Neodymium and Praseodymium ‘NdPr’
Biggest Blind Spot in the Global Commodity Market
Peak Resources - Becoming one of world’s lowest cost fully integrated NdPr producers

BEHIND EACH BATTERY IS A MOTOR
Over 90% of all new energy vehicles will be equipped with an NdFeB permanent magnet motor.
0.5-1kg per is the incremental demand for neodymium (Nd) and praseodymium (Pr)
for each internal combustion vehicle (ICV) which gets replaced by an electric vehicle (BEV,PHEV,HEV).
Disclaimer

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Compliance Statement

Information relating to Infrastructure, project execution, cost estimating, metallurgical test work, exploration results, Mineral Resource estimates and Ore Reserve estimates is extracted from the report entitled “Lower price deck delivers similar BFS results for Ngulla” created on the 12th of October 2017 and is available to view on http://www.peakresources.com.au/asx-announcements/. The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person’s findings are presented have not been materially modified from the original market announcement.
Peak Resources Limited (ASX:PEK) is focused on developing one of the world’s largest, highest grade and lowest cost Neodymium (Nd) and Praseodymium (Pr) (NdPr) rare earth projects.

NdPr is a key ingredient in NdFeB Permanent Magnet Motors (PPMs) which are widely used in electric vehicle (EV) motors and direct drive wind turbines.

The Ngualla Project, located in Tanzania, has existing JORC Compliant Reserves of 18.5 mt at 4.8% Rare Earth Oxide (REO) equating to 887,000t contained REO. Peak holds a 75% interest in the Ngualla Project alongside Appian Natural Resources Fund (20%) and International Finance Corporation (5%).

Peak is looking to become the second fully integrated producer of NdPr Oxide outside of China with its Tees Valley Refinery to be constructed at the UK’s third largest port, close to existing infrastructure and supplies of low-cost chemical reagents whilst providing access to European and Asian markets.

The NdPr price outlook is decidedly bullish with increased demand being driven by the adoption of EV and wind energy technologies. China’s historic supply dominance of rare earths, ~90% of the global supply, is undergoing structural changes due to environmental and supply side reforms which will reduce the overall volumes and availability of spot material in the market.
**Investment Highlights**

- **One of the Highest Grade, Lowest Cost NdPr Projects Globally**: Estimated US $32.24/kg neodymium & praseodymium (NdPr) breakeven point for positive cash flows assuming no other sales revenues from other rare earth material except NdPr, total pre-production CAPEX of US $365m and OPEX of US $91m p.a. over a 26 year LOM with a post-tax NPV₈ of US $612m and IRR 22% at NdPr price of US $77.50/kg.

- **Simple Geology and Mining**: Large, high grade 4.8%, soft bastnasite ore body with mineralisation from surface allowing low cost free-dig open pit operation with a low strip ratio of 1.77:1.

- **The Right Team**: Extensive industry experience with Rocky Smith (CEO) ex-MD of Molycorp’s Mountain Pass Rare Earth Complex, Michael Prassas (GM Sales), ex-Global Sales Account Manager Catalysis and newly appointed Peter Meurer (Chairman), current Non-Executive Chairman of Nomura Australia and former Vice Chairman of Citi and Merrill Lynch.

- **Advanced Project**: BFS completed, Tanzanian environmental certificates received, Teesside Refinery fully permitted - environmental certificate and Planning Permission received, further Project optimisation completed and mining licence application submitted.

- **Proven processing capabilities**: Fully proven piloted process, Mineralogy which is low in reagent consumption, High Grade 45% REO, low mass concentrate, Selective leach process, Low strength acids- no acid roast, use of conventional construction material e.g. Modular plastic tanks.

- **Exposure to Forecast Increases in NdPr Price**: Peak offers excellent leverage to the favourable NdPr price outlook with 90% of revenue to be generated from NdPr.

- **Tight Capital Structure**: Circa 800m shares on issue with 34% held by top 10 including Appian Natural Resource Fund (14.06%) and International Finance Corp/World Bank (3.99%).

- **Compelling Valuation**: With an EV of circa A $37m, Peak offers a compelling value proposition against its ASX listed peers.
Corporate Snapshot

Capital Structure (as at 30 June 2019)

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share Price (ASX:PEK)</td>
<td>4.8¢</td>
</tr>
<tr>
<td>Shares on Issue (Undiluted)</td>
<td>799.3m</td>
</tr>
<tr>
<td>52 Week Range</td>
<td>2.0¢/6.6¢</td>
</tr>
<tr>
<td><strong>Market Capital</strong></td>
<td><strong>A $38.4m</strong></td>
</tr>
<tr>
<td>Cash As At 31 March 2019 Peak Resources</td>
<td>A $3.3m</td>
</tr>
<tr>
<td>Appian Debt due September 2019</td>
<td>A $1.9m</td>
</tr>
<tr>
<td><strong>Enterprise Value</strong></td>
<td><strong>$37.0m</strong></td>
</tr>
<tr>
<td>Listed Options (Exercisable at $0.06 expiring 14 June 2020)</td>
<td>61.1m</td>
</tr>
<tr>
<td>Unlisted Options Outstanding (Exercise Price A$0.035- A$0.15)</td>
<td>123.8m</td>
</tr>
<tr>
<td>Unlisted Performance Rights</td>
<td>A$0.03 – A$0.15</td>
</tr>
<tr>
<td>1 Month Liquidity</td>
<td>97m shares for ~$5.5m</td>
</tr>
<tr>
<td>6 Month Liquidity</td>
<td>245m shares for ~$11.5m</td>
</tr>
<tr>
<td>12 Month Liquidity</td>
<td>311m shares for ~$13.7m</td>
</tr>
</tbody>
</table>

Top Shareholders

<table>
<thead>
<tr>
<th>Shareholder</th>
<th>Shares</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appian Pinnacle Holdco Limited</td>
<td>112,351,377</td>
<td>14.06%</td>
</tr>
<tr>
<td>International Finance Corporation</td>
<td>31,846,257</td>
<td>3.98%</td>
</tr>
<tr>
<td>J P Morgan Nominees Australia Limited</td>
<td>26,222,561</td>
<td>3.28%</td>
</tr>
<tr>
<td>HSBC Custody Nominees (Australia)</td>
<td>16,975,026</td>
<td>2.12%</td>
</tr>
<tr>
<td>Sambold Pty Ltd</td>
<td>16,325,000</td>
<td>2.04%</td>
</tr>
<tr>
<td>Directors and Management</td>
<td>8,845,104</td>
<td>1.11%</td>
</tr>
</tbody>
</table>
The Team

Experienced Management Team

Rocky Smith  
Chief Executive Officer
Chemist with over 35 years’ operations and senior management experience in the mineral processing and chemical engineering sectors. Previously Managing Director of Molycorp’s Mountain Pass Rare Earth Complex.

Graeme Scott  
Chief Financial Officer / Company Secretary
Fellow of the Association of Chartered Certified Accountants (UK)  
More than 20 years’ experience in professional and corporate roles in both Australia and the UK.

Michael Prassas  
General Manager - Sales, Marketing & Business Development
Over 15 years’ experience in sales marketing and business development. Former Global Account Manager Automotive Catalysis / Sales Manager of Rare Earth Systems for Solvay/Rhodia.

Lucas Stanfield  
General Manager Development
Mining Engineer with over 15 years mining and project management experience in Australia, Africa and the United Kingdom. Experienced in managing new projects, mine expansions and development studies.

Experienced Directors & Advisors

Peter Meurer  
Non-Executive Chairman
Distinguished career of over 40 years in the Corporate Finance sector and is currently Non-Executive Chairman of Nomura Australia.

Jonathan Murray  
Non-Executive Director
Partner at independent corporate law firm Steinepreis Paganin Specialising in equity capital raisings and acquisitions.

John Jetter  
Non-Executive Director
Former Managing Director, CEO and head of investment banking of JP Morgan in Germany and Austria.

Tony Pearson  
Non-Executive Director
Former Managing Director HSBC Australia with over 15 year’s banking experience, covering the Asia Pacific natural resources industry.

Kibuta Ongwamuhana  
Non-Executive Director  
PR NG Minerals
Leading Tanzanian legal practitioner who specialises in taxation and corporate law. Managing partner of the legal firm, Ako Law.
The Market – The Fundamentals

- **The Current Market** – The global market is currently approximately 35kt to 45kt of NdPr Oxide per annum across all applications incl. non-NdFeB applications and is currently valued at US $1.75bn to US $2.25b assuming a price of US $50kg/NdPr.

- **The Market Outlook** – The market is projected to double in volume by 2025 with approximately 50% price increase over the same period. Permanent magnets market including NdFeB magnets represents 70%-80% of the total rare earth oxide market in value.

- **EV Adoption Driving NdPr Demand** – approx. annual sales of 25-30m new energy vehicles (BEV/PHEV/HEV) represent approximately ~100% incremental NdPr demand from NdFeB permanent magnets.

- **Tesla Adopts PPM Technology** – With Tesla’s move to adopt the permanent magnet motor (PMM) technology for its Tesla Model 3, PMM has reached close to +90% market share confirming PMM technology as the leading engine technology and industry standard.

- **Change of the Chinese Policies will Impact Todays Rare Earth Supply Chain** – China currently accounts for circa 80-90% of the global NdPr supply and is undergoing structural changes due to environmental and supply side reforms, which will reduce the overall availability of material in the market (e.g. Made IN CHINA 2025) and raise cost (Beautiful China Policy e.g. Environmental Protection tax law). This trend is also supported by the published goals of the 5 Year Rare Earth Industry Plan by China’s Ministry of Industry and Information Technology in October 2016. This offers the opportunity for new supply sources supported by an increasing NdPr price over the coming years.

Source: EV-Volumes.com

Source: Peak Resources limited based on individual company and industry announcements
Key Enabler - Governmental Legislation Underpins NdPr Demand

<table>
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<tr>
<th>Major vehicle markets CO2 emission regulation</th>
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<tr>
<td>---------</td>
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<tr>
<td>China</td>
</tr>
<tr>
<td>USA</td>
</tr>
<tr>
<td>EU</td>
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<tr>
<td>Japan</td>
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Energy efficiency regulation worldwide for electric motor and generators
According to a recent IEA study electric motors are responsible for 53% of global electricity use. Industry standards IEC-IE4/IE5 + further alignment on test procedures will support the continuous growth of PM motors/generators.

What does this mean? Required powertrain portfolios:

- **World of today** – above 100g CO2/km
  - a portfolio of ICE, mild-hybrids and less than 10% electrification can meet the target
- **Mix of powertrains** – below 100g CO2/km
  - a “portfolio game” with equal importance of ICE, PHEV & BEV & 48v mild hybrids can meet the requirements
- **EV World** – below 50g CO2/km
  - achieving the target only possible with a portfolio mainly consisting of EV’s and PHEVs

**Country** | 2018 | 2021 | 2025 | 2030 | 2035 | 2040
---|------|------|------|------|------|------|
**China:**
- NEV quota = 10% and 12% for 2019+2020; max points with +350km reach
- By 2020 OEM's need to meet 5/100km
- Biggest single car market 2017 with 25.8m (EMEA 21m & NA=20.9m)
- Target 5m NEV stock by 2020
- Target 20% of production + sales in 2025 = ~5-7m p.a.
- ICE ban pending

**Brussels, 17 December 2018:** The EU Parliament, Commission and Council agreed to cut carbon emissions for new cars and vans by 15% in 2025 and 37.5% in 2030, compared to 2021 levels! VW CEO Mr. Dies commented: The new EU legislation requires approximately that close to 50% of the new vehicle sales needs to be electrified by 2030.
- From 2021 onwards the EU will fine 95 euros per gram for each car over the target.

**Japan:** County goal 30% NEVs of sales in 2030;

**US:** 8 states have set targets = 3.3m cars by 2025;

**India:** Only sales of NEV by 2030
**Ireland:** Sales ban of ICE by 2030
**Netherlands:** Sales ban of ICE by 2030
**Slovenia:** Sales ban of ICE by 2030
**Norway:** Sales ban of ICE by 2030
**Scotland:** Sales ban of ICE by 2032

**Fossil Free Street Declaration** Auckland, Barcelona, Cape Town, Copenhagen, London, Los Angeles, Mexico City, Milan, Oxford, Paris, Quito, Seattle, Vancouver,

Source: ICCT; national industry bodies, transportenvironment.org, McKinsey, Gov announcements
Analyst projections are all aligned! The question is not if, the question is by when NEV will establish +25% market share. Analysts from Bloomberg, Exxon, IEA, OPEC and BP have revised their Electric Mobility Vehicle sales forecast multiple times. All of them are agreeing on the fact that the electric vehicles will take over the market in the coming decade. China leads the way with their quota system & the 2025 target = 20% electrification (sales 2017 = 25.8m), followed by EU, establishing an indirect EV quota with its introduction of its new legislation and emission target for 2021/2025 & 2030 (sales 2017 = 21m). Furthermore, the EU has announced it will introduce penalties for car manufacturers in 2021 if they do not comply with the new regulation.

Global Automotive industry will invest more than US$ 400 billion
The global automotive industry committed to a ~ US $400 b investment in EVs. E-mobility represents a total new, incremental demand source for NdPr operating in a multi million unit sales mass market.

Toyota Motor Corp recently announced to accelerate its Electric vehicle strategy.
Toyota aims to get half of its global sales from electrified vehicles by 2025. This is five years ahead of schedule, leveraging Chinese battery makers to meet the accelerated global shift to electricity-powered cars.
June/July 2019 - Global macroeconomic issues have put the Rare Earth Industry back into the global spotlight. The world was reminded that those Rare Earth metals are essential for future technological megatrends. During the last few weeks, the general awareness of the importance of Rare Earth metals increased. This is due to the Chinese media and governmental officials publicly discussing the pro’s and con’s of using Rare Earth’s and it’s downstream products as a potential countermeasure in the ongoing trade dispute with the USA.

At the G20 Summit in Osaka, the parties agreed on the resumption of trade talks, but for an all-clear, it’s too early!

Market impact, As a result of these market tensions the market price of NdPr has increased significantly. During the last 4 weeks the price increased by 33% from 260.5 RMB/Kg (US $ 37.8/kg) NdPr to 347.5 (US $ 50.43/kg) with a peak at 372 RMB/kg (US $ 53.98/kg) according to Asian Metal.
The recent trade tensions between United States and China has shown the vulnerability of the Industry. Whether or not China chooses to use rare earths in its trade war dispute with the United States, it is simply not sustainable for the downstream industry to rely on a single supplier for 80% of an key critical raw material.

We believe it is imperative for the industry and the supply chain of the electric vehicle manufacturers to act today and to diversify their supply chain before the S-curve and high volumes in the electric vehicle market kick in.
Electrification of our Society - Connecting the Dots

Each direct drive wind turbine uses a permanent magnet motor that generates between 2-6 MW of performance. Each megawatt requires approx. 200 kg pure neodymium and praseodymium.
The supply demand balance of NdPr is set to be disrupted by the electrification of our society initiated by electric cars, buses and trucks becoming mainstream applications.

**Fact That Matters** - Upcoming Supply Demand Disruption

Spearheaded by **E-mobility** predominantly lead by passenger cars followed by trucks, buses & trains.

And on top of the 2 mainstream applications above all these other applications will require NdPr as well!
Peak Resources - Who We Are

Peak to become one of the world’s lowest cost rare earth producers. With a CAPEX of only US$ 365 million incl. 15% contingency, OPEX of US$ 91 million p.a. and a 26 year Life of Mine.

**UK** Tees Valley the location of Peak’s Rare Earth Refinery
- Capex: US$ 165 million incl. 15% contingency plus 5% owners costs
- Location: Top logistics infrastructure + skilled labour + sustainable waste management facilities
- Annual Production: 9,290 tpa of oxide equivalent = Oxide 2,810 tpa NdPr 2N; Carbonate = 12,095 tpa = 7,995 tpa La; 3,475 tpa Ce & 625 tpa SEG/HRE
- 32.24 US$/kg NdPr - The breakeven point for positive cash flow considering total OPEX divided with only the 2,810 tpa NdPr oxide production

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**Tanzania** Ngualla Project, one of the largest and highest grade undeveloped NdPr deposits worldwide
- Ore Resource: 214.4 mt at 2.15% REO; Ore Reserve: 18.5 mt at 4.8% REO; 22% of the total Mineral Resource, approx. 887,000 t REO
- Capex: US$ 200 million incl. 15% contingency plus 5% owners costs; Opex: US$ 51 million; Life of mine: 26 year; Mill feed rate 711,000 tpa; Strip ratio 1.77; Rare earth concentrate: 32,700 tpa of 45%

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*See ASX Announcement "Higher grade Resource for Ngualla nearly 1 million" and ASX Announcement "Ngualla Rare Earth Project—Updated Ore Reserve" as of 12 April 2017 and: **BFS positions Ngualla one of worlds lowest cost REE Projects** as of 12 April 2017 and: **BFS Update - Lower price deck delivers similar BFS results for Ngualla** as of October 2017.
**The Ngualla Project, Tanzania**

<table>
<thead>
<tr>
<th><strong>Location:</strong></th>
<th>Tanzania</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Geology:</strong></td>
<td>Weathered carbonatite with a high grade bastnasite-rich zone, low in phosphate and carbonate</td>
</tr>
<tr>
<td><strong>Ore Resource:</strong></td>
<td>214.4 mt at 2.15% REO, initially developing only 22% of the total resource</td>
</tr>
<tr>
<td><strong>Ore Reserve:</strong></td>
<td>18.5 mt at 4.80% REO = 887,000 t REO; 21.3% NdPr, 38,800m of drilling (649 holes), 40 x 50 meter spacing, depth of 120 meter</td>
</tr>
<tr>
<td><strong>Mining:</strong></td>
<td>Low strip ratio 1.77:1 &amp; open-pit</td>
</tr>
<tr>
<td><strong>Mill feed rate:</strong></td>
<td>711,000 tpa dry ore</td>
</tr>
<tr>
<td><strong>RE Concentrate:</strong></td>
<td>32,700 tpa at 45% REO Bastnaesite</td>
</tr>
<tr>
<td><strong>Environmental Certificate:</strong></td>
<td>Received March 2017</td>
</tr>
<tr>
<td><strong>Mining licence:</strong></td>
<td>SML pending</td>
</tr>
<tr>
<td><strong>Estimated Capex:</strong></td>
<td>US $200m incl. 15% contingency and 5% owners costs</td>
</tr>
<tr>
<td><strong>Estimated Opex:</strong></td>
<td>US $51m p.a.</td>
</tr>
<tr>
<td><strong>Life of Mine:</strong></td>
<td>26 years (considering only the official Reserve)</td>
</tr>
<tr>
<td><strong>Location:</strong></td>
<td>~1000 KM west of Dar es Salaam close to Mbeya</td>
</tr>
</tbody>
</table>

#The material assumptions underpinning Ore Reserve, production target, capital and operating costs are disclosed in the ASX Announcement dated 12 April 2017 “BFS positions Ngualla as one of the world’s lowest cost rare earth projects” continue to apply and have not materially changed.

## See ASX Announcement “Higher grade Resource for Ngualla nearly 1 million” and ASX Announcement “Ngualla Rare Earth Project – Updated Ore Reserve” as of 12 April 2017

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#ENDABLE TECHNOLOGIES

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The Tees Valley Refinery, UK

- Peak’s refinery will be located at Wilton International’s Teeside Industrial Zone located in Tees Valley, North East England.
- Teeside benefits from existing fully integrated site infrastructure located within a major UK exporting region which is home to existing heavy industries including mineral processing, automotive and advanced manufacturing.
- Existing infrastructure includes road, rail, air and sea connections providing access to European and Asian markets.
- Tees Valley is located alongside the UK’s 3rd largest port by volume within close proximity to competitively priced chemicals, water disposal and treatment facilities required for the refining process.
- Power is generated on-site and is also connected to the UK National Grid providing power security whilst avoiding the need for significant capital outlay.
- Teeside benefits from an available skilled workforce and local government and community support.
- CAPEX: US $165m incl. 15% contingency plus %5 owners costs
- Opex: US $40m p.a.
Compelling Project Economics

US $32.24 is the breakeven point for positive cash flow only from the projected 2,810t p.a. NdPr sales; OCBRITDA = Operating cost before royalties, interest, tax, depreciation and amortisation.

*See ASX Announcement: “Lower price deck delivers similar BFS results for Ngualla” dated 12 October 2017
#See ASX Announcement: “Process optimisation study boosts Ngualla’s operating margin” dated 28 August 2017

BFS Price deck: NdPr Mixed Oxide 2N Min 75% Nd2O3 US $77.50/kg; Cerium* US $02.20/kg; Lanthanum* US $03.70/kg; SEG & Mixed Heavy* US $08.00/kg

US $914 m
NPV₈ – Pre Tax and Royalties

US $108 m p.a.
Average Annual Post Tax Cash flow

26 yrs
Life of Mine

US $812 m
NPV₈ – Post Tax and Royalties

26%
IRR – Pre Tax and Royalties

22%
IRR – Post Tax and Royalties

US $108 m p.a.
Peak has one of the lowest OPEX as a fully integrated producer per kg of NdPr among 58 development projects worldwide*3

Peak has one of the lowest CAPEX as a fully integrated producer per kg of NdPr among 58 development projects worldwide*3

*NdPr = Nd2O3/Pr6O11 Mixed Oxide 2N – min 75% Nd2O3.
*1 Benchmarking data provided by Adamas Intelligence
# US $32.24 is the breakeven point for positive cash flow only from the projected 2,810t p.a. NdPr sales; OCBRITDA = Operating cost before royalties, interest, tax, depreciation and amortisation.
See ASX Announcement: “BFS positions Ngualla one of world’s lowest cost RE Projects” dated 12 April 2017 and ASX Announcement: “Process optimisation study boosts Ngualla’s operating margin” dated 28 August 2017
Track Record of Delivery and Upcoming Catalysts

2015
- Appointment of AMEC FW as BFS lead Engineering firm
- Beneficiation pilot plant
- Advancement of ESIA
- BFS Drilling Program
- AUD $23.4m investment from Appian and IFC
- Optimisation studies:
  - Location of downstream plant
  - Stockpiling of Cerium
  - Beneficiation improvement

2016
- Results from pilot plant test work complete
- New mineral resource estimate
- Project economics updated
- Advance engineering
- Advance Environmental Permitting

2017
- Bankable Feasibility Study completed delivering a US $35m p.a or 30% saving in operating costs compared to Pre Feasibility Study
- Tanzanian Environmental Certificate received
- Project Optimisation delivered similar financial results with a lower price deck. NdPr price has been reduced from US $85kg to US $77.50kg
- Special Mining Licence Application submitted

2018+
- Planning Permission for Teesside Refinery Granted
- Environmental Certificate for the UK Refinery Granted

- Ramp up discussions with potential offtake partners with special focus on magnet manufacturers
- Seek Grant of Special Mining Licence in Tanzania – application lodged
- Seek strategic partner to fund development of Ngualla
<table>
<thead>
<tr>
<th>NGUALLA ORE BODY</th>
<th>NGUALLA MINE AND PROCESS PLANT</th>
<th>TEES VALLEY REFINERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High grade 4.80% REO</td>
<td>• Soft, free dig Ore</td>
<td>• Selective leach process</td>
</tr>
<tr>
<td>• Large deposit</td>
<td>• Simple, small open pit mine</td>
<td>• Low strength acids- no acid roast</td>
</tr>
<tr>
<td>• Bastnaesite mineralogy</td>
<td>• Low waste: Ore strip ratio (1.77)</td>
<td>• Modular plastic tanks</td>
</tr>
<tr>
<td>• Mineralisation from surface</td>
<td>• Zero offsite discharge + water recycle</td>
<td>• Small SX separation plant</td>
</tr>
<tr>
<td>• Very low U and Th (15 and 53 ppm)</td>
<td>• High Grade (45% REO), low mass concentrate</td>
<td>• Bulk, low-cost reagents available</td>
</tr>
<tr>
<td>• Thick blanket morphology</td>
<td>• Proven piloted process</td>
<td>• Pre-existing utilities</td>
</tr>
<tr>
<td>• Low in reagent consuming minerals</td>
<td></td>
<td>• Existing waste management facilities</td>
</tr>
</tbody>
</table>

**Right sized project**
- Low production cost
- Long life - 26 years
- Ethically sustainable
- High value, separated products
- NdPr drives 90% of revenue
- Aligned to permanent magnet and EV markets

**NGUALLA RARE EARTH PROJECT:** **UNDERSTOOD — DE-RISKED — COMPETITIVE — MANAGABLE — READY TO BE DELIVERED**

See ASX Announcement: “BFS positions Ngualla one of world’s lowest cost RE Projects” dated 12 April 2017 and ASX Announcement: “Process optimisation study boosts Ngualla’s operating margin” dated 28 August 2017
The Right Company

- **The Right Team** – Experienced Board and Management with a track record of delivery

- **The Right Asset** – World class asset with low CAPEX ($365m) and OPEX ($91m p.a.) requirements relative to other rare earth projects

- **The Right Market** – considerable leverage to forecast increase NdPr prices resulting from EV revolution and transition to sustainable energy

- **The Right Investment Proposition** – Significant relative value compared to ASX listed peers with clear strategy to become a near term fully integrated NdPr producer

NGUALLA RARE EARTH PROJECT: UNDERSTOOD – DE-RISKED – COMPETITIVE – MANAGABLE – READY TO BE DELIVERED
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ENABLING LOW CARBON TECHNOLOGIES
APPENDIX
Automotive - US$ ~400b Invest* & ~700 New NEV 2018-30

**Tesla Launched Model 3**
First mass market BEV car with a PMM; weekly output since Sep18 = 5,300 UNITS per week, price range `35-52k USD; US$ 14b invest

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### YTD Oct. 2018: 423 NEV in the market
- 224 BEV = 63 ROW + 161 China
- 68 PHV
- 131 HV/48v
- 2018 Beijing Auto Show = 174 new EV

### Estimated invest of US$ ~100b across all Chinese brands and through the Chinese supply chain.

The Chinese government perceives E-mobility as one of the core pillars of their industrial transformation strategy, see “China 2025”. China is now the biggest single automotive market worldwide (2017= China 25.8m, EMEA 21m, NA 20.9m).

Within the top 50 of the global list of car manufacturers 24 are Chinese!

Latest and future Chinese legislation will be the key influencing drivers for future portfolio decision of all global car manufacturers!

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### Source:
Individual company announcements, Bloomberg & Peak Resources estimations & others, Investment number incl. Battery inv. + vehicle R&D + industrial manuf. Invest

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### 2018
- **Hyundai-Kia:** 28 NEV by 2020; in total 38 new NEV by 2025; 40% of sales by 2025; US$ 23b invest
- **JLR:** by 2020 complete line up will have a 13 NEV = 48v+PHEV+BEV
- **Volvo:** All new models = 8 NEV (48v mild hybrid, PHEV + BEV) by 2019; 50% of sales NEV by 2025;
- **Gelly:** 90% of sales to be with NEV by 2020; 65% PHEV and 35% BEVs; Target to launch 30 NEV by 2025; US$ 41b invest

### 2019
- **Ford:** 40 NEV = 16 BEV+ 24 PHEV by 2022; US$ 28b invest
- **GM:** 20 new BEV by 2023, and a significant ramp up of Bolt production
- **Daimler:** complete line up will be electrified ~130 NEV (48v+PHEV+BEV) by 2022; US$ 13 b invest
- **Toyota:** 10 new BEV by 2020s; 5,5m with NEV = 4.5m by PHEV+EHV &, Rest BEV; ~50% of annual sales by 2025; US$ 10b invest.
- **BMW:** Mass production by 2020; 25 NEV = 13 PHEV + 12 BEV by 2025; 15-25%; US$ 47b invest
- **VW Group:** (12 brands): 3m units sales + 50 BEV+30 PHEV by 2025 and 20-25% of sales; 300 BEV+PHEV models by 2030; US$ 84b invest. 2017 = 10.7m units of which 4.2m in China
- **PSA:** By 2025, the full lineup will be electrified for the four brands min 40 BEV+PHEV
  - Peugeot, Citroen, DS, Opel/Vauxhall.
- **Toyota:** 10 new BEV by 2020s; in total 38 new NEV by 2025; 40% of sales by 2025; US$ 84b invest.
- **GM:** 20 new BEV by 2023, and a significant ramp up of Bolt production
- **Total NEV by 2025:** 423 NEV in the market

### 2020
- **Fiat Chrysler:** by 2022 33 NEVs = Maserati 4 BEV+8 PHEV; Jeep 4 BEV and 10 PHEV; Alfa Romeo: 7 PHEV and FIAT = TBA ; US$ 9b Invest
- **Nissan:** 8 new BEV by 2022, ~20% of total sales = 1m sales of NEVs by 2022; 35-45% sales by 2025; Nissan Leaf
- **Renault:** 8 BEV and 12 PHEV by 2022; 50% of sales should be BEV or PHEV by 2022; US$ RNM 12b invest
- **Honda:** 30% of new car sales NEV FC + EV + PHEV by 2030.
- **Mazda:** to electrify all IC engines by 2030

### 2021
- **JLR:** by 2020 complete line up will have a 13 NEV = 48v+PHEV+BEV
- **Fiat Chrysler:** by 2022 33 NEVs = Maserati 4 BEV+8 PHEV; Jeep 4 BEV and 10 PHEV; Alfa Romeo: 7 PHEV and FIAT = TBA ; US$ 9b Invest
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### 2022
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- **Fiat Chrysler:** by 2022 33 NEVs = Maserati 4 BEV+8 PHEV; Jeep 4 BEV and 10 PHEV; Alfa Romeo: 7 PHEV and FIAT = TBA ; US$ 9b Invest
- **Nissan:** 8 new BEV by 2022, ~20% of total sales = 1m sales of NEVs by 2022; 35-45% sales by 2025; Nissan Leaf
- **Renault:** 8 BEV and 12 PHEV by 2022; 50% of sales should be BEV or PHEV by 2022; US$ RNM 12b invest

### 2023
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- **Fiat Chrysler:** by 2022 33 NEVs = Maserati 4 BEV+8 PHEV; Jeep 4 BEV and 10 PHEV; Alfa Romeo: 7 PHEV and FIAT = TBA ; US$ 9b Invest
- **Nissan:** 8 new BEV by 2022, ~20% of total sales = 1m sales of NEVs by 2022; 35-45% sales by 2025; Nissan Leaf
- **Renault:** 8 BEV and 12 PHEV by 2022; 50% of sales should be BEV or PHEV by 2022; US$ RNM 12b invest

### 2024
- **JLR:** by 2020 complete line up will have a 13 NEV = 48v+PHEV+BEV
- **Fiat Chrysler:** by 2022 33 NEVs = Maserati 4 BEV+8 PHEV; Jeep 4 BEV and 10 PHEV; Alfa Romeo: 7 PHEV and FIAT = TBA ; US$ 9b Invest
- **Nissan:** 8 new BEV by 2022, ~20% of total sales = 1m sales of NEVs by 2022; 35-45% sales by 2025; Nissan Leaf
- **Renault:** 8 BEV and 12 PHEV by 2022; 50% of sales should be BEV or PHEV by 2022; US$ RNM 12b invest

### 2025
- **JLR:** by 2020 complete line up will have a 13 NEV = 48v+PHEV+BEV
- **Fiat Chrysler:** by 2022 33 NEVs = Maserati 4 BEV+8 PHEV; Jeep 4 BEV and 10 PHEV; Alfa Romeo: 7 PHEV and FIAT = TBA ; US$ 9b Invest
- **Nissan:** 8 new BEV by 2022, ~20% of total sales = 1m sales of NEVs by 2022; 35-45% sales by 2025; Nissan Leaf
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**China Startup’s**

- **NIO:** US$ 3.3b invest
- **Byton:** US$ 2.5b invest
- **Lucid:** US$ 1.13b invest
- **Byton:** US$ 0.79b invest
- **Byton:** US$ 0.7b invest
- **NI:** US$ 0.6b invest
- **BYD:** US$ 0.2b invest

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**Estimated invest of US$ ~100b across all Chinese brands and through the Chinese supply chain.**

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Within the top 50 of the global list of car manufacturers 24 are Chinese!

Latest and future Chinese legislation will be the key influencing drivers for future portfolio decision of all global car manufacturers!
2018 TCO = LeasePlan announced that in Norway and Netherlands EVs became cheaper than ICE. Belgium and UK are close.
Next Generation Of Direct Drive Wind Turbines Depend On NdPr

HALIADE-X 12 MW

GE Renewable Energy is developing Halide-X 12 MW, the biggest offshore wind turbine in the world, with 220-meter rotor, 107-meter blade, leading capacity factor (63%), and digital capabilities, that will help our customers find success in an increasingly competitive environment.

One Halide-X 12 MW can generate 67 GWh annually, which is 45% more annual energy production (AEP) than most powerful machines on the market today, and twice as much as the Halide-150-6MW.

The Halide-X 12 MW turbine will generate enough clean power for up to 16,000 European households per turbine, and up to 1 million European households in a 750 MW configuration windfarm.

1MW = 200kg of NdPr Oxide

https://www.windpoweroffshore.com/
NGUALLA RARE EARTH PROJECT:
UNDERSTOOD - DE-RISKED - COMPETITIVE
MANAGEABLE - READY TO BE DELIVERED!
More than 30 different NdFeB magnet applications are in a regular car using NdPr, which is equivalent to approx 200gr NdFeB Magnets. A hybrid vehicle contains between 1.5-3kg NdFeb magnets, 1/3 of this is pure NdPr oxide.
The Market - Demand Update

NdPr-Permanent Magnet Motors obtain now close to 100% Market share among electrified vehicles

Tesla has decided to change its Motor technology. Tesla Model 3 is using a NdPr Permanent Magnet Motor!

The recently published EPA documents of the Model 3 confirm that instead of their traditional induction motor, Tesla has decided to use a 258-HP AC 3-PHASE PERMANENT MAGNET MOTOR in their Model 3. With Tesla coming onboard with Permanent Magnet Motor applications this technology now represents close to 100% market share in the electrified Motor automotive segment.

The 500,000 already ordered Model 3's of Tesla, of which production recently commenced, will consume a minimum of 600 tonnes incremental new demand of NdPr oxide per year. This is equivalent to 2% of the world's global legal annual produced Nd/Pr oxide - and that's just the beginning! According to Bloomberg, more than 120 additional new electric cars are in the pipeline to be launched during the next 2.5 years to join the Model 3.
The Market

1 Megawatt from 200 kg NdPr Oxide

Each direct drive wind turbine uses a permanent magnet motor that generates between 2-6 MW of performance. Each megawatt requires approx. 200kg pure neodymium and praseodymium.
Peak Resources

PEAK RESOURCES:
AN ETHICAL, SUSTAINABLE
AND INTEGRATED RARE EARTH
SUPPLY CHAIN SOLUTION
The Asset - Ngualla Processing Plant

Flowsheet
Flowsheet
The Asset - Peak No1 Among Its Peers

Peak - a unique proposition where world class rare earth expertise meet with a world class deposit and a perfect alignment with the market

FILTERING THROUGH TO THE #1 PROJECT

Globally we have identified 58 rare earth projects. If a project does not fit within the following 4 criteria ... it falls out of the bucket

Filter 1: “Does the project have an Ore Reserve or Mineral Inventory?”
Filter 2: “Are the project’s REEs hosted by a mineral that has been commercially produced and processed in the past (i.e. bastnaesite, monazite, or xenotime)?”
Filter 3: “Does the project aim to separate and purify REE products to market-desired specifications in-house, or are they reliant on a third party to make their products”
Filter 4: “Can the project be developed for less than US $500 million?”

Source: Benchmarking data provided by: Adamas Intelligence