



ROYAL  
RESOURCES LIMITED

Razorback:  
a technically and financially  
robust project

19<sup>th</sup> February, 2013



**VISION**

**Become a significant and profitable iron ore miner and producer of premium grade iron concentrate**



**STRATEGY**

**Define a significant resource, demonstrate technical and financial viability, attract funding through an end-user partner**



**OUTLOOK**

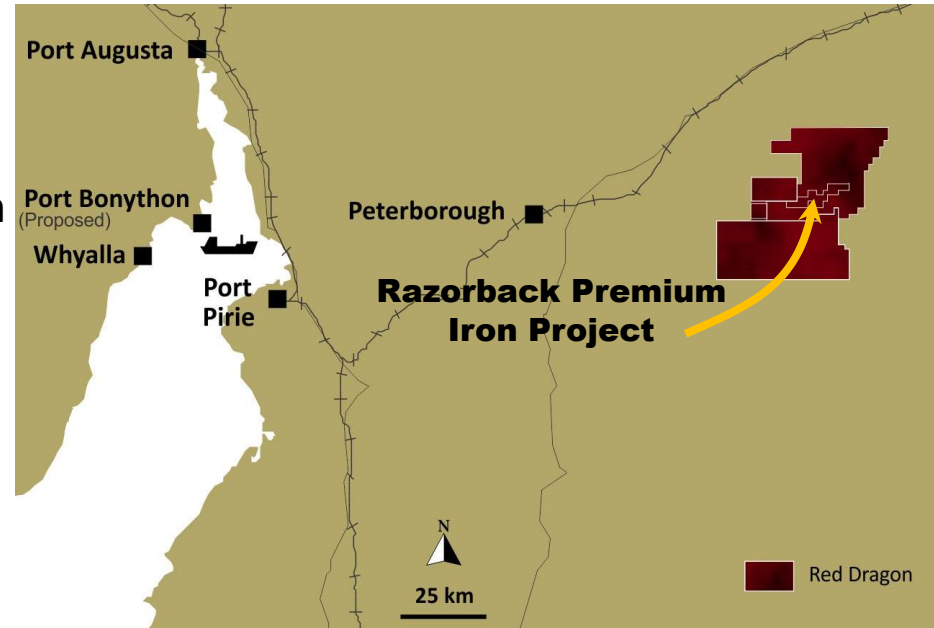
**On path to realisation**



# THE RED DRAGON VENTURE:

*opening a significant new iron ore district*

- ❖ Large scale iron project in South Australia
- ❖ 4 to 8 Billion tonnes of exploration potential at 18 to 45% Fe<sup>1</sup>
- ❖ Over **3 Billion tonnes** of JORC-compliant resources defined to date<sup>2</sup> in two stand-alone projects:
  - Razorback Premium Iron Project
  - Ironback Hill Iron Project
- ❖ Multiple prospects in pipeline to define additional projects



<sup>1</sup> ASX announcement on 24 March, 2011. The potential quantity and grade of the exploration target is conceptual in nature, there has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the determination of a Resource. The estimate of an exploration target tonnage should not be construed as an estimate of Mineral Resource.

<sup>2</sup> ASX announcement on 21 November, 2012

# RAZORBACK PREMIUM IRON PROJECT CONCEPT:

*A company making opportunity*

- ❖ Large scale conventional open pit mining of a robust ore body
- ❖ Targeting +8 Mtpa high grade concentrate product
- ❖ Single stage crushing & grinding to 45 $\mu$ m
- ❖ Standard flow sheet
- ❖ Slurry to the coast
- ❖ Innovative floating stock-pile solution without need for a port
- ❖ Lower end of the cost curve





# STUDY PARTNERS:

Backed by world-class organisations providing best practice input



Ample resources to back a long-lived operation

Project	Mineral Resource JORC Classification	Million Tonnes	Fe%	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%
Razorback	Indicated	1,193	21.5	43.4	7.1	0.20
	Inferred	623	19.9	45.6	7.4	0.24
<b>subTOTAL</b>		<b>1,816</b>	<b>21.0</b>	<b>44.1</b>	<b>7.2</b>	<b>0.22</b>
Ironback Hill	Inferred	1,187	23.2	44.1	7.2	0.21
<b>TOTAL<sup>1</sup></b>		<b>3,003</b>	<b>21.8</b>	<b>44.1</b>	<b>7.2</b>	<b>0.21</b>

<sup>1</sup> Rounded to significant figure

- ❖ One of Australia's largest magnetite resource inventories
- ❖ Razorback Indicated Resource is currently being converted to Probable Reserve
- ❖ Total cost in defining these Resources and delivering the PFS was \$0.009/t
- ❖ Upside exploration potential for an additional 1,800 to 5,000Mt at 18% to 45% Fe<sup>1</sup>

<sup>1</sup> The potential quantity and grade of the exploration target is conceptual in nature, there has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the determination of a Resource. The estimate of an exploration target tonnage should not be construed as an estimate of Mineral Resource.



## PREMIUM QUALITY PRODUCT:

Sort after pellet feed grades with low contaminate levels

	Recovery	Fe%	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%	S%
Magnetite product	16.5%	67.4	4.74	0.54	0.016	0.003
Haematite product	4.0%	61.8	8.45	0.76	0.078	0.016
<b>TOTAL<sup>1,2</sup></b>	<b>20.5%</b>	<b>67.0</b>	<b>4.74</b>	<b>0.5</b>	<b>0.026</b>	<b>0.005</b>

<sup>1</sup> Rounded to significant figure

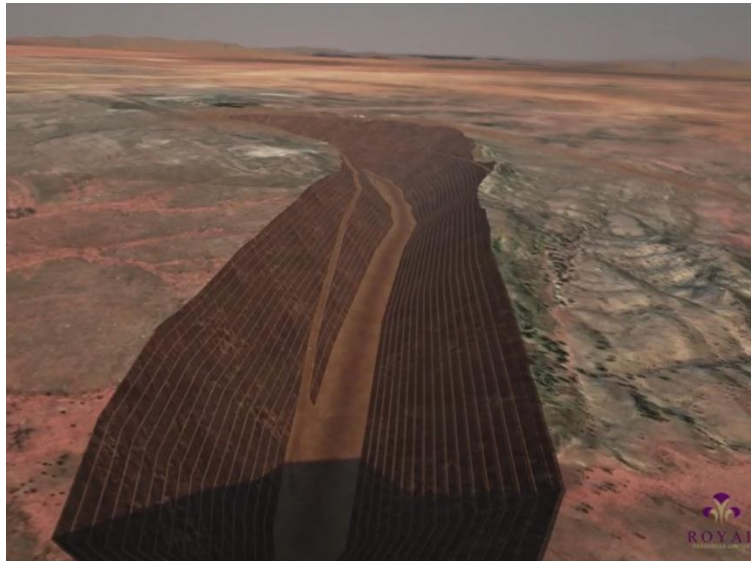
<sup>2</sup> Assumes an additional 1% magnetite and 4% haematite is recovered via a haematite recovery circuit

- ❁ 370 million tonnes of contained iron
- ❁ High grade product is likely to attract a grade premium, currently about \$4/Fe%/t, or US\$20/t; sufficient to cover freight in to China
- ❁ Optimisation studies underway to address the Quality vs Quantity trade-off
- ❁ Magnetite recovery circuit finalised
- ❁ Haematite recovery circuit subject to “whole of deposit” characterisation



# OPEN PIT MINING:

*Standard, low risk mining*



- ❖ 40Mtpa ROM operation
- ❖ Standard drill & blast, shovel & truck operation
- ❖ Low strip ratio of 0.79:1<sup>1</sup>
- ❖ No prestrip



- ❖ Digging ore from Day 1
- ❖ Single gyratory crusher feeding a linear ROM stockpile that allows blending
- ❖ Tailings/waste co-disposal

<sup>1</sup> for a 15 year optimised pit

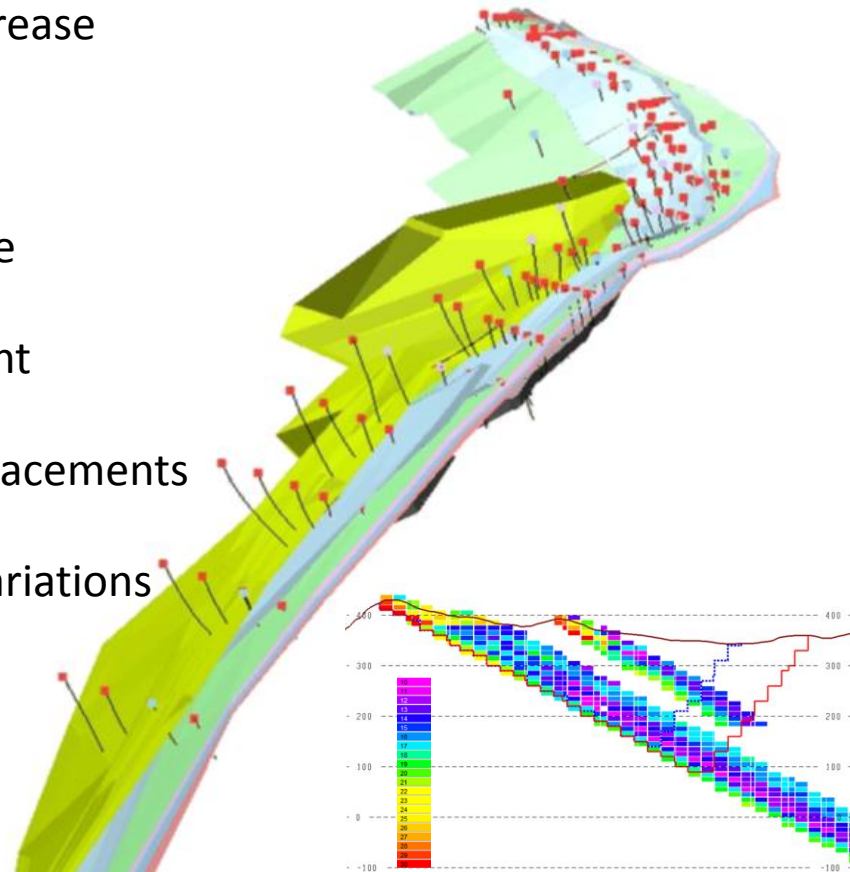




## PIT MINING CONFIGURATION:

*Minimising strip and haul, maximising efficiency*

- ❖ 285m LoM pit depth, with option to increase
- ❖ High Rock Mass Quality (RQD) allowing:
  - 75° batter angle, 54.4° overall angle
  - 6.2m berm width, 20m batter height
- ❖ Low footwall angle (~42°) eases ramp placements
- ❖ Optimised pit shells are insensitive to variations in processing costs, indicating a robust ore body





## INDUSTRY STANDARD FLOW SHEET:

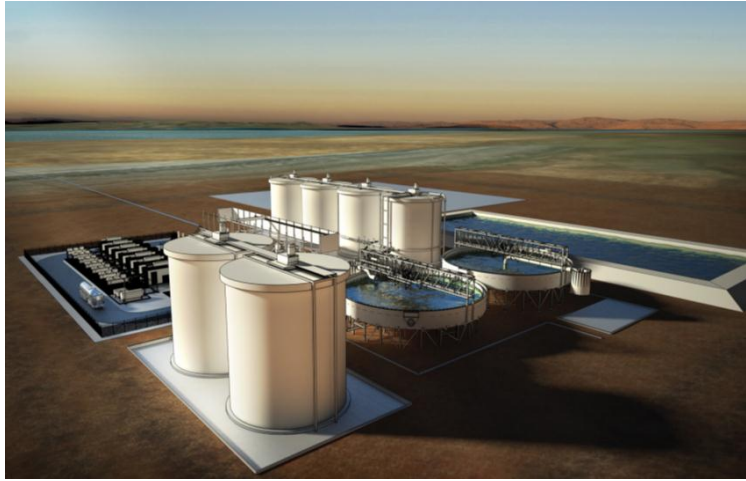
*Backed by extensive metallurgical testing*

- ❖ Two-module processing plant
- ❖ Each consists of a SAG mill and two ball mills to grind the ore to 45 $\mu$ m
- ❖ Iron recovered via a two stage wet low intensity magnetic separation followed by a spiral circuit for final cleaning
- ❖ A haematite recovery circuit is being validated to lift yield above 20%
- ❖ The concentrate will be pumped to the coast through a 230km slurry pipeline
- ❖ Tailings are thickened and pumped to a Tailings Storage Facility where additional free water is recovered by ponding



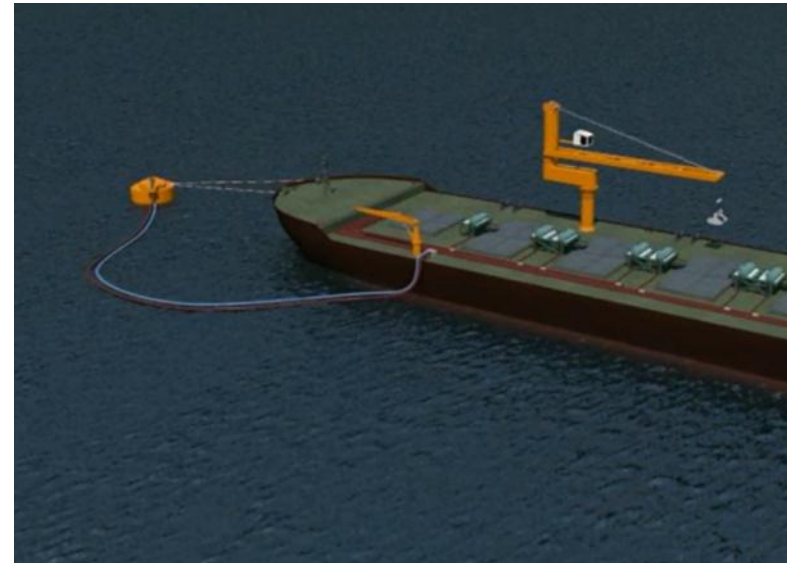
## LOW COST EXPORT FACILITY:

*Innovative approach delivers cost and time benefits*



- ❖ Iron concentrate is received at the coastal facility where it is further thickened.....
- ❖ .....then pumped via a subsea line to a permanently moored Dewatering Transshipment Vessel (DTSV)

- ❖ The DTSV dewateres the slurry and stores the dried concentrate for later transfer to the Ocean Going Vessel
- ❖ Recovered water is pumped back to the mine site along with top-up desalinated water produced on the DTSV





## ADVANTAGES OF SLURRY OVER RAIL:

*Lower OPEX makes the case for a slurry pipeline compelling*



Compared to rail, slurring:

- has 4 times lower OPEX
- requires only one product rehandling, compared to up to 5 for rail
- does not require mine and port stockpiles, stacker-reclaimers, train unloader, conveyor systems, ship loader, mine spur line, or rolling stock, making it almost CAPEX neutral
- has reduced dust, noise and traffic impacts, and is essentially invisible
- can access virtually any part of the Spencers Gulf coastline, rather than being tied into a size-restricted Pt Pirie that attracts high port charges or building a greenfields port facility





## KEY ADVANTAGES FOR RAZORBACK:

*A robust project in a prime location*

- ❖ Grid access to lower cost power: **\$0.06/kWh indicated (excl carbon tax)**
- ❖ Low rock strength: **lower power usage**
- ❖ Large resource base with upside: **25 year mine life with blue sky potential**
- ❖ Ore from surface: **mining ore from Day 1, Life of Mine strip ratio 0.79:1**
- ❖ Cost effective transport: **ideal product sizing for slurring**
- ❖ Close to population base: **3½ hrs drive from Adelaide, proximal to workforce**
- ❖ Premium product: **high iron, low alumina and phosphorous; optimum pellet feed**
- ❖ Optimisation paths identified: **reduction in OPEX and CAPEX are being sort**





# OPEX:

At about the 50th percentile of global costs

Operating area	OPEX A\$ / t of product
Mining <sup>1</sup>	\$31
Beneficiation	\$17
Transport to DTSV, dewatering & transhipment	\$9
Infrastructure and Admin	\$6
Royalties <sup>2</sup>	\$5
<b>TOTAL<sup>3</sup></b>	<b>\$68</b>



Base case uses contract mining. Owner operator mining may reduce OPEX by up to \$8/t

<sup>1</sup> Weighted averages of ore and waste      <sup>2</sup> State royalty of 2% is applicable for the first 5 years operation; 5% thereafter. Vendor royalty of 1.25% applies.      <sup>3</sup> Carbon tax excluded

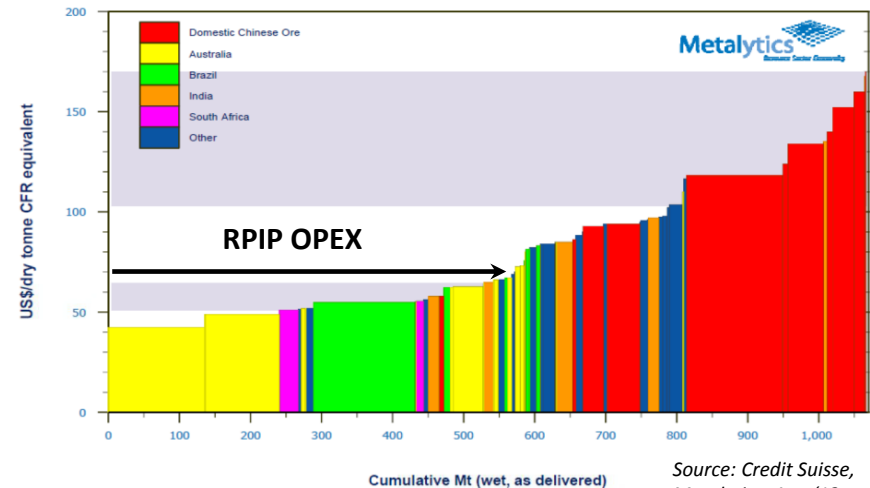


Over 550Mt of world traded production is more expensive than the Razorback product



Shipping costs are off-set by the premium the Razorback product will attract

Cost curve US\$ / t





# CAPEX:

Option to reduce to \$1,000

	Operating area	CAPEX A\$ Million
<b>Direct Costs</b>	Mining	-
	Primary Crushing & ROM stockpile	69
	Processing	281
	Tailings Disposal	140
	Slurry pipeline with water return	741
	DTSV fit out	54
	Desalination plant	130
	Port infrastructure	5
	Plant infrastructure (incl accom & roads)	92
	Power transmission line	63
<b>Indirect Costs</b>	EPCM	234
	Owner costs	78
	Construction	45
<b>Contingency</b>		302
<b>TOTAL<sup>1</sup></b>		<b>2,234</b>

- ❖ Contract mining
- ❖ Outsourcing the slurry pipeline and ship loading facility could reduce CAPEX to under \$1,000M



<sup>1</sup> Rounded to significant digit



Areas being assessed to optimise the operation:

 Mining:

- Continuous surface miners
- In-pit crushing and conveying
- Trolley-assist truck haulage
- Pit wall steepening
- Owner – operator mining

 Processing

- Optimise haematite recovery
- Alternative tailings dewatering and storage

 Transport

- Slurry pipeline lining and return water pipeline configuration
- Pipeline, ship loading facility, and desalination plant ownership

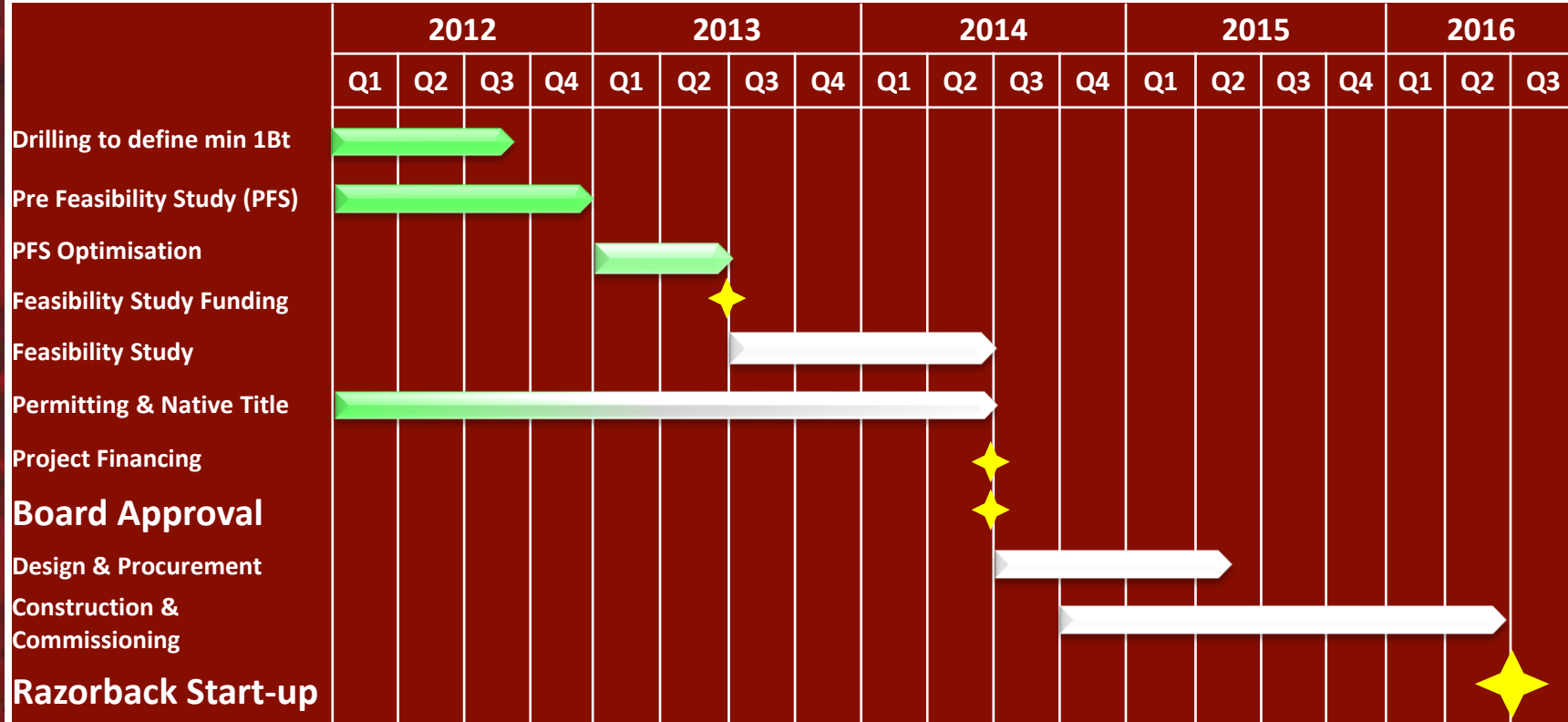


The robust results from the  
Pre-feasibility Study gives the  
Board of Directors confidence to  
proceed to a Feasibility Study on  
the Razorback Premium Iron  
Project



# RAZORBACK PREMIUM IRON PROJECT:

Transitioned from exploration to development

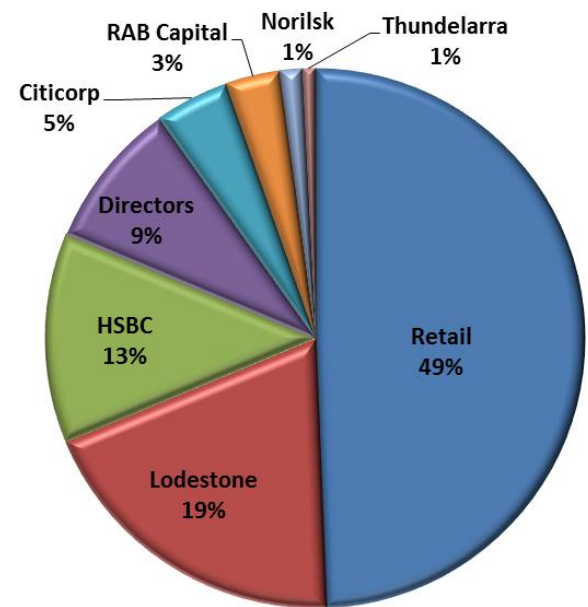




# CAPITAL STRUCTURE & SHARE HOLDINGS

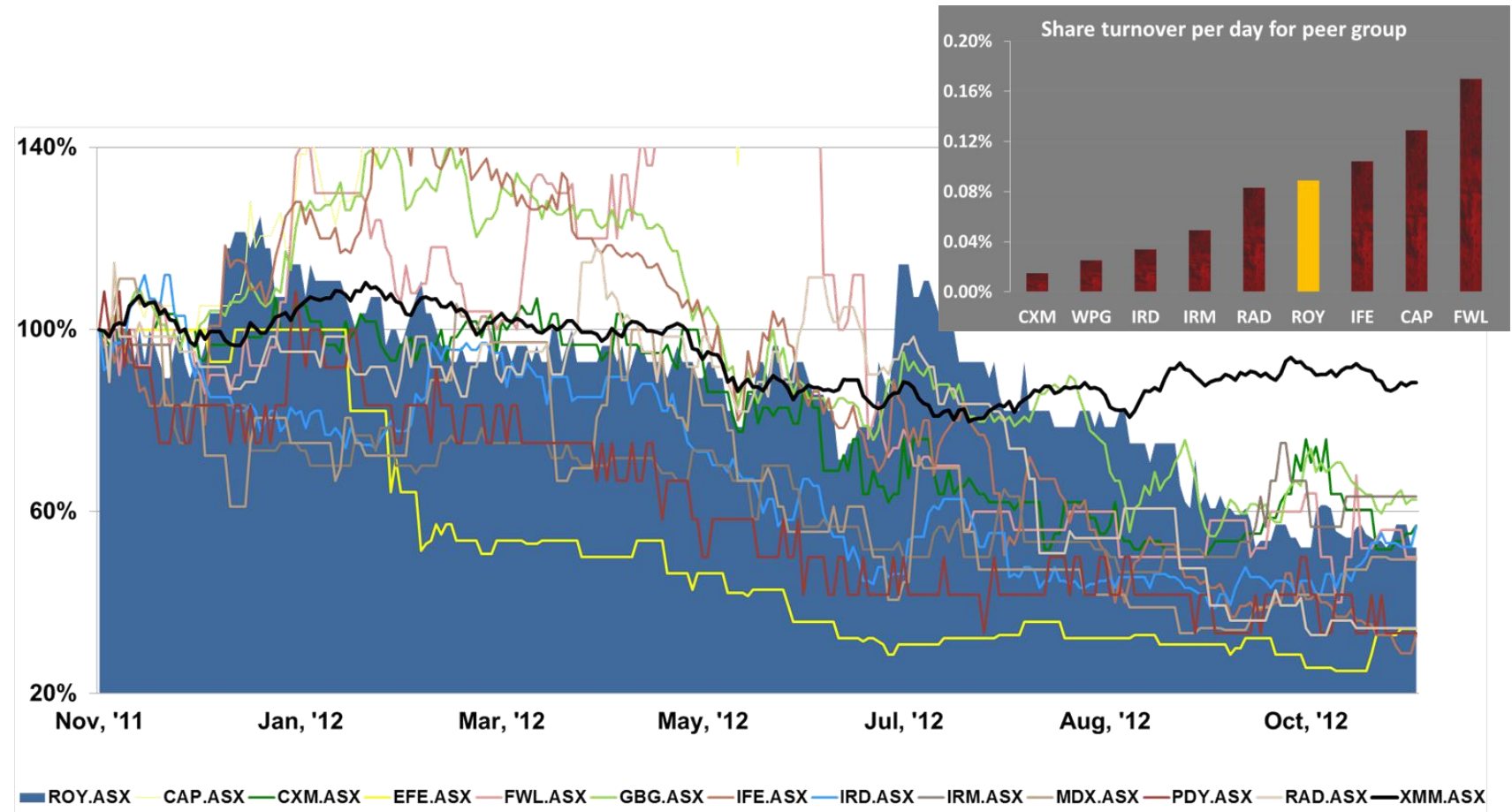
Rank	Name	%
1	LODESTONE EQUITIES LIMITED	19.51
2	HSBC CUSTODY NOMINEES (AUSTRALIA) LIMITED	12.71
3	RAGGED RANGE MINING PTY LTD & ASSOCIATES	7.26
4	CITICORP NOMINEES PTY LIMITED	4.49
5	HSBC CUSTODY NOMINEES (AUSTRALIA) LIMITED - A/C 3	3.28
6	MR RICK WAYNE CRABB	1.47
7	NORILSK NICKEL AUSTRALIA PTY LTD	1.36
8	JP MORGAN NOMINEES AUSTRALIA LIMITED <CASH INCOME A/C>	1.18
9	MR FRANK DEMARTE	0.88
10	FORSYTH BARR CUSTODIANS LTD <FORSYTH BARR LTD-NOMINEE A/C>	0.88
11	THUNDELARRA EXPLORATION LTD	0.86
12	UOB KAY HIAN PRIVATE LIMITED <CLIENTS A/C>	0.72
13	MR CHING WOO GOH	0.72
14	WESTESSA HOLDINGS PTY LTD	0.66
15	MR ROSS SPENCER	0.64
16	RENIQUE HOLDINGS PTY LTD <RANDALL SUPER FUND A/C>	0.56
17	MR MARCUS FLIS	0.55
18	MR EDWIN L DAVIES + MRS SUSAN L DAVIES <L & S DAVIES SUPER FUND>	0.53
19	BNP PARIBAS NOMS PTY LTD <DRP>	0.51
20	MR WILLIAM JANSEN + MRS MARILYN GAIL JANSEN <W & M G JANSEN S/F>	0.49
<b>Totals: Top 20 holders of ORDINARY SHARES (198852427 shares)</b>		<b>59.24</b>
<b>Total Remaining Holders Balance (136800603 shares)</b>		<b>40.76</b>

<b>Issued Shares</b>	<b>c336 million</b>
<b>Share Price</b>	<b>\$0.055</b>
<b>Market Capitalisation</b>	<b>c\$20 million</b>
<b>Cash</b>	<b>c\$5 million</b>





# ROYAL'S 12 MONTH SHARE PRICE PERFORMANCE & LIQUIDITY





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