP and the International Finance Corp. The latter in particular is quite a stamp of approval as this supranational investment fund backs very few mining ventures and has backed no Rare Earth ventures until now.

The first part of the relationship was put in place in February of 2015 as part of a transaction amounting to a total of AU$31.8mn. The goal of this was to finance the BFS. It was composed of:

- Stage 1: received AU$20mn
- Stage 2 & 3: to be received AU$11.8mn

The transaction involves staged investments at different levels of the project structure with Appian and IFC are investing on an 80:20 basis.

The arrangement (as visualized in the chart below) is that these partners have a total stake of 19.99% in the master listed vehicle, Peak and then 37.5% in the operating subsidiary, PAM and on top of this a 2% Gross Smelter Royalty.

These investors have formed a partnership to invest in African projects with Peak being the lead target at this time. The other investment they have made together is the Burkina Faso gold play, Roxgold (ROG.v).

Peak sees the partners as collaborative and long-term. We might also add that having the IFC is somewhat of a guarantee that one might have more “consideration” from local administrations due to the organisation’s international importance to emerging economies.

Conclusion

In Rare Earth circles these days, it is not only the quality of a company’s deposit that it is important, but also the

quality of the company it keeps. Peak has bagged heavyweight shareholders in the form of Appian and the International Finance Corporation. This is a mighty endorsement in a mining sub-space where many have spoken of strategic investors but few have been able to actually get them onto their share registers. In Peak's case they are present at both the listed vehicle and the project levels.

In summary certain fundamental geological aspects offer distinct advantages for development over other rare earth projects. These include:

- large size of the deposit
- outcropping high grade mineralisation amenable to open cut mining with low strip ratios
- favourable mineralogy amenable to a relatively simple, low cost processing route
- extremely low uranium and thorium levels

Again, in Peak, we find a case of "hare & tortoise" with a below-the-radar REE hunter moving further down the road to the end goal, verily as some of the household names of the REE space fold up their tents for the last time having burned through enormous piles of money with nothing to show. Instead the company has spent the "downtime" of the last two years, proving up its resource and getting its thoughts in order for a cogent production plan. With the team in place and the reformed capex plan in hand, the all-important funding phase begins.

To access the Hallgarten & Company research report titled – **Peak Resources: Updated PFS puts African REEs in Picture** – click here

Choosing the “Rocky” Road to Rare Earth Production

Here at **Investorintel** we often muse about what can be salvaged from the wreckage of Molycorp and while opinions differ wildly on the residual value of the hardware and real estate (not to mention the intellectual property) there are some assets that were embedded at Molycorp that are infinitely transferrable and indeed have already been transferred.

It was a very interesting move to see Rocky Smith captured by Peak as Chief Operating Officer – Development. This became effective from the 5th of January 2016. He was previously the Managing Director of Molycorp’s Mountain Pass Rare Earth complex from July 2009 to August 2015. Essentially Peak has picked up one of the few people with current experience of practical, specialist and technical rare earth operations.

His skillset span management, operations and engineering. Most recently he was responsible for operations at Molycorp’s mining and processing site at Mountain Pass where he managed 500 employees and an annual operational budget of in excess of US$150 million. He recruited, developed and led the team responsible for the implementation of the redesigned and expanded Mountain Pass operation. His work included the establishment of management systems, debottlenecking and the delivery of expansion programs which boosted production capacity by 230% over three years.

Between 1989 and 2000 he worked for FMC Corp and between 2000 and 2008 for the Talc miner, Barretts Minerals.

Before that I worked with Eti Soda in Beypazari, Turkey as a technical expert on a soda ash plant start up in 2009. From 2000 to 2008 he was employed by Minerals Technology at their Barretts Minerals property (a talc mine) in Dillon, Montana,

most of that time as the Plant Manager with responsibility for everything from the mine thru the facility. From 1989 thru 2000 he worked for FMC, first in gold at Paradise Peak as Chief Metallurgist and then Plant Superintendent, then he moved to the Green River site and again worked as Technical Superintendent for the site and then as an Operations Superintendent for one of their large natural soda ash plants.

In the range of metals dealt with he has also worked in uranium, vanadium, gallium, germanium and base metal sulphide flotation recovery.

He holds a Bachelor of Science degree in Chemistry and has over 35 year's operations and senior management experience in the mineral processing sector. He has relocated from the United States to Perth, Western Australia.

The number people on the planet, who are not Chinese, that know how to put together the soup to nuts of Rare Earths production can be numbered on one hand (and of someone whose lost a few fingers..) so Peak have bagged themselves someone with a "rare" skillset.

Ngualla

Peak's sole focus is the Ngualla project in Tanzania which it is pursuing in conjunction with its partners Appian and IFC. Ngualla is a large high-grade rare earth deposit, particularly gifted in the magnet metals neodymium and praseodymium. The PFS mooted capex of around US$367mn, including 30% (US $85 million) contingency.

Peak has commenced the Bankable Feasibility Study for the Ngualla Project and has appointed AMEC Foster Wheeler as the lead engineer for the study. Early indications are that a rejigged scenario for the production process due out in coming weeks could show a sizeable reduction in the previously mooted

capex.

Prepping the Marketing Effort

Also in the first few weeks of the New Year, Peak announced that Michael Prassas was joining as Executive General Manager – Sales, Marketing & Business Development. He had previously been Global Account Manager for Automotive Catalysis and Sales Manager – Rare Earth Systems for leading global chemical company Solvay. That Belgian group had acquired Rhodia-STER, the large French REE trading house (and chemical company) in 2011.

He was at Solvay from September 2012 where his primary responsibility was for Rare Earth Mixed Oxide sales in Europe and Africa. He over 20 years' experience in sales and marketing (also at OEM and Tom-Tom) with his focus being the negotiation of long-term supply contracts with global accounts and developing business relationships and offtake agreements with some of the world's largest automotive companies.

He has a degree as a Business Economist from the North Stuttgart School of Business Administration where he studied economics, majoring in foreign trade, human resources and financing. He is expected to relocate from France to Perth in the first quarter of 2016.

Clearly Peak are not relying on the failed "build it and they will come" school of thought, that so many others have posited, and want to make sure customers are lined up in advance for Ngualla's output.

Conclusion

When an explorer moves up to the stage of making the commitment to corraling the team for mine building and operation then one can finally be reassured that the "rubber is hitting the road". The two most recent hires go beyond mere mine-building and are looking to the end production and

selling phase. Beyond that Peak has decided to go for heavyweights with experience in the biggest players in the rare earth space.

In particular its hire of the (re)builder of Mountain Pass comes freighted with “lessons learnt” in constructing a major Rare Earth mine. Peak’s Ngualla development will be much more bite-sized and with management’s feet firmly on the ground the pressure to build something pharaonic will not be there. That Peak feels it can and will be done is further accentuated by the hiring of personnel to move the product out to the marketplace when production starts to roll.

Again, in Peak, we find a case of “hare & tortoise” with a below-the-radar REE hunter moving further down the road to the end goal, verily as some of the household names of the REE space fold up their tents for the last time having burned through enormous piles of money with nothing to show. With the team in place we now await the reformed capex plan in the next few weeks and the move to funding.

Darren Townsend of Peak Resources presents at the Technology Metals Summit

November 29, 2015 – Watch Darren Townsend, Managing Director for Peak Resources Ltd. (ASX: PEK) present on being one of the highest grade neodymium (Nd) and praseodymium (Pr) development projects during the InvestorIntel Technology Metals Summit on October 14, 2015 in Toronto. In spite of challenging markets, Darren highlights Peak’s recent closing of their bankable feasibility study financing for $29.5M with the Appian Fund

and IFC. “Appian and the IFC want to see these plants built” he reiterates as he discusses Peak’s strong strategic partners interest in developing the Ngualla Rare Earth project in Tanzania. To access the complete presentation, click here

Darren Townsend: Thanks Tracy for the opportunity to present the Peak story. We’re an ASX listed company. Market cap around about $25 million dollars just heading into our bankable feasibility study. As we talked about this morning in the panel, as you’re aware, we’ve done a financing transaction with Appian and the IFC, which funds us through the bankable study. I’ll talk a little bit more about Appian and the IFC further in the presentation, but I just wanted to give you an overview of the project. We’re located in southwest Tanzania in the east coast of Africa. It’s a bastnaesite deposit so similar mineralogy to the Mountain Pass deposit at Molycorp, but we’ve got a couple of unique parts of the ore body in terms of the composition is quite a bit simpler from a processing perspective. I’ll talk through a bit on the processing. That’s where we are, southwest Tanzania. I can’t say we’ve got excellent infrastructure and all that sort of stuff cause it’s not as good as some of the other projects. Rare earths, you’re talking about producing, in our PFS case, we were talking about producing 10,000 ton a year of final product. We’re actually now looking at producing about 6,500 ton a year of product. Rare earth mining and processing is more about incoming chemical logistics then it’s about the amount of product you’ve got to ship out. I’m not going to talk a lot about the PFS numbers. They are quite dated now. We are now moving to a hydrochloric acid leach rather than a sulfuric acid leach. Those big breakthroughs in the beneficiation really substantially change the economics. We’ve also worked out a way of getting rid of 70% to 80% of our cerium very early in our process. Cerium effectively is a loss-making rare earth so it’s very good to get that out of your processes as early as possible. I’m not going to talk a

lot about the market. I think most everybody here is familiar with the market. It's really all about NDPR as you can see from that chart. High-powered magnets is really our key focus. 81% of our revenue stream is going to come from NDPR. That's a cross-section through the orebody. I can use some of the bingo words for this. It is on surface, low strip ratio, all that sort of stuff. Rare earth mining, it's really chemical processing. The mining side of it actually quite simple. We have a mine life well in excess of 30 years so this is a big long life project. As I said before, our biggest advantage is the mineralogy. We're very low in carbonate and phosphate minerals. Really what you're trying to do with rare earth processing is make sure you're not chewing up too much acid. We're very lucky…to access the full presentation, click here

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Peak Resources' low capex and metallurgical advantages attract IFC financing

Peak Resources Ltd ('Peak', ASX: PEK), the Australian rare earths mining company, has obtained a financial commitment of USD$ 25 million from the Appian Natural Resources Fund LP, an investment fund, for its Ngualla rare earth project located in southern Tanzania. Appian will help Peak finance the bankable feasibility study for the Ngualla Project by taking a 13% share of the Company's capital. Appian has the option to take up to 37.5%, at the cost of some AUD$ 14.1 million. Ngualla deposit is estimated to have the potential to deliver some 170 million tons of rare earth oxides at a grade of 2.24% rare earth oxide content, making it the 5th largest in the world outside of China. Meanwhile, the International Finance

Corporation (“IFC”), a member of the World Bank Group, intends to participate in Peak’s venture by joining Appian in a consortium, contributing about 20% of the total investment. Peak’s Ngualla deposit has a maiden mineral resource of 170 million tons at 2.24% REO, making it one of the largest and highest grade rare earth deposits in the world.

This is a significant development for Peak, which gains a reliable financial backer as the IFC makes its first foray into the rare earths, while the IFC has in what is the Institution’s first foray in rare earths. Appian has already invested USD 1 million as the first tranche of a USD$ 3 million bridge loan. IFC’s Board, meanwhile, intends to participate in partnership with Appian in a 20:80 % arrangement (Appian 80% – IFC 20%). IFC also has the right to appoint a member to join Peak’s Board. The Appian and IFC loans will ensure that the Ngualla Project remains well funded while also generating investors’ trust and confidence. In fact, the IFC, is one of the largest lenders to the private sector in emerging economies such as Tanzania. Peak has managed to confront financial risks, allowing for management to focus more on the development and optimization of its assets in order to clear the path ahead to production.

The IFC also performs social and environmental sustainability due diligence as part of its risk assessment procedures. Appian is a private equity fund having a specific mandate to invest in mining. Moreover, last December, Peak announced it had signed a non-binding MOU with a Chinese rare earths company based in Jiangsu Province, northeastern China, to form a strategic long-term partnership to help develop the Peak Resources Ngualla project, which should start production in 2016. The Chinese have offered facilities and technical expertise in the beneficiation, processing and separation of rare earths into high purity rare earth products and an established marketing network. Many Chinese mining firms want to secure positions in projects in Tanzania, which is an ideal

area for export logistics to China.

The Ngualla Project is itself one of the ones with the best conditions, which translates to lower costs, allowing for the Company to adopt a relatively simple processing method. The mineralization is not radioactive since the proportion of uranium and thorium is among the lowest of all major rare earth projects in the world. The ratio of overburden occurrence is low and the resource is distributed such as to allow for open pit mining. The deposits are believed to be the fifth largest outside the People's Republic of China. The capital cost is estimated at USD$ 400 million with an annual income of some USD$ 360 million. Peak Resources wants to set up a pilot project next and then in 2016 start of commercial production. To fully appreciate Peak's success at securing financial partners for the Ngualla project, consider that, today, REE prices are still much lower than even a few years ago and financing for capital-intensive projects is harder than ever.

Project margins are at risk, which makes it difficult got mining companies to find any partner for mine financing. Only those rare earths companies that offer convincing evidence of the quality and efficacy of their project can draw the right attention from financial partners. Nevertheless, once these partners, especially when these include such institutions as the IFC, it validates management's performance, minimizing risks and maximizing the prospects of success. Peak's main advantages are the quality of the resource, the 58 year mine life and very low capital costs (CAPEX). Peak's scoping and Pre-feasibility studies suggested a CAPEX in the order of USD$ 367 million which allows for a surprisingly quick projected payback period – according to Peak's management this will happen in the third year of production.

As for the Ngualla Project itself, the property's rare earths potential was discovered in 2010 and that it has only taken four years to go from discovery to Pre-Feasibility-Study. The

Ngualla project is located in southwestern Tanzania, which, is a very good mining jurisdiction. The Ngualla Project itself also offers metallurgical advantages given the fact that the deposits have shown a mineralization, bastnaesite – typically rich in lanthanum, cerium and most importantly in yttrium – with very little uranium and thorium content, which eases processing and reduces capital cost requirements. Tanzania is the third largest gold mining country in Africa, backed by adequate infrastructure and mining legislation, updated in 2010.