



MULTI-COMMODITY MINER EXPLORER

www.alkane.com.au

ASX : ALK
OTCQX : ANLKY

Annual General Meeting

Sydney

18 November 2015

Shareholder Presentations Melbourne 19 November and Perth 20 November



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This document has been prepared in accordance with the requirements of Australian securities laws, which may differ from the requirements of United States and other country securities laws. Unless otherwise indicated, all ore reserve and mineral resource estimates included or incorporated by reference in this document have been, and will be, prepared in accordance with the JORC classification system of the Australasian Institute of Mining, and Metallurgy and Australian Institute of Geosciences.

Competent Person

Unless otherwise stated, the information in this presentation that relates to mineral exploration, mineral resources and ore reserves is based on information compiled by Mr D I Chalmers, FAusIMM, FAIG, (director of the Company) who has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Ian Chalmers consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.

Alkane Strategy



Focused on NSW Central West



Multi-commodity
company



Strategic
relationships



Community & environmentally
responsible

Board & Management

Board

- **John S F Dunlop (Chairman)** BE(Min), MEngSc(Min). Mining engineer
- **D Ian Chalmers (Managing Director)** MSc. Geologist
- **Ian J Gandel (Director)** LLB, BEc. Businessman
- **Anthony D Lethlean (Director)** BAppSc. Geologist/Banker

- **Karen Brown (Company Secretary)** BEc

Senior Management

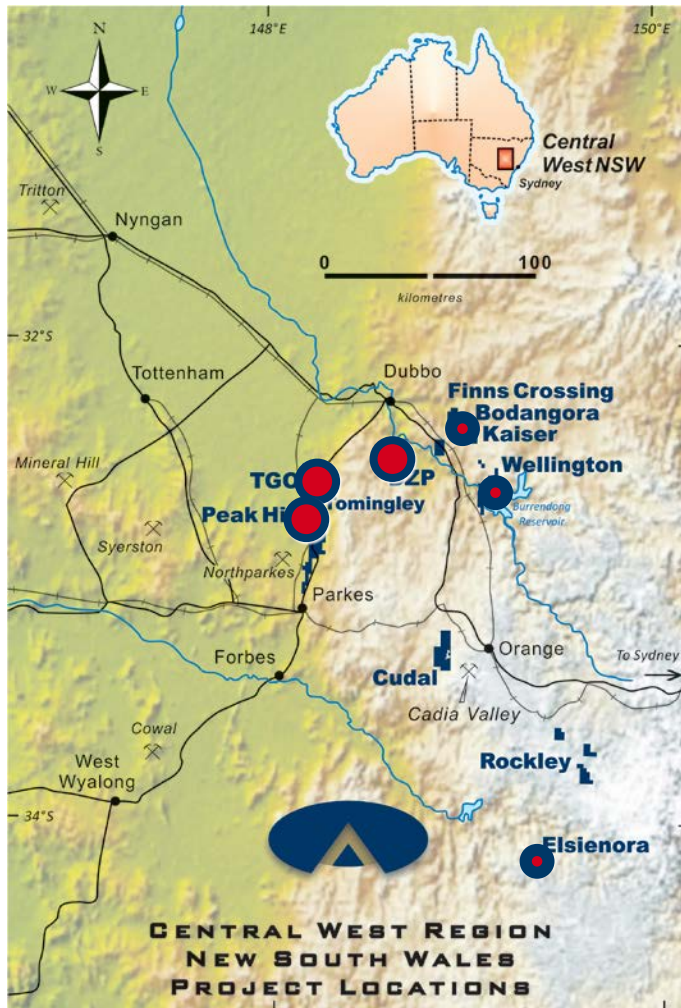
- **Nic Earner (Chief Operations Officer)** BEng (Honours)
- **Michael Ball (Chief Financial Officer)** CA BCom
- **Terry Ransted (Chief Geologist)** BSc
- **Michael Sutherland (General Manager NSW)** BSc
- **Brendan Ward (Commercial Manager)** LLB, BA
- **Sean Buxton (TGO Operations Manager)** BEng
- **Natalie Chapman (Corporate Communications)** BSc, MBA

DZP Marketing

- **Alistair MacDonald (Marketing TCMS)** - Ceramic Engineer
- **Jeff Swingler (Special Strategic Advisor)** - CA, MEI



Alkane in the Central West NSW



- **Peak Hill Gold Mine 1996 - 2005**
- **Tomingley Gold Operations
Production commenced 2014**
- **Dubbo Zirconia Project
Pre-construction**
- **Advanced exploration projects at
Bodangora – Kaiser (Au – Cu)
Wellington (Cu – Au)
Elsienora (Au – base metals, barite)**

● Tomingley Gold Operations in steady state

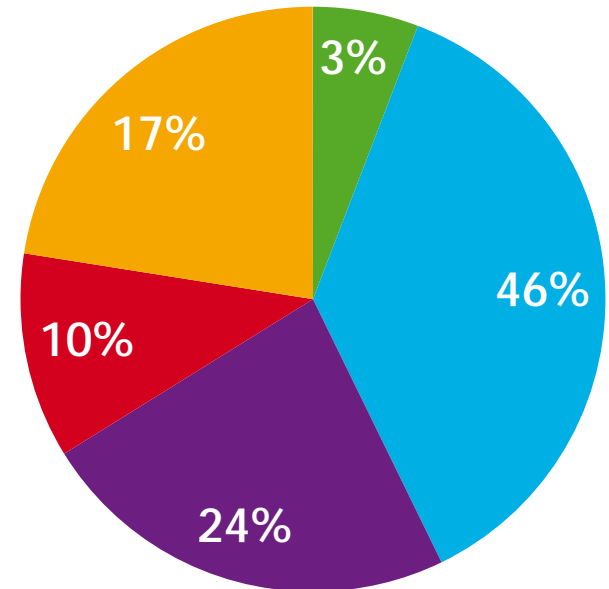
- Production 69,612 ounces
- Gold revenue A\$101.94 million
- Operating cash flow A\$28.6 million
- Capital A\$15.9 million (incl deferred waste A\$11.0M)

● FY15 Financials

- Total income A\$102.5 million
- Loss after income tax A\$4.1 million
- Total equity A\$170.5 million
- Market cap at 17 November A\$90 million
- Issues cap 414.2 million shares
- Cash and bullion A\$19.6 million. No debt

● Dubbo Zirconia Project – FEED, process development, marketing

- FY15 total expenditure A\$15.8 million
- Funded from TGO cash flows



- Hedge Funds
- Retail & others
- Directors & Management
- Foreign Institution
- Domestic Institutions

Major Shareholders:

- 22% Abbotsleigh (Gandel Metals)
- 10% Fidelity Group

Tomingley Gold Operations FY15

- **\$115 million funded without debt**
- Resource – 688,000oz of gold (21 Sept 2015)
- Mine Method – open cut & underground
- Mine Life – 6.5 years (targeting 10+ yrs)
- Processing plant throughput – 1.0Mtpa
- 2.00g/t Au and 93% recovery standard CIL
- Gold Production – ~400,000oz over base case life



Gold production commenced February 2014
FY15 at 30 June 2015:

- Production 69,612oz
- Revenue A\$101.9M
- Cash flow A\$28.6M
- AISC A\$1,249⁽¹⁾

(1) AISC = All in Sustaining Cost comprises all site operating cash costs, royalties, mine exploration, sustaining capex and mine development and an allocation of corporate costs presented on the basis of ounces produced.

Note: ASX announcement 21 September 2015 - the Company confirms that all material assumptions and technical parameters underpinning the estimated Mineral Resources and Ore Reserves, and production targets and the forecast financial information as disclosed continue to apply and have not materially changed.



ALKANE
RESOURCES LTD

TGO Site



CIL Processing Plant



Caloma open cut October 2015



ALKANE
RESOURCES LTD

TGO Q1 FY16

Continuous Improvement Programs

Mining:

TGO has been working collaboratively over the last 12 months with its fleet hire equipment provider, Emeco, to improve overall mining productivity. This project, “Emeco Better Solution”, has to date delivered a 12% increase in payload and 10% increase in operating efficiency lifting TGO’s fleet into the first or second quartile of similar mining fleets in Australia across most standard productivity metrics.

Processing:

The team has been focussed on stable recovery and lowering unit costs. This has been successful in reducing processing cost by >7% over the last 12 months to below that forecast in the DFS 2013.

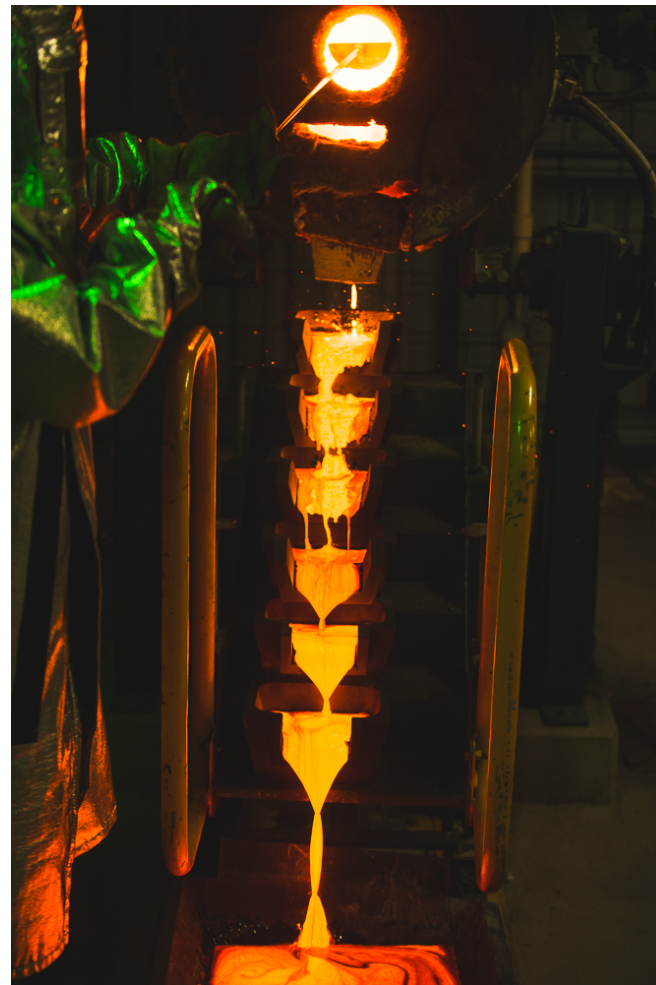
Q1 FY16:

- Production 19,789oz
- AISC⁽¹⁾ A\$1,234/oz
- Revenue A\$32.9M
- Operating cash flow A\$13.0M
- Gold forward 22,500oz @ A\$1,596/oz

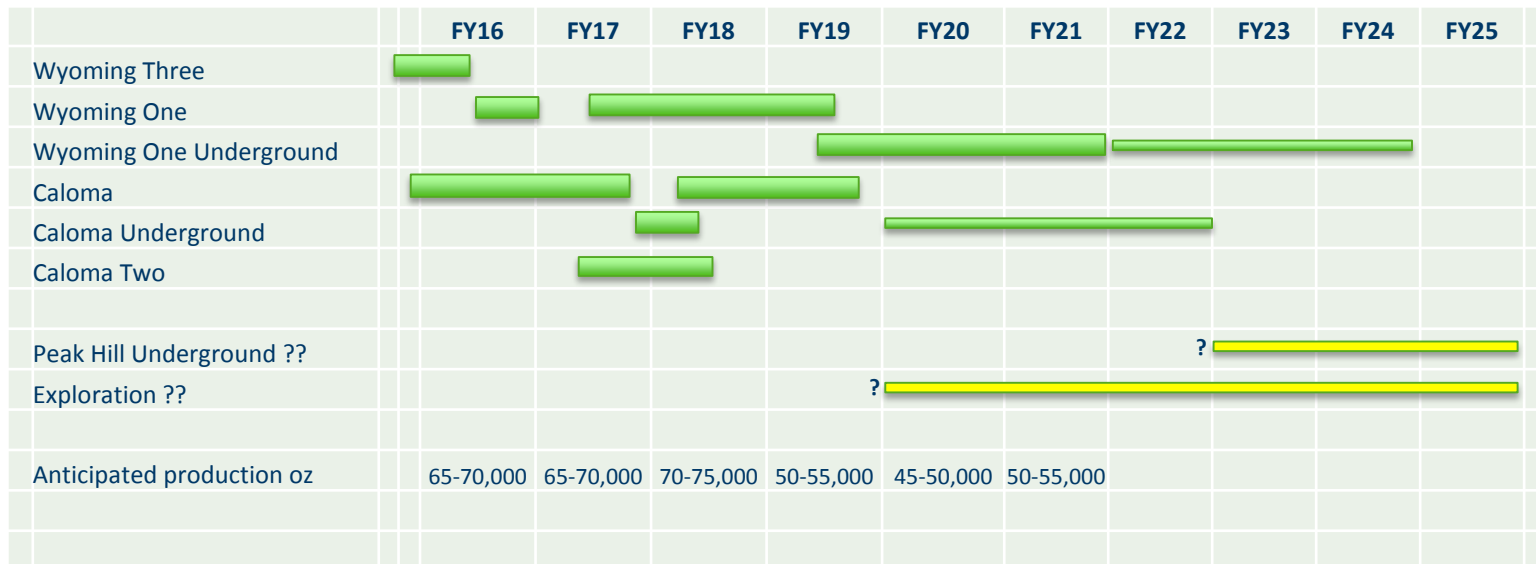
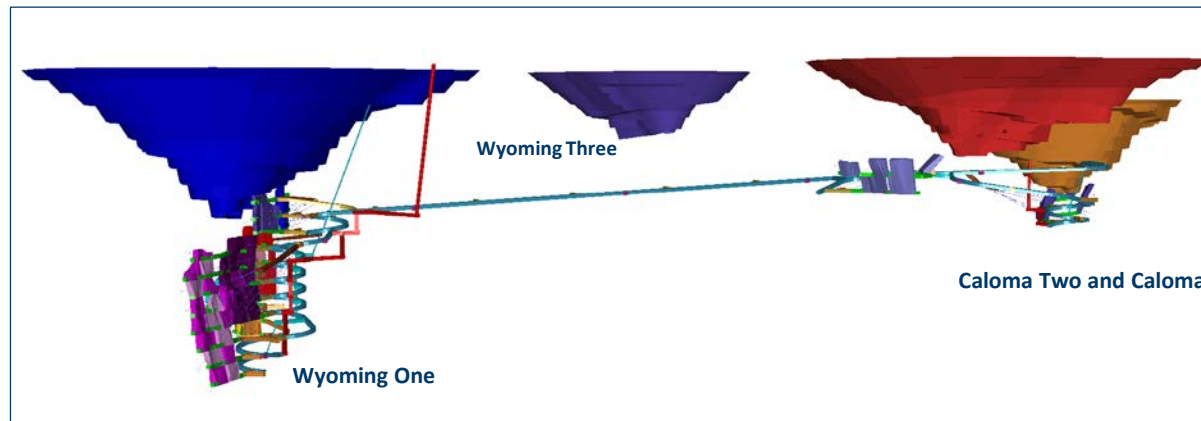
FY 2016 Guidance:

- Production 60,000 – 70,000oz
- AISC⁽¹⁾ A\$1,200 – 1,300/oz

(1) Defined on slide 7



TGO Mine Schedule



Scheduled



Possible



Potential

TGO Resource Expansion

Additional Resource Potential

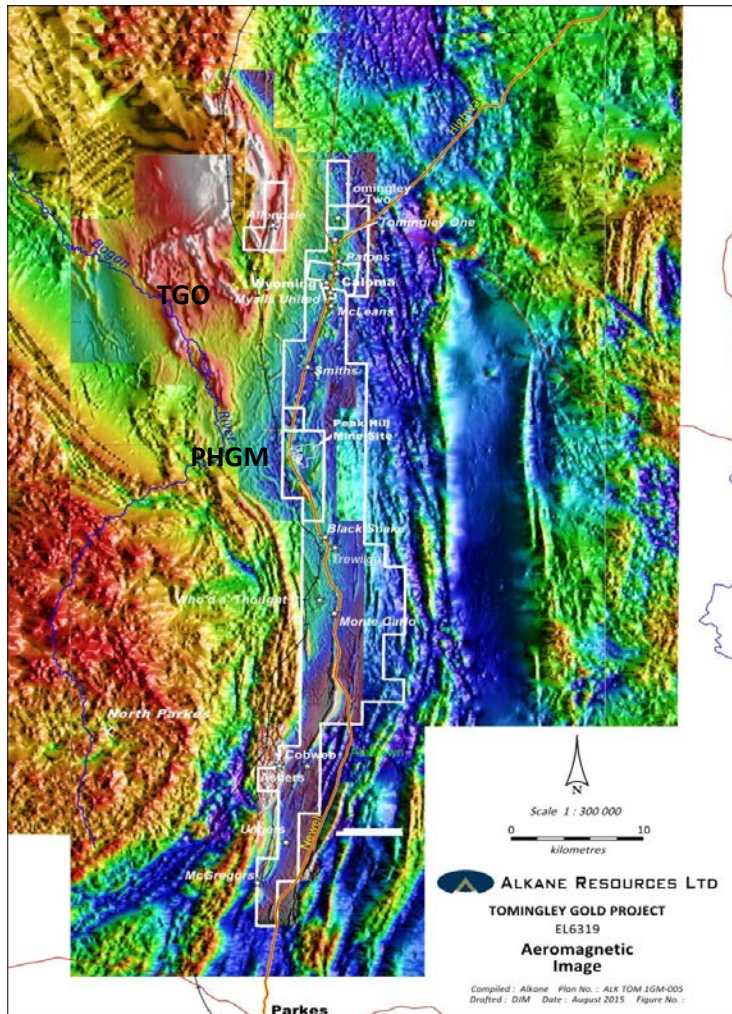
**Expand Wyoming One underground
Caloma and Caloma Two underground**

**Peak Hill - substantial gold copper mineralization
(non JORC 2012 Classification)**

**Myalls underground (historic gold production)
Wyoming Two and Three underground intercepts
Tomingley One and Two - ore intercepts
McLeans - ore intercepts
Smiths - alteration and low grade gold intercepts
Black Snake - ore intercepts**

Monte Carlo, Ungers, Ashes, McGregors - surface geochemical anomalies

**50 kilometre long zone of prospective geology with limited
exploration activity outside of the Peak Hill Gold Mine and TGO**



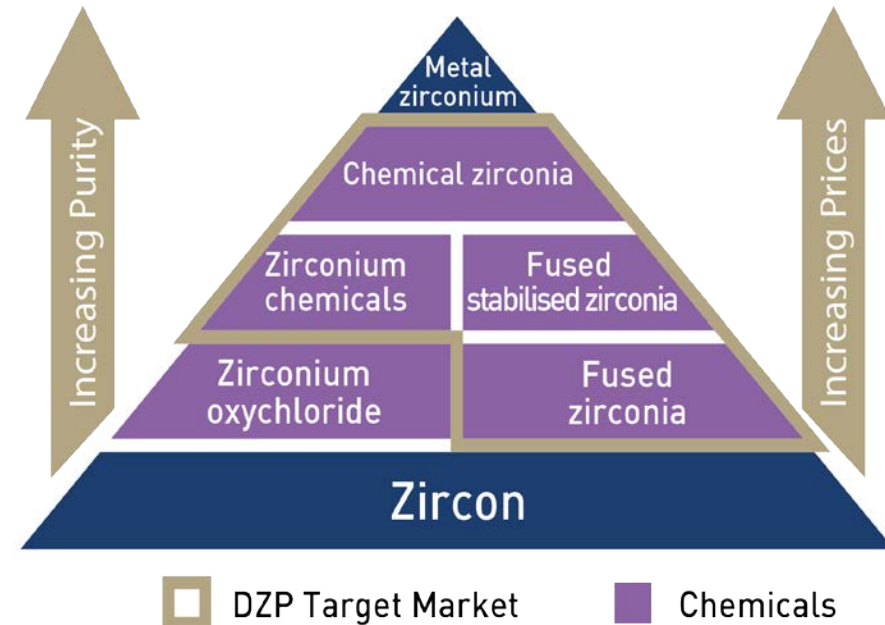
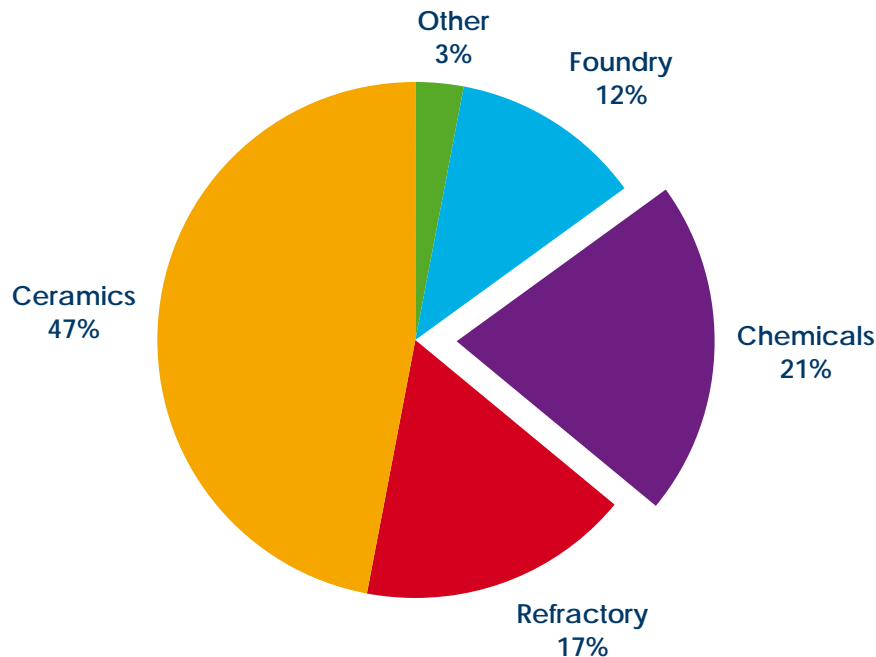
Dubbo Zirconia Project

- Located 400km northwest of Sydney within a region that has substantial infrastructure – roads, rail, power, gas, light engineering, people (~100,000), being a large agricultural and mining area
- A very large polymetallic resource of the metals zirconium hafnium, niobium (tantalum), yttrium and rare earths
- Important and strategic metal mix
- Reserve supports 35 year mine life at 1 million tonne ore processing per annum with defined resource supporting an 80 year open pit operation
- Demonstrated flow sheet with pilot plant and products for market evaluation operated at ANSTO since 2008
- August 2015 Front End Engineering Design (FEED) study confirmed the robust technical and financial DFS of April 2013
- State and Federal environment approvals in May and August 2015
- Finnish technology/engineering solutions company Outotec appointed for Early Contractor Involvement (ECI) in September to present a fixed price EPC



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Zircon Demand by End Use (2015 ~ 1 million tonnes)



- **Global market US\$2-3B**
- **2015 producer zircon inventories still high**
- **Market expected to stabilise through 2016 - 2017**
- **CAGR anticipated at 5% - 7% pa after stabilisation**

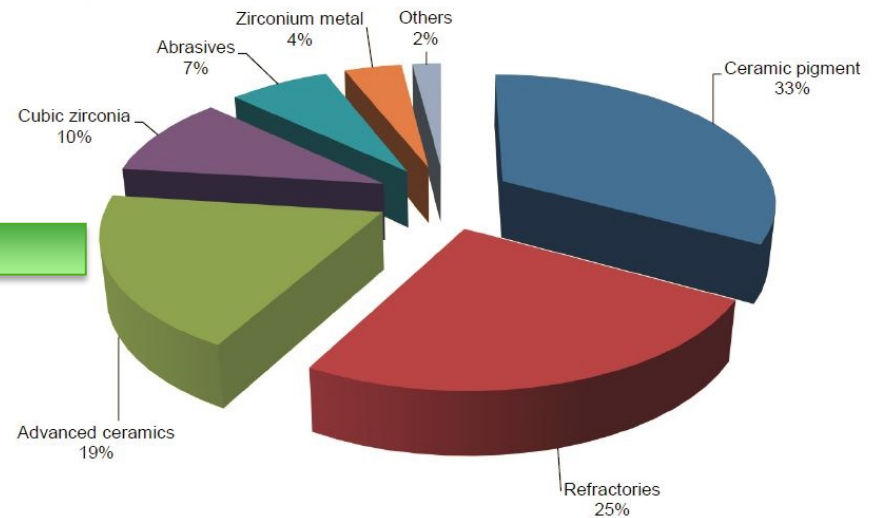
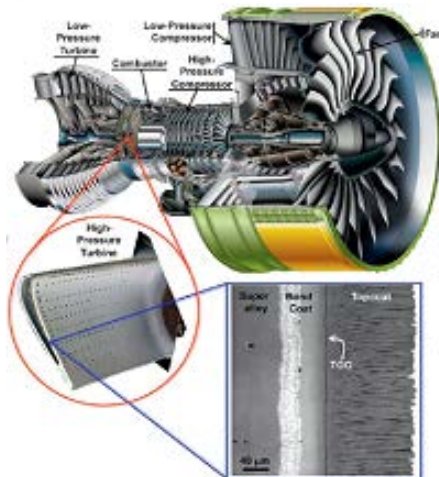
- **China dominates downstream zirconium industry (85-90%)**

Zirconium Applications

Auto exhaust catalysts – ceria stabilised zirconia



Thermal barrier coatings – yttria stabilised zirconia for jet and industrial gas turbines, and many other applications

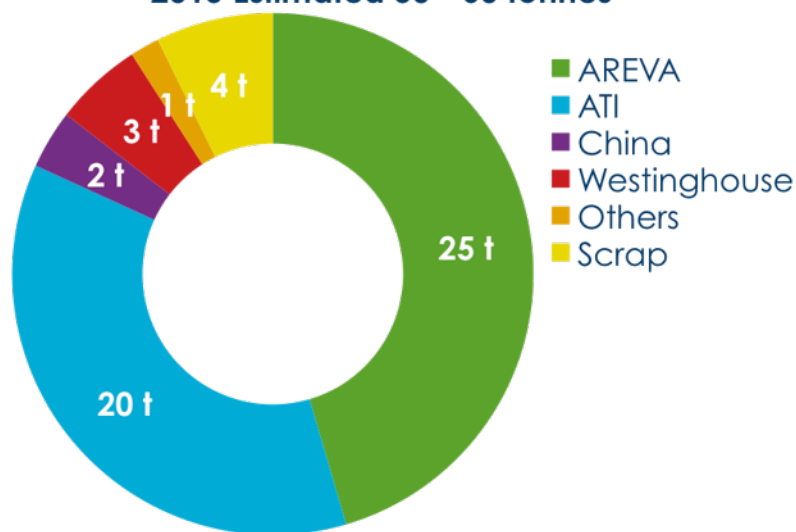


Substantial growth in advanced ceramics and cubic zirconia (jewellery)

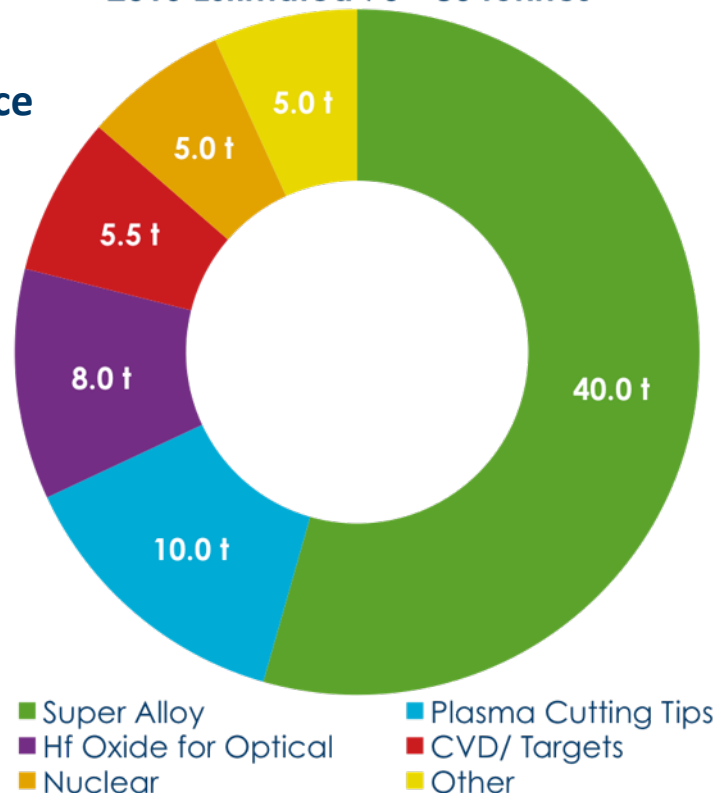
Current world demand for zirconium chemicals / zirconia ~ 160,000tpa

- **Super Alloys - 73% of 2015 supply**
- **By-product from zirconium metal**
 - Depends on nuclear industry
- **Prices escalating through demand by aerospace industries 2014 into 2015**

Hafnium Supply
2015 Estimated 50 - 60 tonnes



Hafnium Demand
2015 Estimated 70 - 80 tonnes

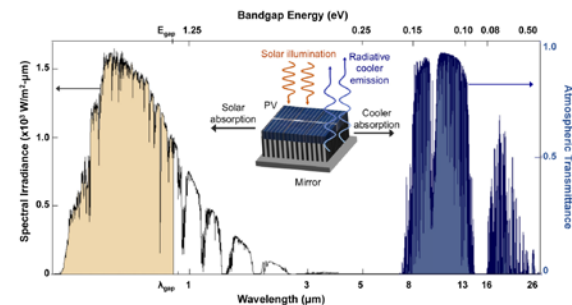


Hafnium Applications

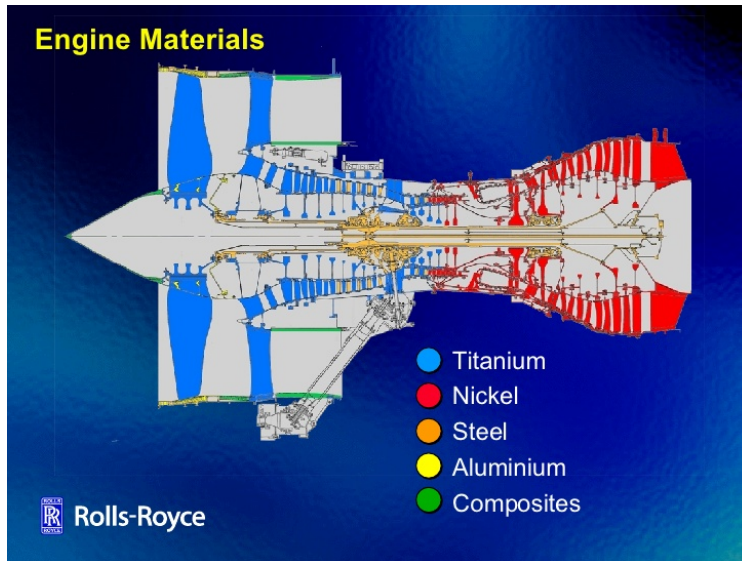
Many innovations developing around hafnium

Stanford Report, November 26, 2014

Stanford engineers invent high-tech mirror to beam heat away from buildings into space



Reflective $\text{HfO}_2\text{-SiO}_2$ layer pushes energy in to space and does not add heat to the atmosphere

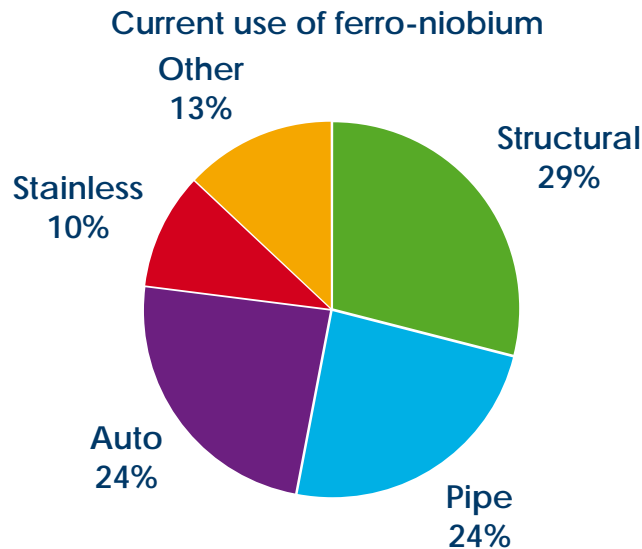


Addition of 1%-2% Hf to NiCo alloys raises operating temperature from 1,400°C to 2,000°C providing fuel efficiencies and emission minimisation.

Applicable to both jet engines and industrial gas turbines

Both passenger and military aircraft growth at plus 100% over the next five years

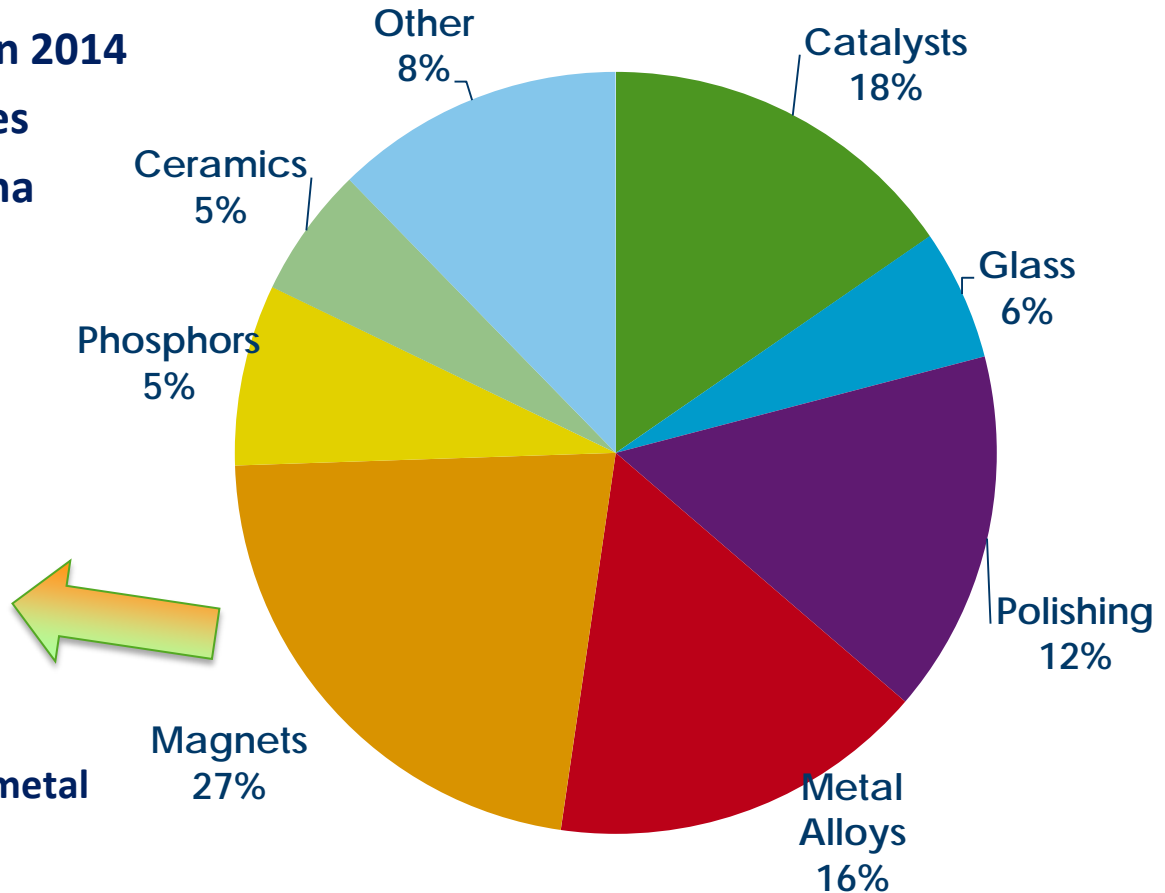
- 90% of Nb used in standard grade ferro-niobium for the production of high strength low alloy (HSLA) steels
- World production estimated at 80,000t Nb in 2012. CBMM in Brazil accounts for 85%
- Global market US\$3-4B. Price stability since 2008, including GFC
- CAGR anticipated at 10%. Demand expected to be driven by greater intensity of use in steels by BRIC producers



- **US\$3-5B Global market**
- **136,000t Annual consumption 2014**
- **3-5% Annual growth estimates**
- **85-90% REE produced by China**

- **Permanent magnet dominant consumer and growth ~ 8% pa**
- **Annual magnet market ~US\$20B**
- **Major use for Nd, Pr, Dy and Tb**
- **Growth in other REs for special metal alloys and ceramics**

REE Demand 2016 by Application



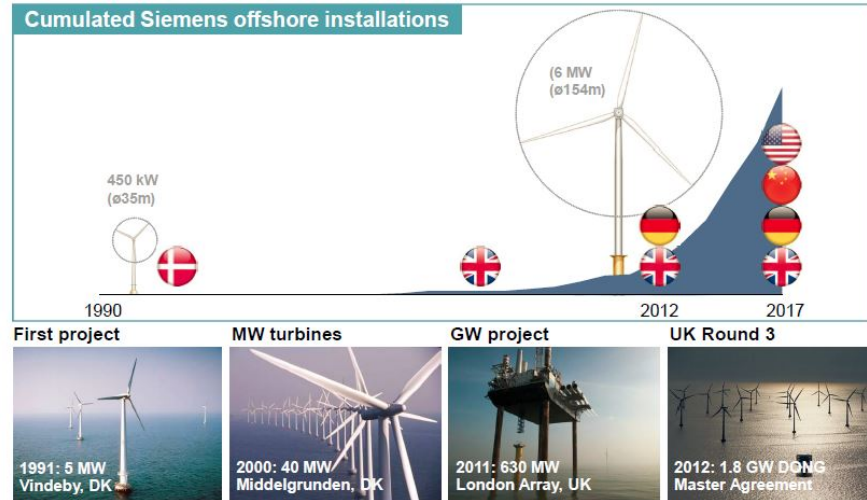
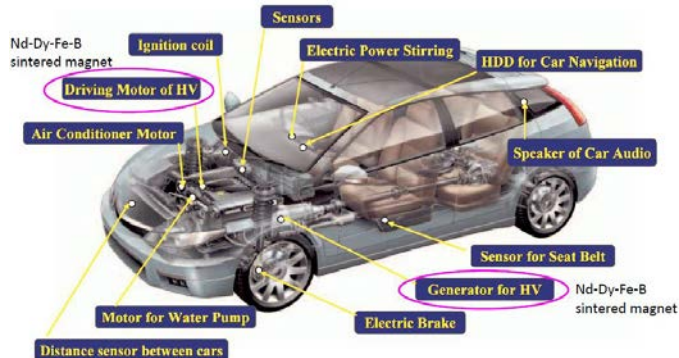
Rare Earth Applications – Permanent Magnets

Permanent Magnets – major growth

- Hybrid and electric cars
- Wind turbine
- Industrial gas turbines
- Marine electric motors

More than 100 magnet motors in one car

Ferrite magnet → Nd magnet → High-end ferrite magnet (added La, Co), SRM etc.



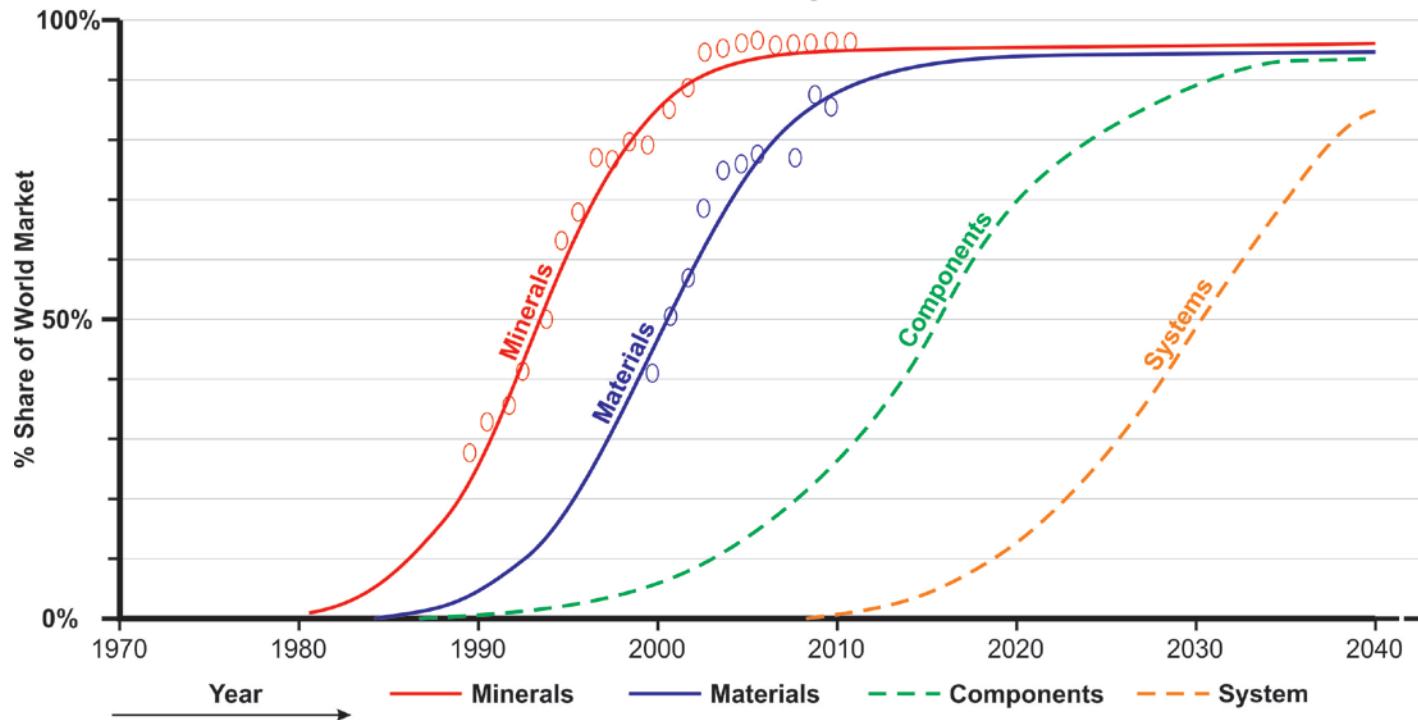
Restricted © Siemens AG 2014 All rights reserved.

Thyssen Krupp Maritim Permasyn marine propulsion systems



China's REE dominance

China's market share on steps of REE value chain



The value increases from **US\$4B Minerals**; **US\$40B Materials**; **US\$400B Components**; to **US\$4T Systems**

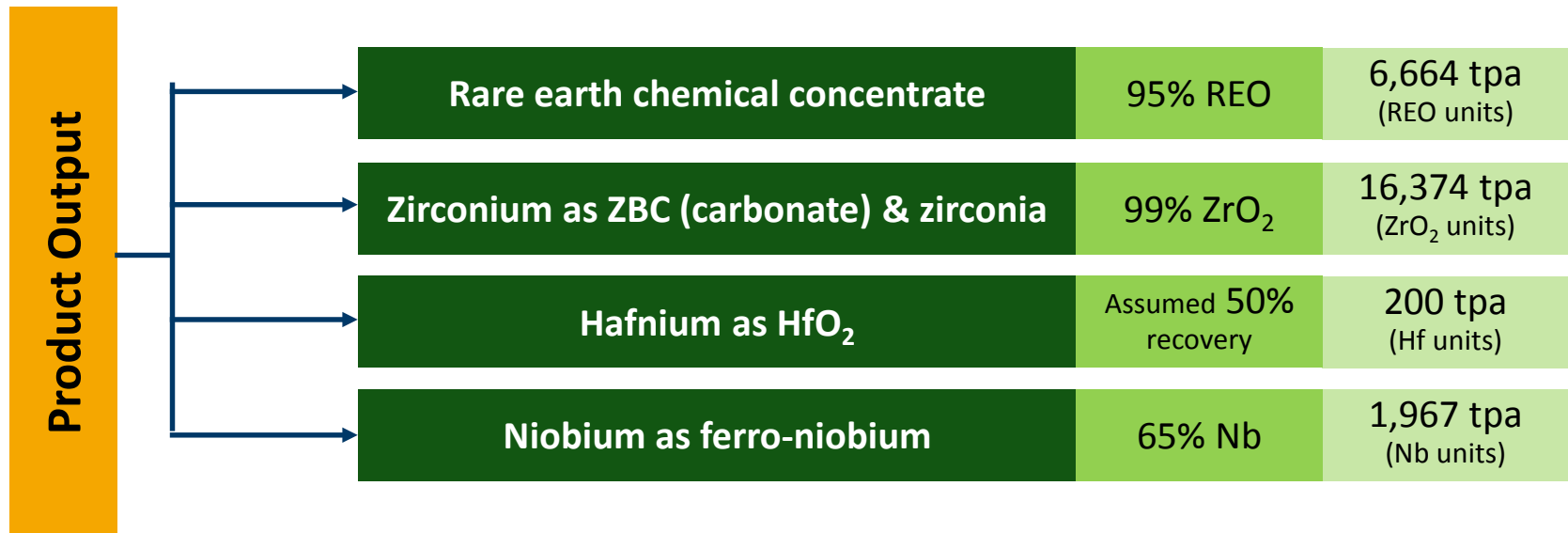
Is the rest of the world prepared to accept China's domination of high-tech and advanced materials manufacture?

Source: Karl Gerald van den Boorgart, Polina Klossek and Andreas Klossek, "How Forward Integration along the Rare Earth Value chain Threatens the Global Economy", paper presented at 2014 Critical Minerals Conference, Denver, Colorado, August 3-5 2014. Referenced in "The Elements of Power, Gadgets, Guns and The Struggle for a Sustainable Future in the Rare Metal Age, David S Abraham, published by Yale University Press, October 2015.

DZP 2015 Key Milestones

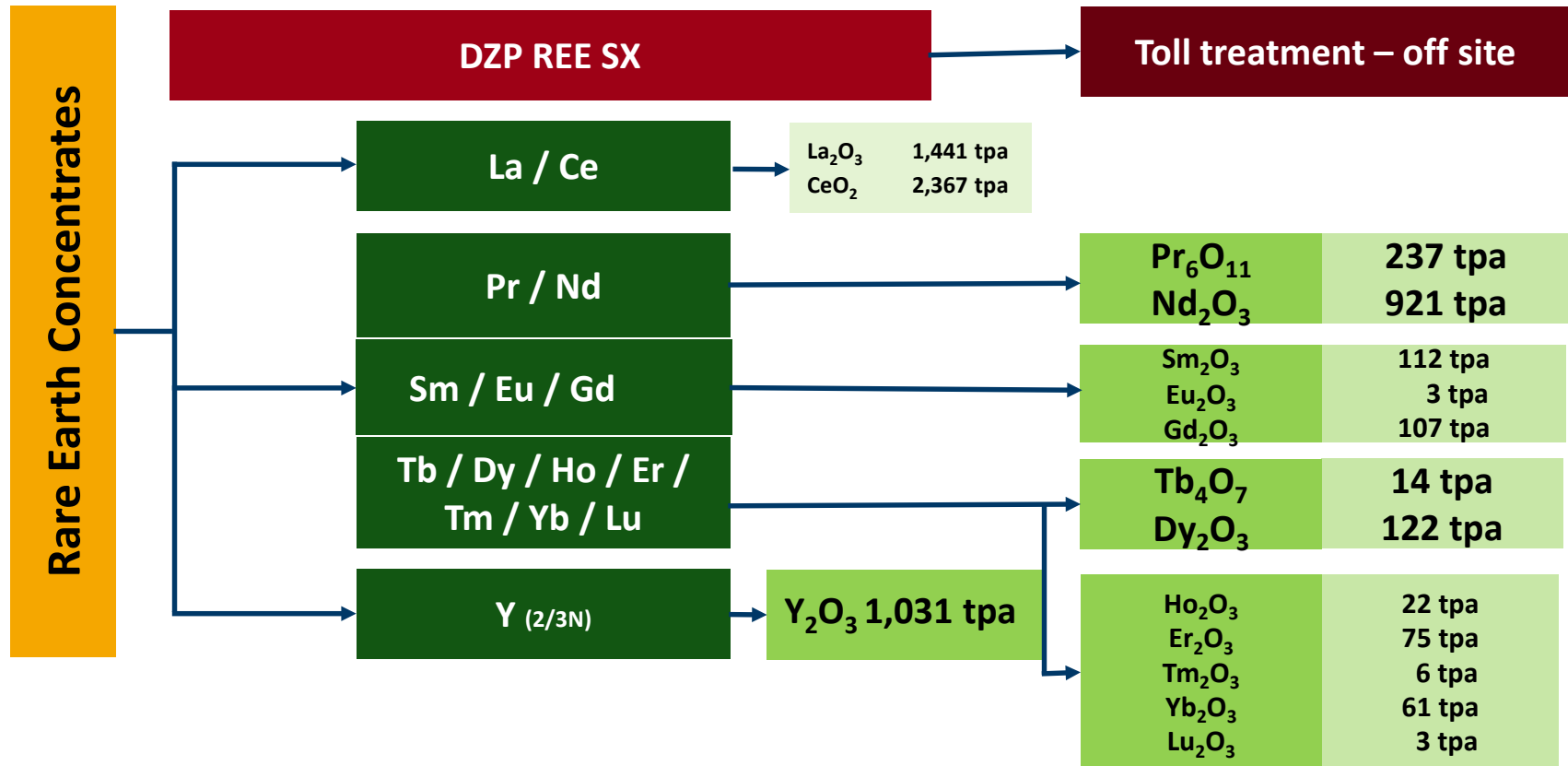
- State Approval 28 May
 - Federal Department of Environment Approval 25 August
 - Front End Engineering Design (FEED) completed 27 August
 - Revamped flowsheet, with specific rare earth separation on site, improved waste management and reduced water consumption
 - Technology engineers Outotec appointed 29 September for Early Contractor Involvement (ECI) to produce EPC (Fixed price) construction cost
-
- Environmental Protection Licence (EPL) and Mining Lease approval expected shortly
-
- Financing, rare earth processing and product off-take agreements – continued progress





Tonnage based upon recoveries developed from mass balances of the demonstration pilot plant.
Total output approximately 25,200 tpa of all products

Rare Earth Output



Tonnage based upon recoveries developed from mass balances of the demonstration pilot plant, and preliminary solvent extraction stages on site at the DZP. Total saleable RE products from site ~1,030 tpa and off site ~ 1,675 tpa.

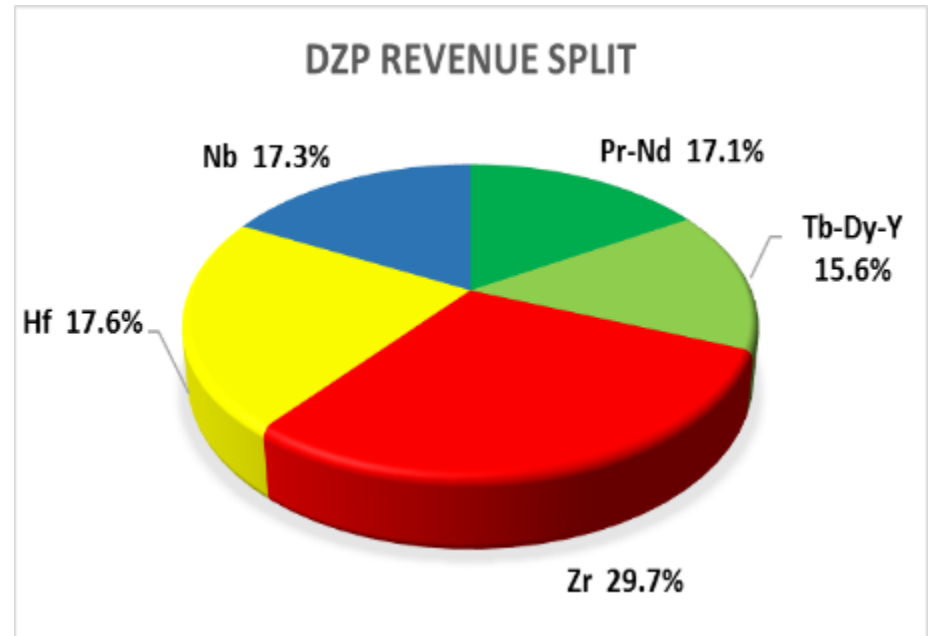
2015 Financial Summary

Front End Engineering Design (FEED) completed August 2015

Capex A\$1.3B / A\$103M contingency
 Revenue A\$550 - \$600Mpa
 Opex A\$260Mpa
 EBITDA A\$290 - \$340Mpa
 20 year NPV A\$1.2B (8%) and 17.5% IRR

Revenue based upon Chinese domestic rare earth prices
 and current spot ranges for Zr, Hf and Nb

Rare earth revenues largely derived from Pr, Nd, Tb, Dy
 and Y (for production of RE magnets and special
 ceramics/alloys)



Operating costs to produce a kilogram of product range from US\$7.50 to US\$8.00/kg

Revenue averages US\$17.00/kg (REO US\$23/kg or US\$56/kg without La/Ce; Zr US\$8.26/kg; Hf US\$500/kg; Nb US\$40/kg)

Capital intensity ~ US\$35/kg of product

Marketing and Off-take

- Joint venture with Treibacher Industrie AG to produce and market ferro-niobium
- Finalising a zirconium product marketing agreement for world wide sales
- Advancing the off-site rare earth processing agreement to enable marketing of separate rare earth products
- Continued discussions with multiple end users for all products



Funding Strategy

Investment at Project Level

- Strategic Investment(s)
- Advisors: Sumitomo Mitsui Banking Corp (SMBC) & Credit Suisse
- Strategic interest(s) in long term supply of critical metals
- Intro of cornerstone investor(s)

Government Assistance Programs

- ECA Style Funding
- Lead coordinator: SMBC
- Attractive Project
 - Long life, low cost
 - Long term off-take-agreements with international companies

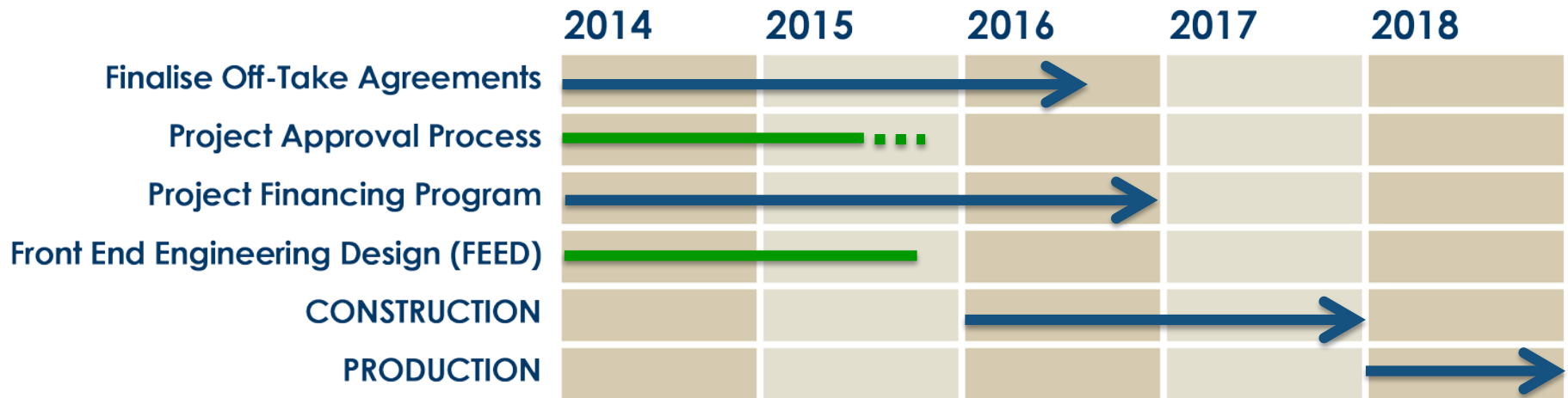
Commercial Bank Debt (CBD)

- Advisors: SMBC & Credit Suisse
- Attractive Project
 - Strong operating cash flows
 - Diversified revenue stream
 - New markets

Equity Capital Markets (ALK)

- Advisors: Credit Suisse & Petra Capital

- **Total project capex ~US\$1.3B (including ~10% contingency)**
- **Advisor financial modelling indicates Export Credit Agency/CBD capacity 60% - 70%**
- **ECA discussions suggest 30% - 40% of capex requirements**
- **Strategic investment will be an important catalyst to funding**
- **Discussions have advanced since Project approval in May**



FEED provided ~30% detail design and the Project engineering design is now at construction stage awaiting finance.

Estimates of times are indicative only and are subject to change.
Alkane reserves the right to vary the timetable without notice.

The DZP Advantage

- **Internationally strategic with supply of several critical metals from non-Chinese sources**
- **Business case has robust revenues, even at current Chinese domestic RE and Zr prices**
- **Full spectrum of rare earth magnet materials – neodymium, praseodymium, dysprosium and terbium produced, as well as other “heavy” rare earths and yttrium which have developing advanced materials applications**
- **The DZP’s diversified output gives a very different revenue profile to Lynas’ Mt Weld and Molycorp’s Mt Pass pure rare earth operations, providing increased stability in variable markets**
- **Production of zirconium chemicals not related to zircon or the mineral sands industry. New high purity zirconium product**
- **Potential to be the world’s largest hafnium producer and supply long term stable production and pricing into the expanding aerospace and industrial gas turbine industries, not related to the production of nuclear grade zirconium metal**
- **Current estimated operating cost structure very competitive @ US\$7 - \$8/kg of product produced**

Thank you

2015 Awards

2015 Women in Resources National Awards NSW Winner - Simone Painter – Processing Manager TGO

NSW Minerals Council Environment and Community 'Leadership' category - Mike Sutherland General Manager NSW

NSW Minerals Council Environment Excellence Category – Alkane Resources Ltd 'Leaving No Stone Unturned to Conserve the Pink-Tailed Worm-Lizard at the DZP site'

Dubbo Zirconia Project – Mineral Resources

Toongi Deposit	Tonnage (Mt)	ZrO ₂ (%)	HfO ₂ (%)	Nb ₂ O ₅ (%)	Ta ₂ O ₅ (%)	Y ₂ O ₃ (%)	REO (%)
Measured	35.70	1.96	0.04	0.46	0.03	0.14	0.75
Inferred	37.50	1.96	0.04	0.46	0.03	0.14	0.75
Total	73.20	1.96	0.04	0.46	0.03	0.14	0.75

These Mineral Resources are based upon information compiled by Mr Terry Ransted MAusIMM (Alkane Chief Geologist) who is a competent person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Terry Ransted consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. The full details of methodology were given in the 2004 Annual Report.

Dubbo Zirconia Project – Ore Reserves

Toongi Deposit	Tonnage (Mt)	ZrO ₂ (%)	HfO ₂ (%)	Nb ₂ O ₅ (%)	Ta ₂ O ₅ (%)	Y ₂ O ₃ (%)	REO (%)
Proved	8.07	1.91	0.04	0.46	0.03	0.14	0.75
Probable	27.86	1.93	0.04	0.46	0.03	0.14	0.74
Total	35.93	1.93	0.04	0.46	0.03	0.14	0.74

These Ore Reserves are based upon information compiled by Mr Terry Ransted MAusIMM (Alkane Chief Geologist) who is a competent person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The reserves were calculated at a 1.5% combined ZrO₂+Nb₂O₅+Y₂O₃+REO cut off using costs and revenues defined in the notes in ASX Announcement of 16 November 2011. Terry Ransted consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

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Resource & Reserves: Tomingley

TOMINGLEY GOLD PROJECT MINERAL RESOURCES (as at 30 June 2015)									
DEPOSIT	MEASURED		INDICATED		INFERRED		TOTAL		Total Gold (Koz)
	Tonnage (Kt)	Grade (g/t Au)	Tonnage (Kt)	Grade (g/t Au)	Tonnage (Kt)	Grade (g/t Au)	Tonnage (Kt)	Grade (g/t Au)	
Open Pittable Resources (cut off 0.50g/tAu)									
Wyoming One	2,171	1.7	442	1.5	735	1.1	3,348	1.5	167
Wyoming Three	206	1.7	122	1.7	2	1.1	330	1.7	18
Caloma	2,163	1.8	582	1.7	2,008	1.5	4,753	1.7	254
Caloma Two	-	-	1,085	2.4	704	1.3	1,789	2.0	112
Sub Total	4,540	1.8	2,231	2.0	3,450	1.4	10,220	1.7	551
Underground Resources (cut off 2.50g/tAu)									
Wyoming One	168	4.8	205	4.4	361	4.2	735	4.4	104
Wyoming Three	12	3.6	20	4.5	25	3.3	57	3.8	7
Caloma	0	3.1	4	2.9	81	3.2	84	3.2	9
Caloma Two	-	-	92	3.5	63	3.2	155	3.3	17
Sub Total	180	4.7	321	4.1	530	3.9	1,031	4.1	136
TOTAL	4,720	1.9	2,552	2.3	3,979	1.7	11,251	1.9	687

TOMINGLEY GOLD PROJECT ORE RESERVES(as at 30 June 2015)							
DEPOSIT	PROVED		PROBABLE		TOTAL		Total Gold (Koz)
	Tonnage (Kt)	Grade (g/t Au)	Tonnage (Kt)	Grade (g/t Au)	Tonnage (Kt)	Grade (g/t Au)	
Wyoming One	1,665	1.6	202	1.3	1,867	1.5	94
Wyoming Three	173	1.6	5	1.4	178	1.5	9
Caloma	1,247	1.9	72	1.5	1,319	1.8	80
Caloma Cut Back	222	1.5	66	1.4	288	1.4	14
Caloma Two	-	-	243	3.5	243	3.5	27
							-
Stockpiles	468	0.8	-	-	468	0.8	12
TOTAL	3,775	1.6	588	2.2	4,363	1.6	235

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