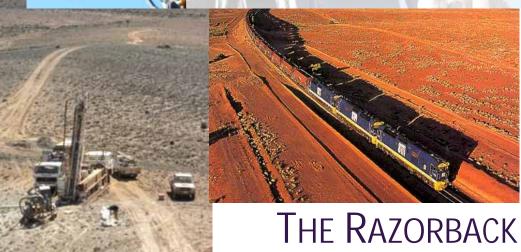






# SA Exploration and Mining Conference

Friday 2 December 2011



IRON PROJECT,
BRINGING HOME THE

BACON!

**Dr Gavin England** 

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The details contained in this report that pertain to ore and mineralisation is based upon information compiled by Mr Marcus Flis, a full-time employee of the Company. Mr Flis is a Fellow of the Australasian Institute of Mining and Metallurgy (AUSIMM) and 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 a Competent Person as defined in the December 2004 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (JORC Code). Mr Flis consents to the inclusion in this report of the matters based upon his information in the form and context in which it appears.

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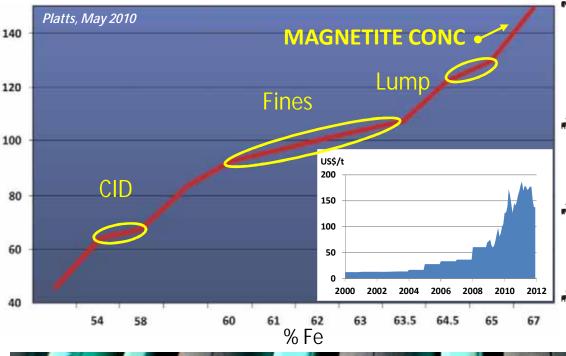
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#### WHY MAGNETITE AND WHY NOW?





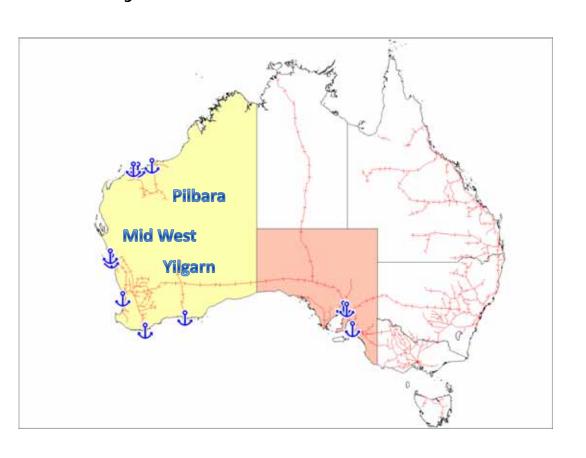


- Magnetite currently attracts a \$5/%Fe/t premium over reference fines
- Increasingly "dirty" haematite ores require sweetening
- Long run average analyst's pricing is increasing to US\$100/t1
  - China's iron ore is profitable if prices exceed US\$141/t²

### WHY SOUTH AUSTRALIA?



The key to success in Bulk Commodities is access to infrastructure



## Iron in WA is becoming too hard

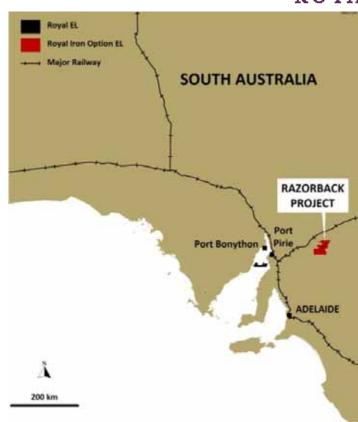
- Pilbara port and rail mostly held by the big players
- Mid West still waiting for their infrastructure
- Yilgarn long way to port and limited port capacity

#### 100% ownership of a very large iron ore potential

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#### WITH HIGH INFRASTRUCTURE OPTIONALITY

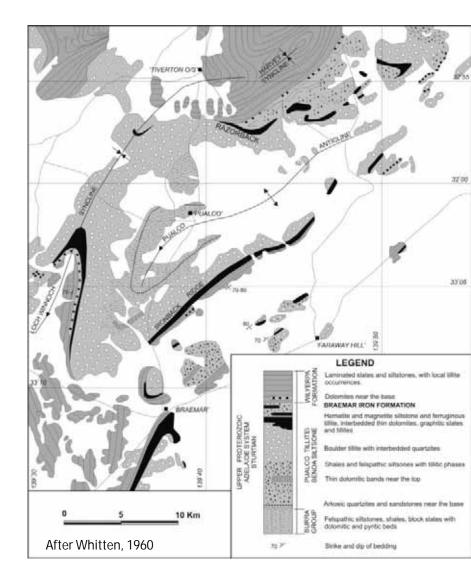
- An exploration target of 4.8 to 8 Billion tonnes grading 18 to 45% Fe<sup>1</sup>
- Access to existing open-user ports and rail
- In an infrastructure rich area
- Over 1,400 km² land holding
- Soft ore from surface
- Defining an emerging iron ore district in a very low sovereign risk jurisdiction



<sup>&</sup>lt;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.

## BRAEMAR IRON FORMATION

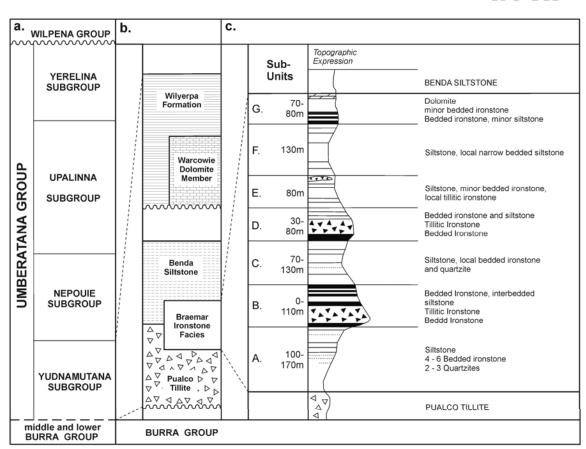
- Near the base of the Umberatana Group, Neo-Proterozoic Adelaide Geosyncline
- Sturtian Glaciation (Snowball Earth)
- Glacial Sediment not BIF
- Braemar Iron Formation was the result of chemical precipitation during interglacial / postglacial periods and formed in coastal fringes, where terrestrial influence was strong.
- Similar deposits globally, due to periods of -
  - Oceanic Anoxia
  - Magmatic Activity
  - Restricted Basins



## Braemar Iron Formation at Razorback Ridge



- Braemar Iron Formation is the iron-rich facies within the Benda Siltstone and Pualco Tilite
- 7 sub units recognised by Whtten's studies in 1960's
- Observed across the tenement area
- Units B, D and G generally have the greatest magnetite content and are the target horizons
- Unit A has new exploration target



#### UNIT B SUB-FACIES









#### 30 to 65 % Fe

B1 is characterised by a bedded, magnetite-rich siltstone, with minor thin beds of dolomitic siltstone and fine sandstone

18 to 25 % Fe

B2 is tillitic / diamictitic ferruginous siltstone with varying dropstone content

#### 20 to 35 % Fe

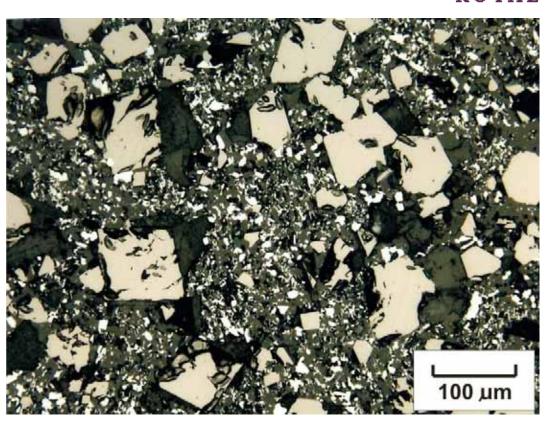
B3 is an interlaminated iron-rich siltstone much like Unit B1 but with increased siltstone / sandstone interlaminations

#### Mineralogy @ Razorback Ridge

- Pure Magnetite Grains

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- Magnetite individual subhedral to euhedral grains in the size range 30 – 120 µm in diameter
- LA- ICP-MS suggest Magnetite is very pure (< 50 ppm impurity)</p>
- Hematite platy crystals ranging from 1 - 20 µm in diameter
- Further work on paragenesis of Fe speices and distribution

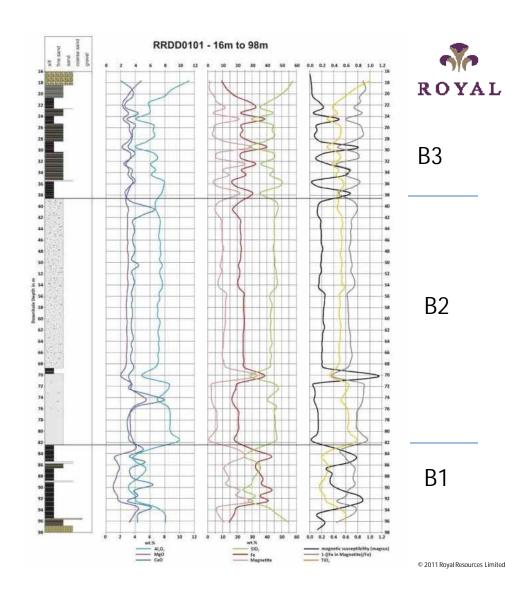


Royal acknowledges the collaborative work of Martin Griessmann and Andreas Schmidt-Mumm, Adelaide University

#### **MINERALOGY**

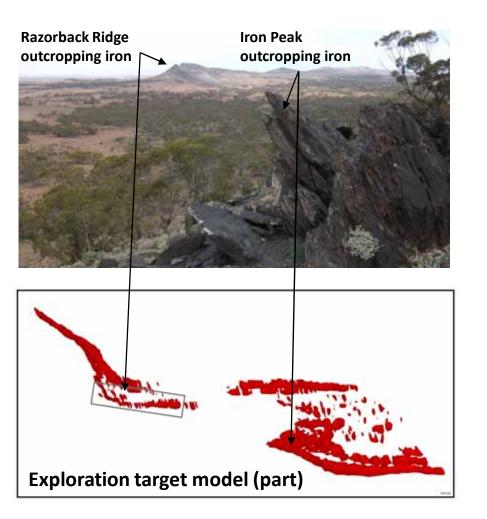
- Magnetite and hematite have strong sedimentary / local stratigraphic control
- Finer grained units may have higher magnetite content
- Dictated by O<sub>2</sub> fugacity in the sedimentary pile
- Martitisation of some magnetite grains in samples near surface or in paragenetically-late fracture zones

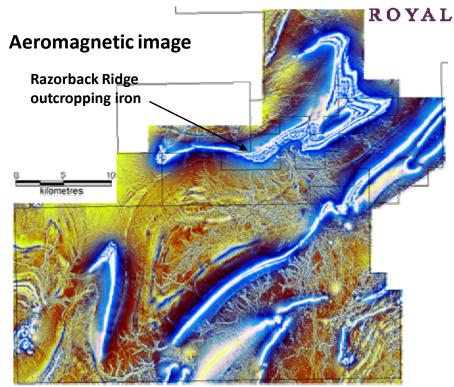
Royal acknowledges the collaborative work of Martin Griessmann and Andreas Schmidt-Mumm, Adelaide University



## 4.8 to 8.0 Billion Tonnes of exploration potential defined



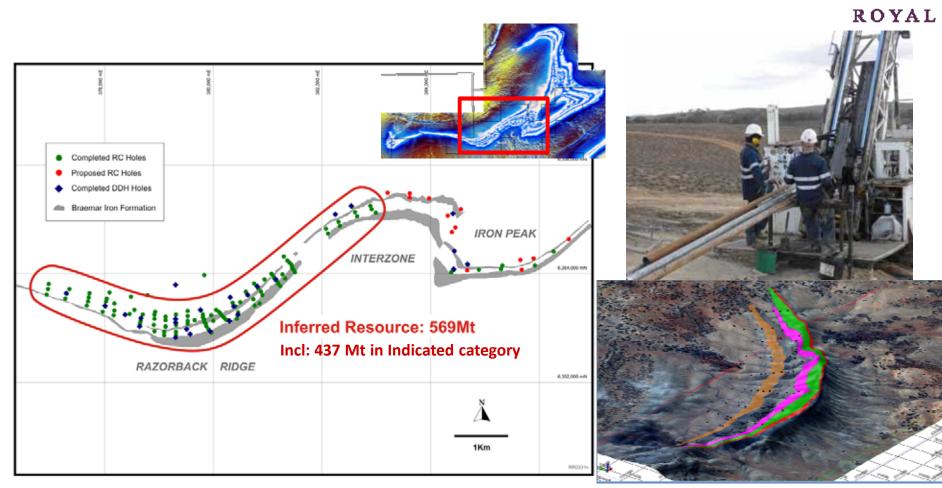




110 strike kilometres of prospective horizon indicating an exploration target of 4.8 to
 8.0Bt of iron at grades of 18 to 45% Fe<sup>1</sup>

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## Only 5% strike drilled to define resource of 569mt



## Inferred resource defined within 9 months and Indicated Resource within 18 months of project acquisition



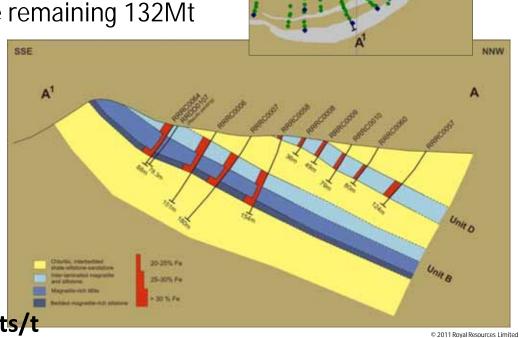
♣ 569Mt in JORC-compliant Inferred Resources

Conversion to an Indicated Resource of 437Mt with no additional drilling; conversion of the remaining 132Mt is expected

Simple regular outcropping geology

- Very consistent mineralisation
- Every drill hole defined 4.3Mt of resources - 30,750 t with every metre drilled

Resource definition cost of ~0.4 cents/t



## RAZORBACK WILL PRODUCE A CLEAN, HIGH VALUE CONCENTRATE



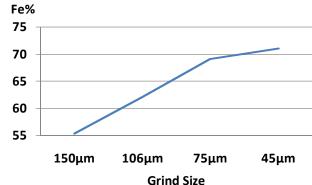
Concentrate size	Fe%	SiO <sub>2</sub> %	Р%	Al <sub>2</sub> O <sub>3</sub> %	MgO%	Na <sub>2</sub> O%	TiO <sub>2</sub> %	<b>S</b> %
Head grade	28.15	39.20	0.22	6.14	2.56	1.01	0.41	0.012
150μm	59.22	13.47	0.04	1.26	0.52	0.26	0.13	0.006
106μm	62.98	9.72	0.03	0.81	0.35	0.18	0.07	0.005
75μm	68.10	4.28	0.01	0.29	0.16	0.11	0.03	0.003
45μm	70.48	1.73	0.005	0.08	0.07	0.05	0.02	0.004

A premium product (very low alumina, phosphorous and sulphur) is readily achievable.

Higher haematite content in parts of the deposit is recoverable at the smaller grind size

Mass Wt recoveries 15 – 20%



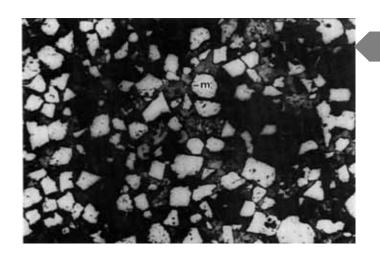


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#### ORE HAS EASY LIBERATION — LOW COST GRINDING

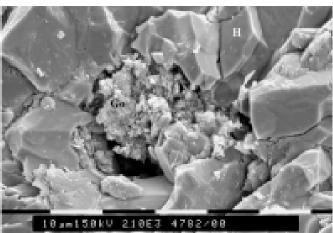


- Razorback ore is soft ore breaks along grain boundaries, not across crystal faces
- Less than half the power needed to crush and grind compared to bif : <10kWH/t cf >20kWH/t
- Power costs typically account for around 60% of beneficiation costs, so soft ore is a strong lever for low OPEX



**Bedded magnetite** 

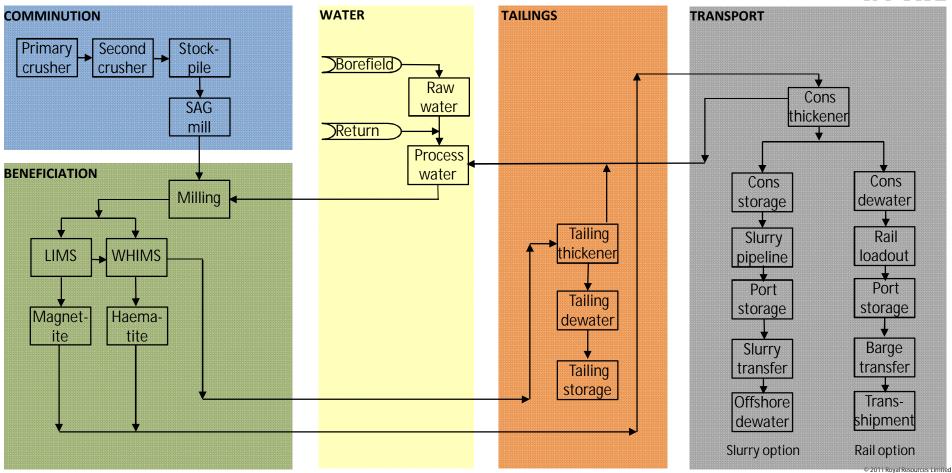
BIF



© 2011 Poval Posources Limite

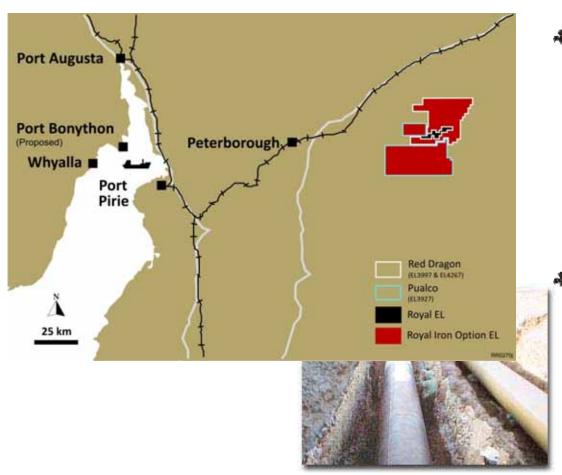
## COMMINUTION & BENEFICATION ARE STANDARD





## Multiple options for transport to the coast



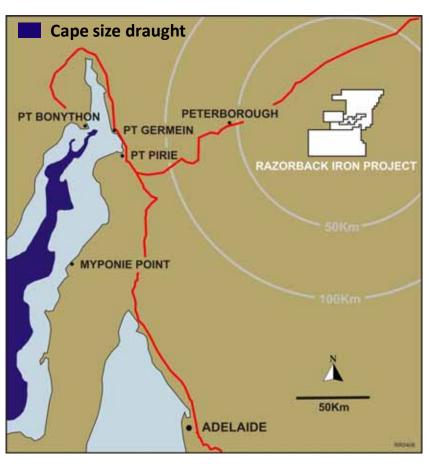


- Near open-user governmentowned railway that:
  - is available
  - is heavy gauge
  - has spare capacity
  - has low cartage costs
- Slurry pipeline option:
  - lower OPEX cost than rail
  - lower ancillary CAPEX costs
  - opens access to extended coastline

## Multiple options for export facilities



- MOU with Flinders Ports, giving access to a choice of two existing, open user ports, and one proposed port:
  - Pt Pirie: transhipment (180km)
  - Pt Adelaide: in sea containers (390km)
  - Proposed Pt Bonython: Cape size (350km)
- Low cost, direct slurry loading onto a floating stockpile
  - ~20km north of Pt Pirie
  - ~80km south of Pt Pirie



#### SLURRY LOADING ONTO A FLOATING STOCKPILE

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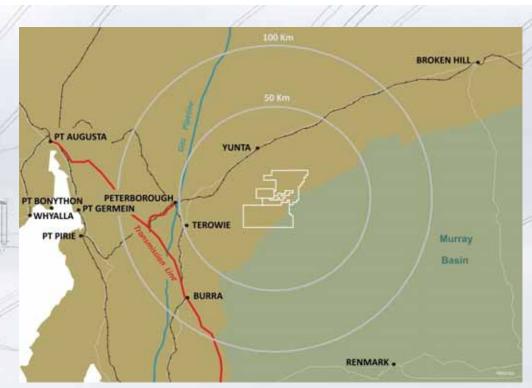
- Low cost alternative to port development
  - Train unloader not required
  - Negative pressure shed not required
  - Conveyor system to wharf not required
  - Circumvents port usage and the attendant charges
- Cheaper than barge transshipping
- Lower environmental risk
- Low bad weather risk
- Used around the world for coal and oil



## Multiple options for power, water & accommodation

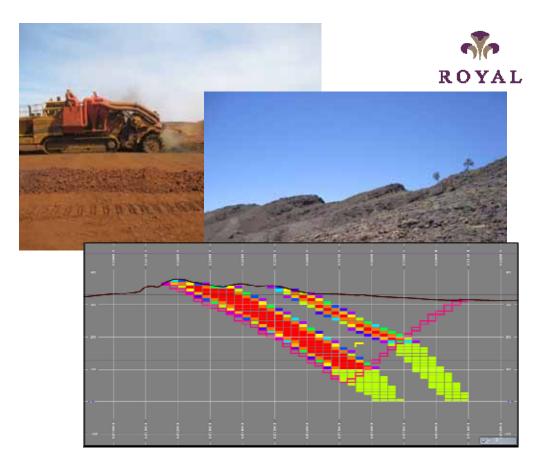


- Power:
  - state grid
  - gas turbine
- Water:
  - Murray Basin groundwater
  - coastal desalination plant
- \* Accommodation:
  - 4 dormitory towns nearby
  - mining towns
- Heavy industry towns nearby
- ♣ Within 3½ hours drive of Adelaide



#### A LOW COST PRODUCER

- Low stripping ratio zero initially
- Geologically and mineralogically simple and consistent
- Soft ore suggests it may be amenable to continuous surface mining techniques avoiding the need for drill and blast
- Soft ore and dry coarse magnetic cobbing will reduce OPEX





#### ITS NOT ALL JUST ABOUT HEAD GRADE!

		Razorback Iron Project	Typical Australian BIF	Cost benefit to Razorback
Grade	Head Grade, Fe	26%	35%	
Graue	Weight Recovery	20%	40%	
	Strip Ratio	0:1	2:1	
Mining	Rock mined to produce 1t of product	5t	7.5t	\$12.50
	Ore hardness (kWh/t)	10kWh/t	20kWh/t	
Grinding	Ore to crush & grind (t)	3.3	2.5	
	Power cost/t	\$4.36	\$11.20	\$6.84
Infrastructure	Railing cost/t	\$10.00	\$22.00	\$12.00
Razorback	: Advantage/t			\$31.34



Razorback is capable of delivering low OPEX costs compared to similar sized bif-based resources

**Assumptions** 

Razorback grade: JORC Inferred Resource BIF grade: Assumed global average

Mining costs: \$5/t assumed

Ore hardness: Initial testing, Razorback

Fe Tech 2010 for WA bifs

Grinding Assumed 34%

 $non magnetic\, material$ 

removed by dry cobbing

Power costs: 22.54c/kWh (WA)

13.2c/kWh (SA)

Rail costs: Mid West average (WA)

Quote (SA)

Verification of parameters through the completion of a PFS are required to verify the conclusions of this table

## LOW ENVIRONMENTAL RISK





"....no areas that need to be avoided for mining activities because of the presence of significant vegetation, fauna or habitat" Rural Solutions SA, July 2010

#### AGREEMENT WITH NATIVE TITLE CLAIMANTS IN PLACE



- Agreement with Ngadjuri on preserving their culture through heritage clearances
- About half of Royal's holdings have had NT extinguished

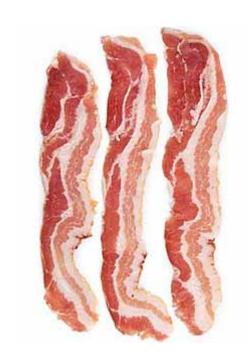




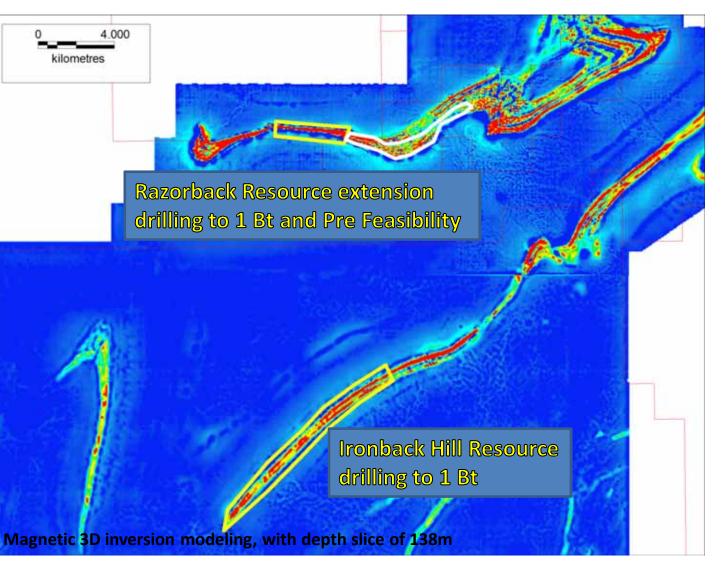
## SCOPING STUDY FINANCIALS SHOW HIGH VALUE



	2.5Mtpa	10Mtpa (4x2.5 units)
CAPEX	\$501 M	\$1,759 M
OPEX	\$67/t	\$59/t
Gearing	70%	70%
Product Price	A\$116/t	A\$116/t
NPV <sub>10%</sub>	\$406 M	\$2,446 M
IRR	27.3%	38.0%
Mine Life	>100 yrs	>25 yrs



Financial model undertaken by Promet Engineers. 10Mtpa case assumes four 2.5Mtpa modules with only minor site works commonality. Product price includes a US\$5/%Fe/t premium. The Scoping Study model is accurate to within  $\pm 50\%$  and should be taken as indicative only. Royal is not responsible for the accuracy of the financial model or the conclusions drawn by the reader.





Razorback Project Snapshot of Current Work

## An aggressive schedule to see production by 2014

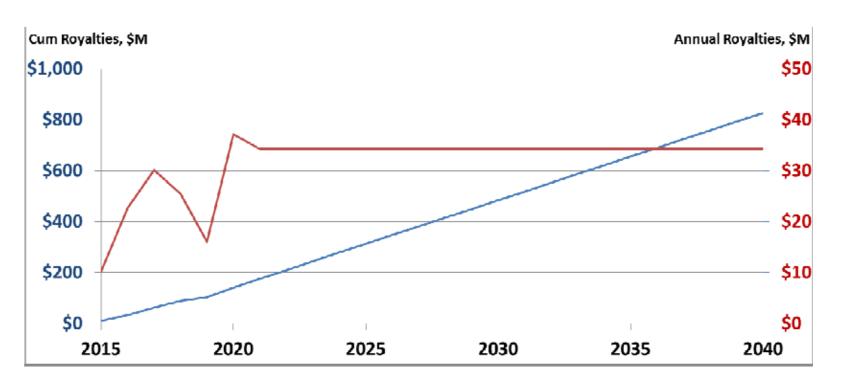


	2011			2012				2013	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Drilling to define min 700Mt			$\Rightarrow$						
Pre Feasibility Study									
Drilling to 1Bt Indicated Resource			E	$\Rightarrow$					
Feasibility Study							_		
Permitting, Environ & Native Title									
Project financing									
Project start-up									+

#### ROYALTIES – THE ELEPHANT IN THE ROOM?



- Total SA Mining Royalty for 2009/2010 was \$75 million
- Magnetite Projects will be the most significant contributor in the future



#### **ROYAL SNAPSHOT**



#### Issued Securities

-	305.8 M	Fully Paid Shares	(ROY)
-	34.7 M	Listed Options (Oct '13)	(ROYOA)
-	28.0 M	Unlisted Options	

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CONTRACT OF	Share Price at 14/11/11	\$0.15
-Sa	Market Cap	\$46M

Cash \$8M

#### Experienced management team:

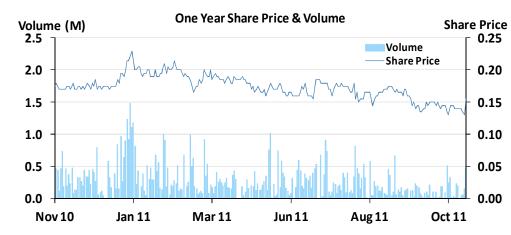
Philip Crabb Chairman

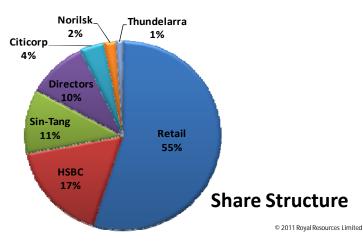
Marcus Flis Managing Director Frank DeMarte Executive Director

Brian Richardson Non-executive Director Malcolm Randall Non-executive Director

Directors Shareholdings 10%

Top 20 shareholders 52%





## **CONTACT**



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