GRANGE
RESOURCES LIMITED

# Pursuing the most attractive niche in iron ore

## Southdown Magnetite and Kemaman Pellet Project

## BBY Conference

5 May 2008

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# Pursuing the most attractive niche in iron ore

- **The niche…..DR pellets**
- **Steelmaking 101: Integrated vs Electric Arc Furnace**
- **Supply & Demand**
- **DR pellet price and premium**
- **Grange - positioned to capture the DR Pellet opportunity**
  - **Southdown magnetite project in Australia**
  - **Kemaman pellet plant in Malaysia**
- **Project Status**

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# The most attractive niche in the iron ore industry:

## DR Pellets

- **We all understand the China boom – massive, growing demand for iron ore to China.**
- **In Australia that demand is being met by Rio, BHP, FMG and some Juniors primarily with DSO.**
- **Less understood is an iron ore opportunity that Grange considers even more attractive:**

***the DR pellet opportunity, in the Middle East and Southeast Asia***

- **A niche, growing even faster on a percentage basis than iron ore to China**
- **<u>Undersupply</u> set to increase for the foreseeable future**
- **<u>Higher prices</u>, rising even faster than DS iron ore prices**

**To supply the rapidly growing DRI+EAF steelmakers**

**in the Middle East and Southeast Asia**

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# Steelmaking 101

- As pricey as it's become, iron ore has *no* inherent value: it is only valuable as a feedstock for steelmaking

- So, the attractiveness of supplying iron feedstocks to the steel industry starts with the competitiveness of the steelmaking process to which they contribute

- There are 2 steelmaking processes competing in the steel industry:

  1. The Integrated Steelmaking route
  2. The Electric Arc Furnace route

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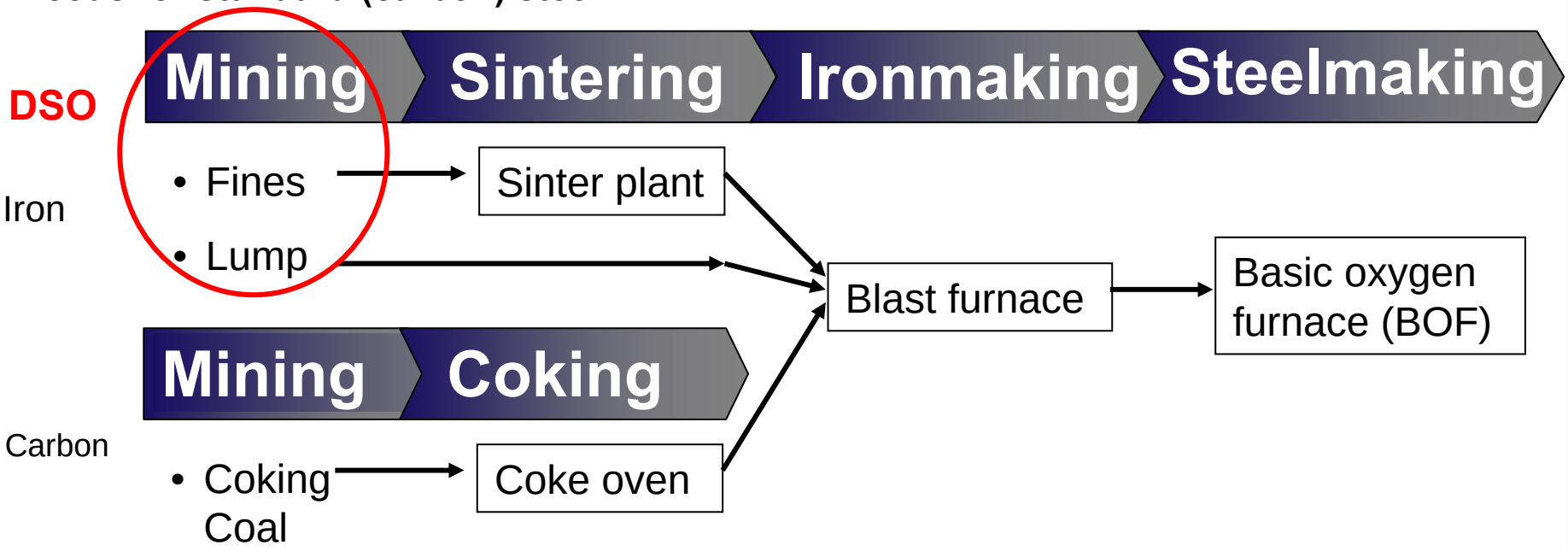
# Integrated Steelmaking process

- End-to-end, the **Integrated Steelmaking** route (the traditional and still dominant route for steel) is both *capital intensive* and *environmentally unattractive*

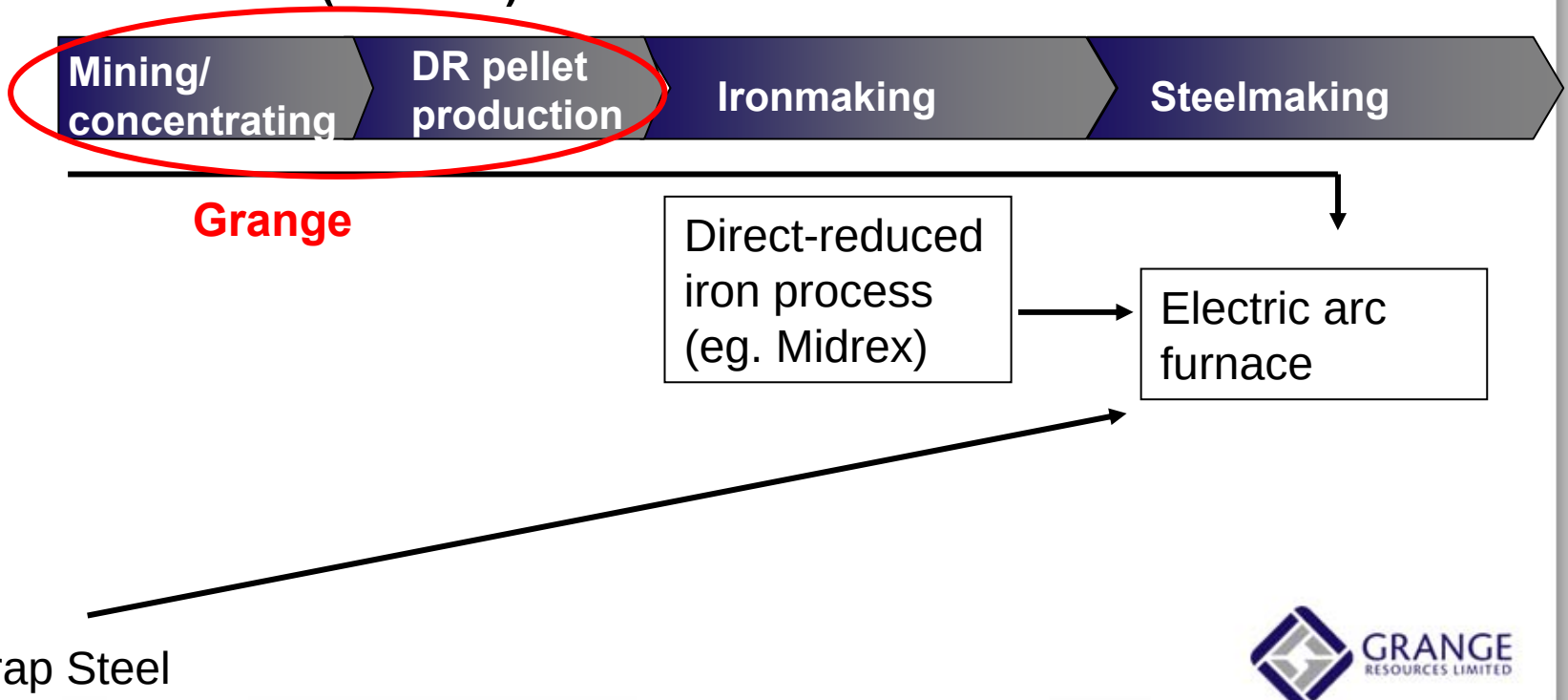
**Feeds for standard (carbon) steel:**



# Electric Arc Furnace process

- In contrast to integrated steelmaking, the **Electric Arc Furnace** steelmaking route is less capital-intensive and more environmentally attractive

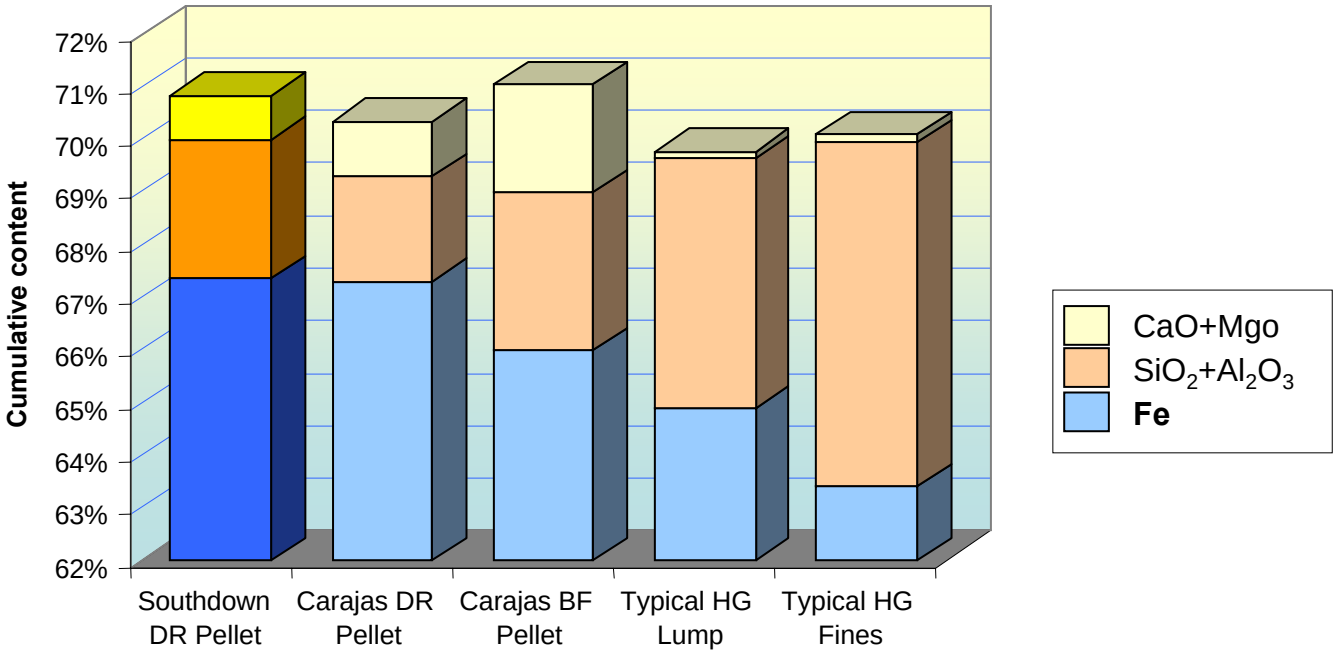
**Feeds for standard (carbon) steel:**






* Surplus from integrated steelmaking or dedicated pig iron furnace

# Feedstock for DRI and EAF




Source: CVRD, Grange Resources

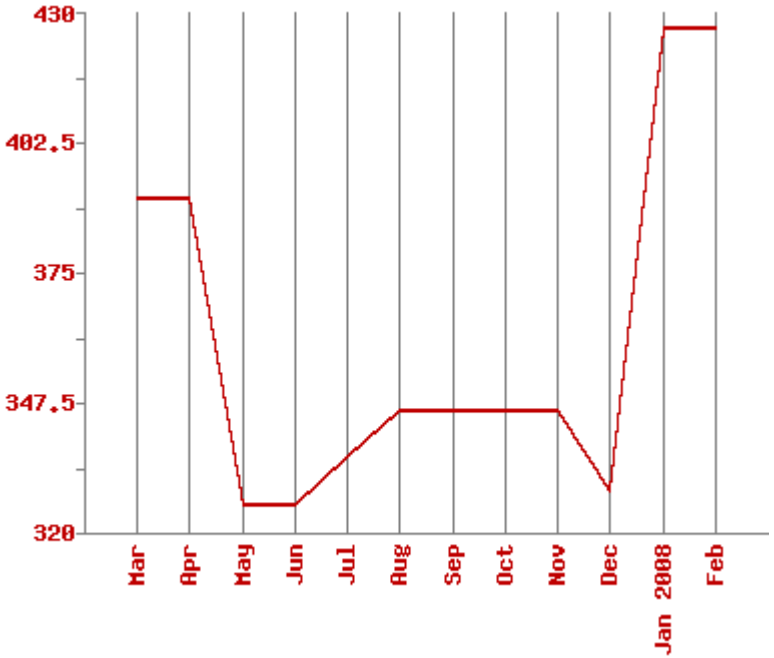
**EAFs require suitable high grade pellets (pre-processed to DRI) or scrap steel as feedstock rather than lower grade pellets which together with Direct Ship Ore (DSO) supply Blast Furnaces.**

***Basket tests indicate Grange will produce high grade pellets***

# Scrap steel vs DRI for the EAF steelmaker

- **Historically, scrap steel < US$200/t.**
- **The price of scrap steel has increased hugely, due to overwhelming steel demand from China and other emerging economies:**

**SCRAP STEEL PRICE HISTORY**




Source: Iron Age Scrap Price Bulletin

- **The demand and price implications of this *'scrap squeeze'* for Grange's alternative feed, DR pellets, are profound**

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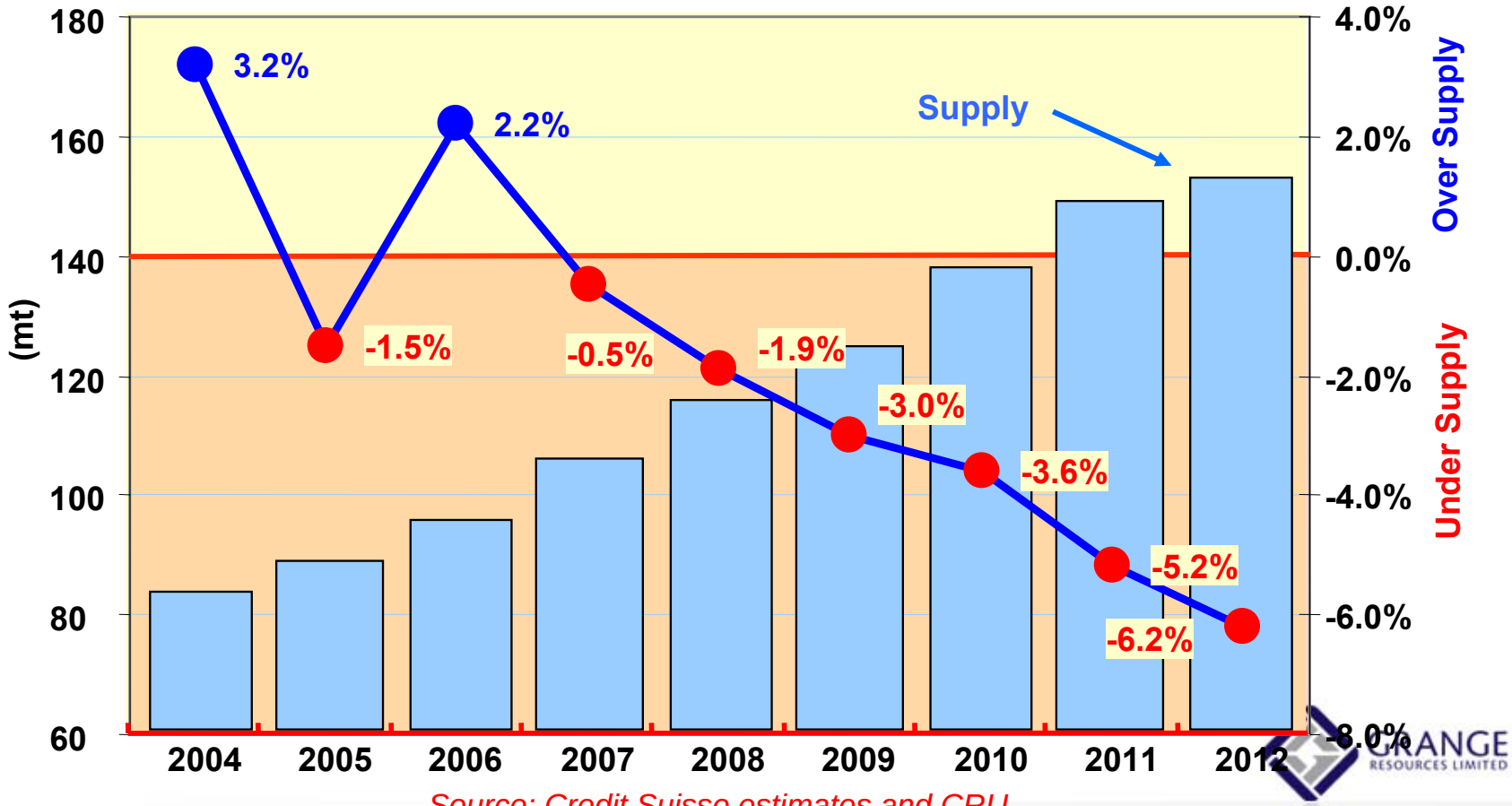
# Growing shortage of DR pellets

**Credit Suisse Brazil—in the heartland of world DR pellet supply—sees DR pellet *under*supply increasing for the foreseeable future.**

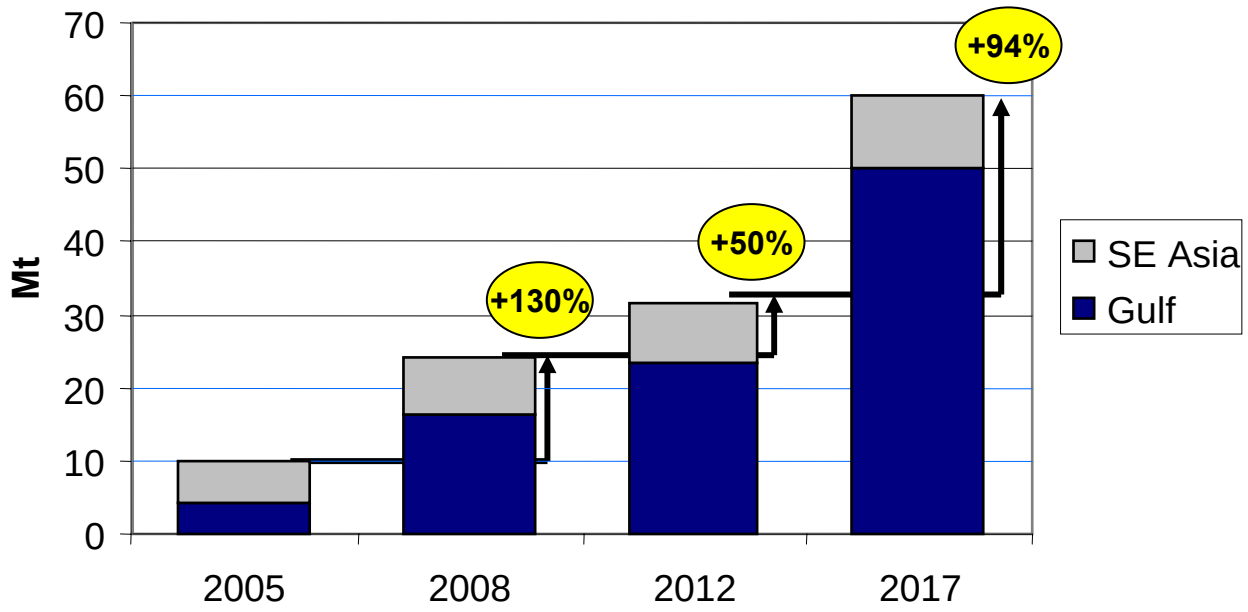
**Seaborne Pellet Supply and Supply/Demand balance**




*Source: Credit Suisse estimates and CRU*

# Demand for DR Pellets

**DR pellet demand is projected to increase significantly in SE Asia and the Gulf Region.**




**SE Asia**
- Perwaja Steel
- Mega Steel
- Krakatau Steel

**Gulf**
- Hadeed
- Qasco
- Shadeed
- Al-Tuwairqi
- Others

**Drivers of increasing DR Pellet Demand**
- Capital cost of traditional integrated steel plants – availability / cost of coking coal
- Environmental issues of sinter plants – intensifying over time
- Abundant and cheap natural gas availability in SE Asia and Gulf Region
- Proximity of steel plants to fast growing industrialisation and urbanisation in SE Asia and Middle East

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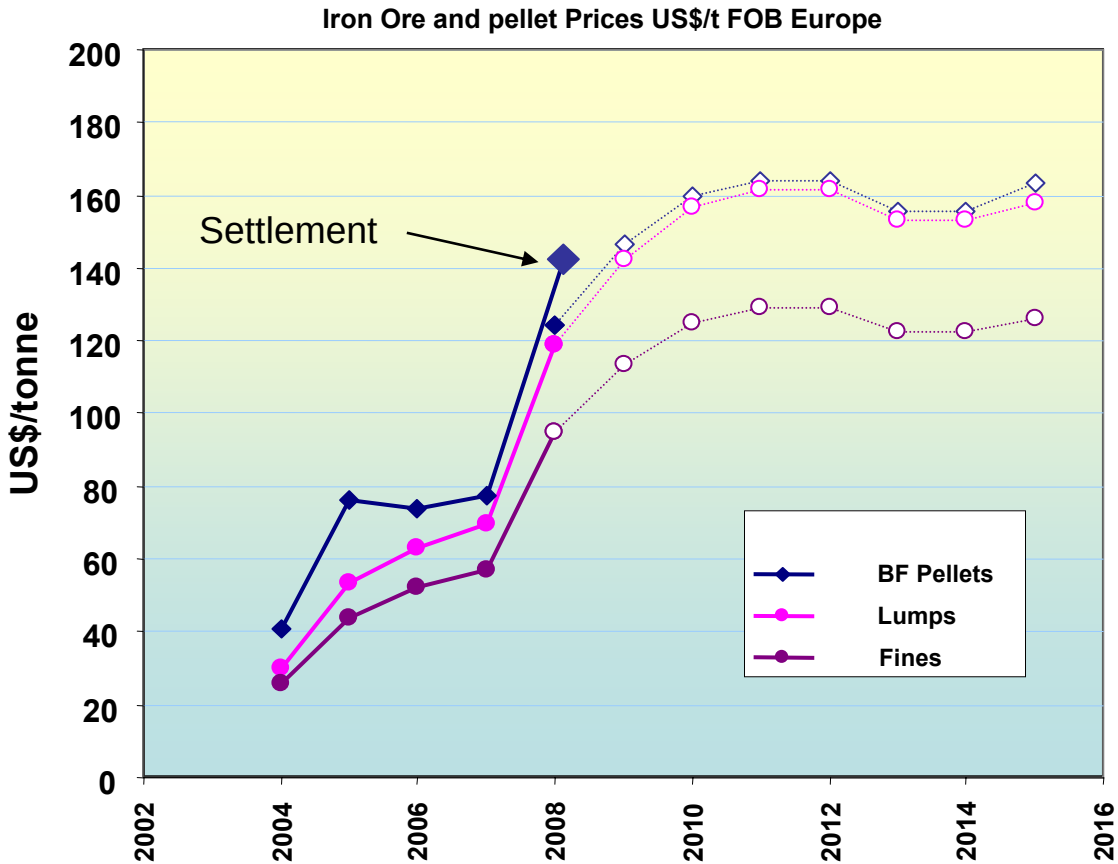
# Prices…the Pellet opportunity is attractive…

**With increasing demand, future price forecasts continue to look strong, with a good premium for BF pellets over DSO…**




Source: Metalytics 2008, GRR

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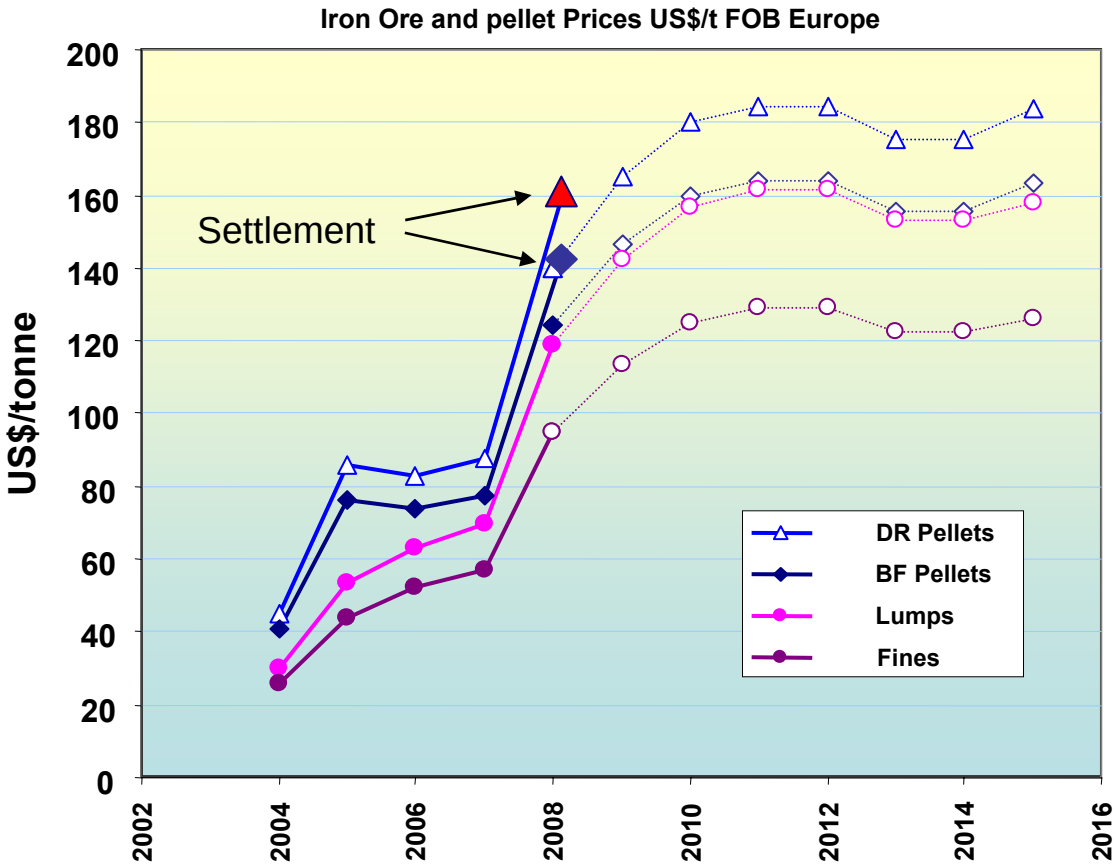
# …but the ***DR*** Pellet opportunity is even **more** attractive

**with a further 10% premium for DR pellets over BF pellets.**

**For DR pellets expect a premium of:**

**US$17/t over BF**
**US$20/t over Lump (DSO)**
**US$40/t over Fines (DSO)**




Source: Metalytics 2008, GRR

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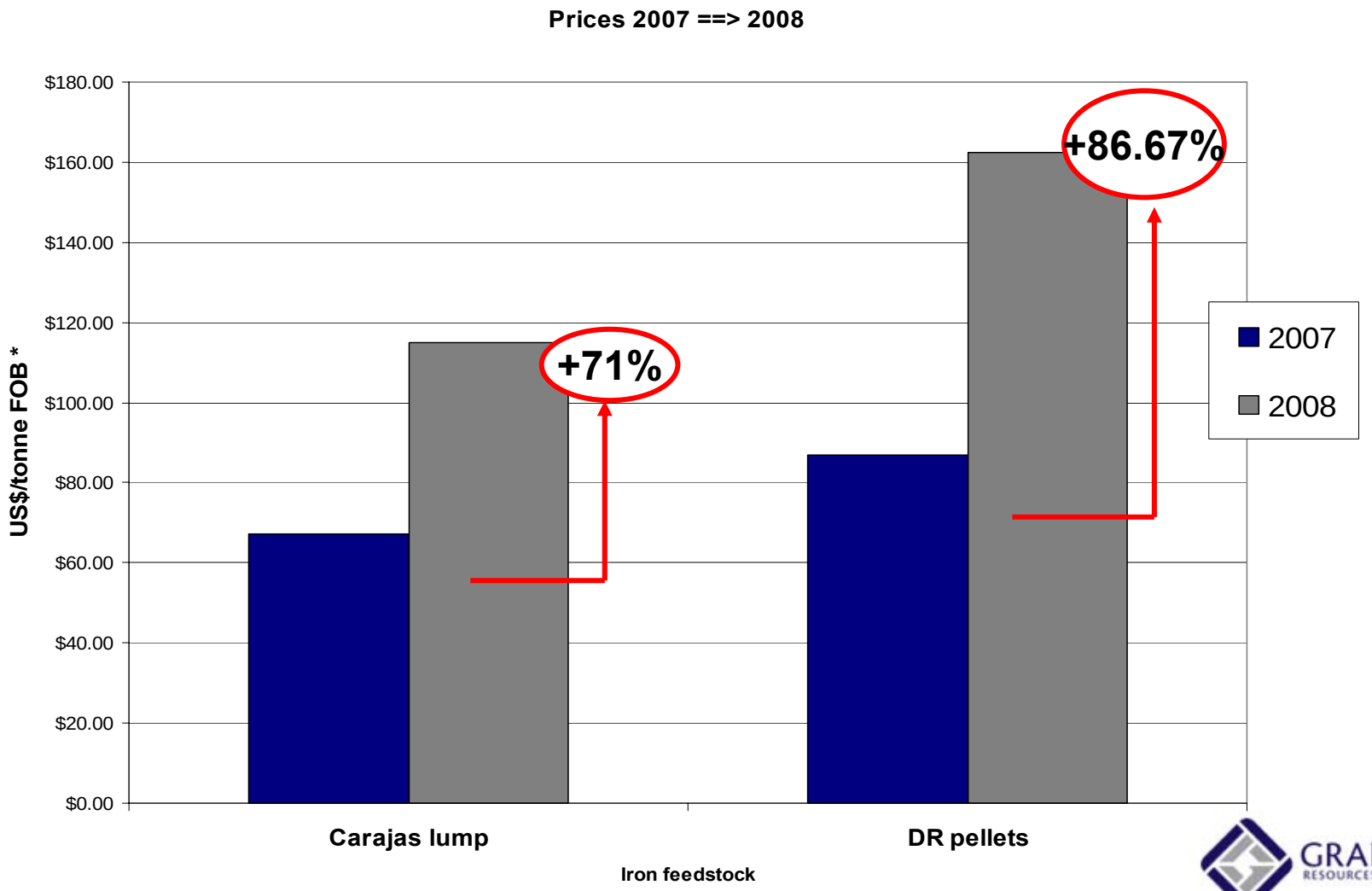
# Price – this year's result




* Benchmark prices in US¢/dmtu, translated to US$/tonne FOB @ 67% Fe for ease of understanding.

# In Summary:

- Iron Ore consumption is increasing worldwide, particularly in China.
- With abundant gas and expanding infrastructure, demand for DR grade pellets is increasing exponentially in the Middle East and South East Asia
- Supply is not matching demand in the DR market
- Prices in the DR market reflect the increasing DSO price and attract a significant premium to it
- Grange is excellently positioned for this market

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# Grange – Southdown/Kemaman overview

| | |
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| 1 | **Grange Resources Limited** |
| 2 | The Southdown and Kemaman Project |
| 3 | The Southdown Magnetite Deposit |
| 4 | Project Infrastructure |
| 5 | Markets |
| 6 | Economics |
| 7 | Recent Developments and Current Status |

# Grange Overview

## Board of Directors

| | |
|---|---|
| **Anthony Bohnenn** | **Non Executive Chairman** |
| **Russell Clark** | **Managing Director** |
| **Alex Nutter** | **Technical Director** |
| **Richard Krasnoff** | **Non Executive Director** |
| **David Macoboy** | **Non Executive Director** |
| **Douglas Stewart** | **Non Executive Director** |

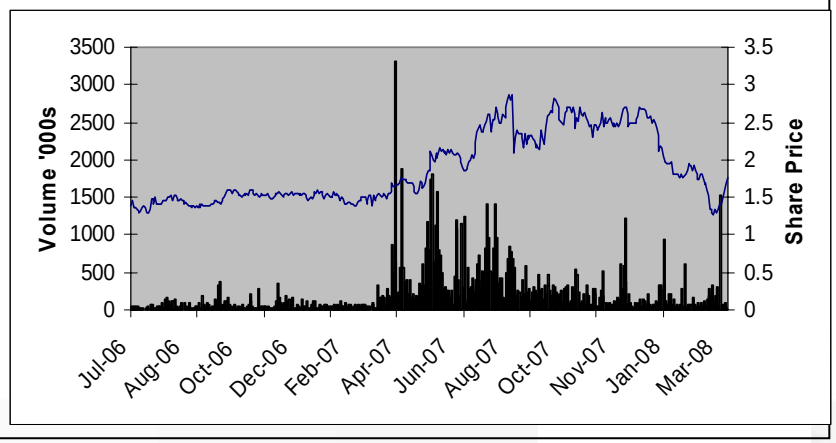
## Shares

| | |
|---|---|
| ASX Code: | GRR |
| Current shares on Issue: | 115,201,099 |
| Unlisted Options on Issue to Rio Tinto: | 17,500,000 |
| Share price (29 April 2008): | ~A$1.75 |
| Market Capitalisation (29 April 2008): | A$201.6 m |

## Major Shareholders

| | |
|---|---|
| Management | 12.5% |
| Rio Tinto Ltd | 7.9% |
| Top 10 Shareholders | 81.1% |
| <u>After Exercise of Options:</u> | |
| Rio Tinto Ltd | 19.9% |

## Share Price




Bloomberg: 7 April 2008

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# Project Highlights

- **Advanced Project** ☑
- **Initial Feasibility Study Completed** ☑
- **Infrastructure Solutions in Place** ☑
- **Ability to produce High Quality (DR Grade) Pellets with very low Phosphorus content** ☑
- **Growing DR Pellet Market in SE Asia & Middle East** ☑
- **Pellet Plant Close to Key Markets** ☑
- **Joint Venture with Sojitz – a leader in the world pellet market** ☑

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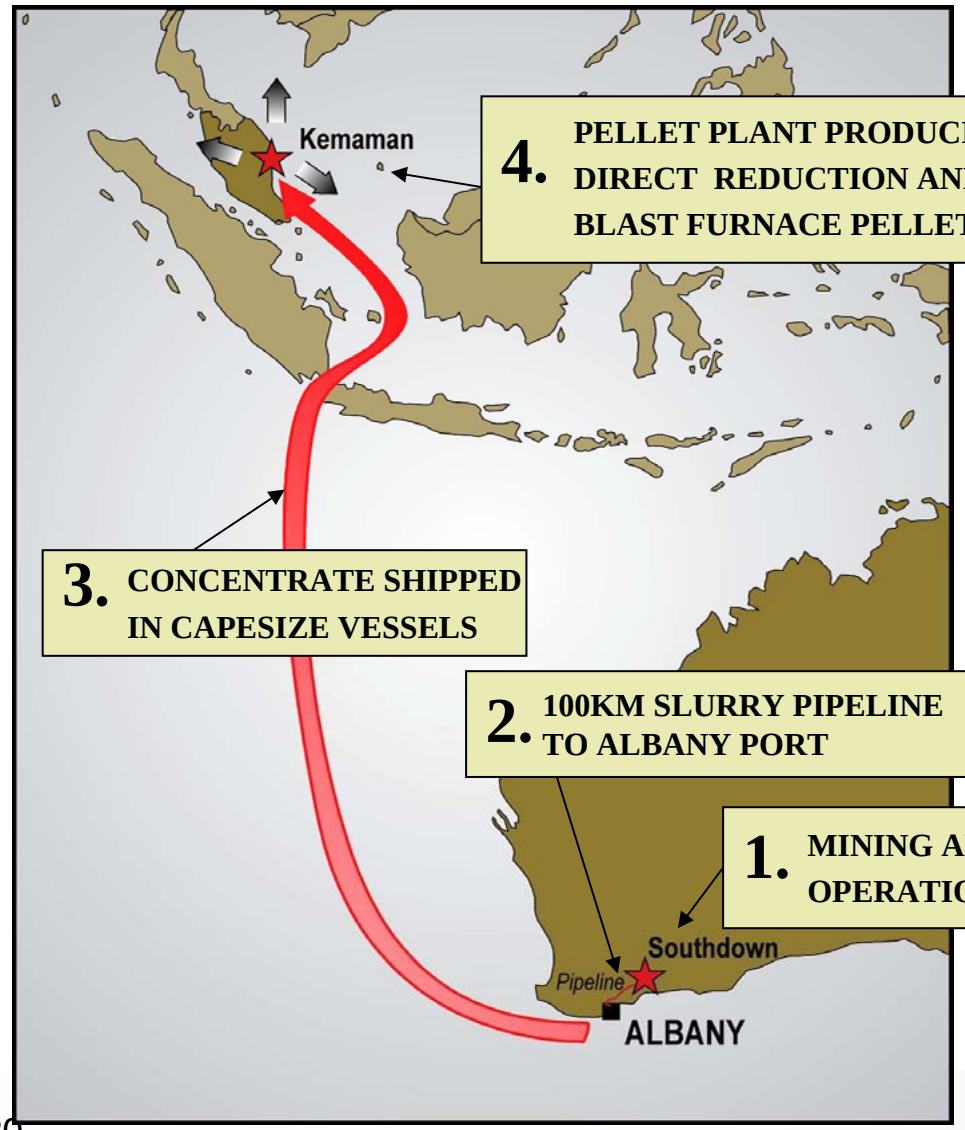
# Project Overview




## Dual Location

### Southdown

- Open pit mine operation
- Magnetite concentrate production 6.6mtpa @ 69% Fe
- Slurry pipeline to existing port
- Shipping in Capesize vessels

### Kemaman

- Pellet production ~7mtpa
- Deep water, capesize port
- Availability of gas, power, water
- Proximity to markets (first in South East Asia)
- Investment incentives

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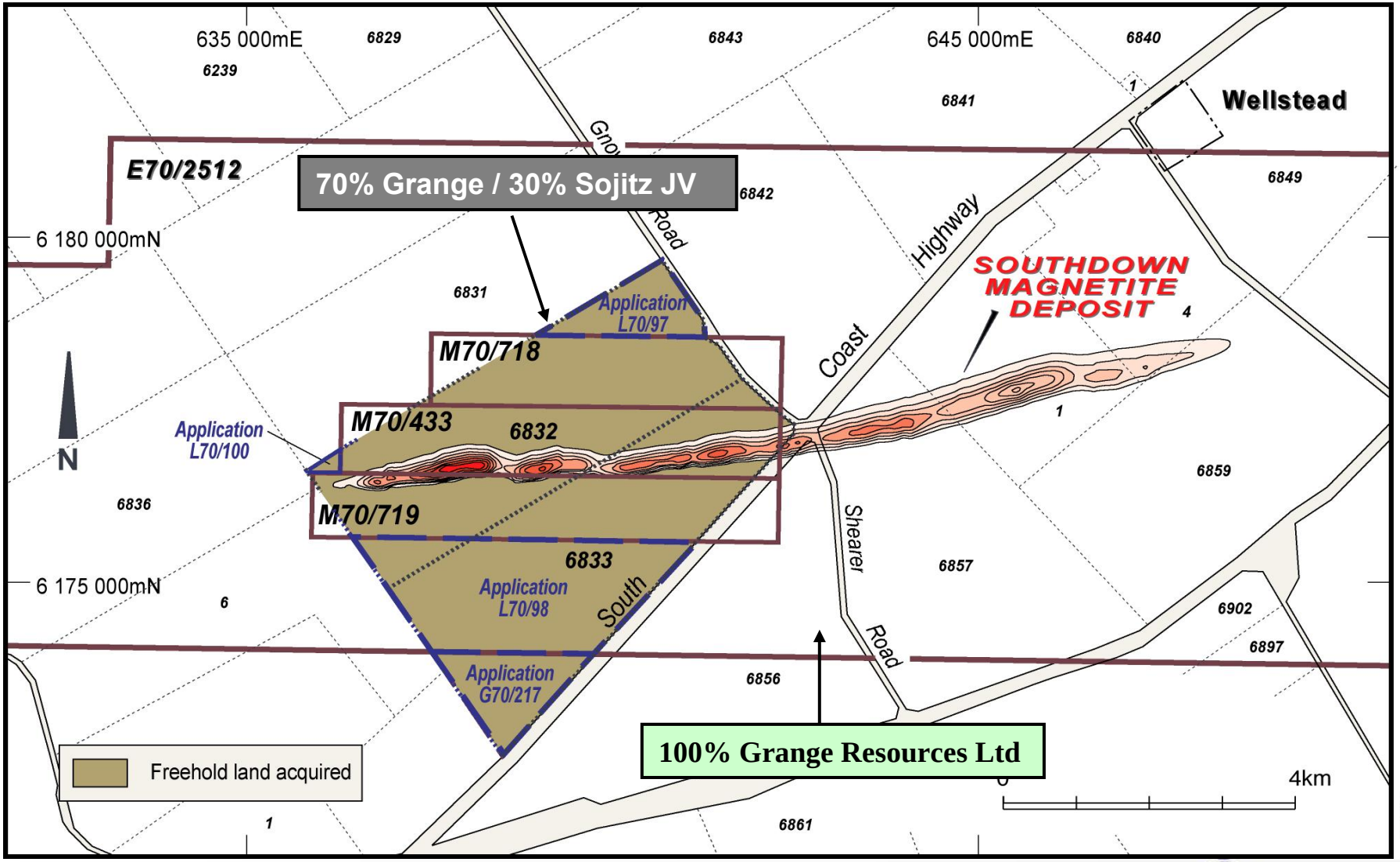
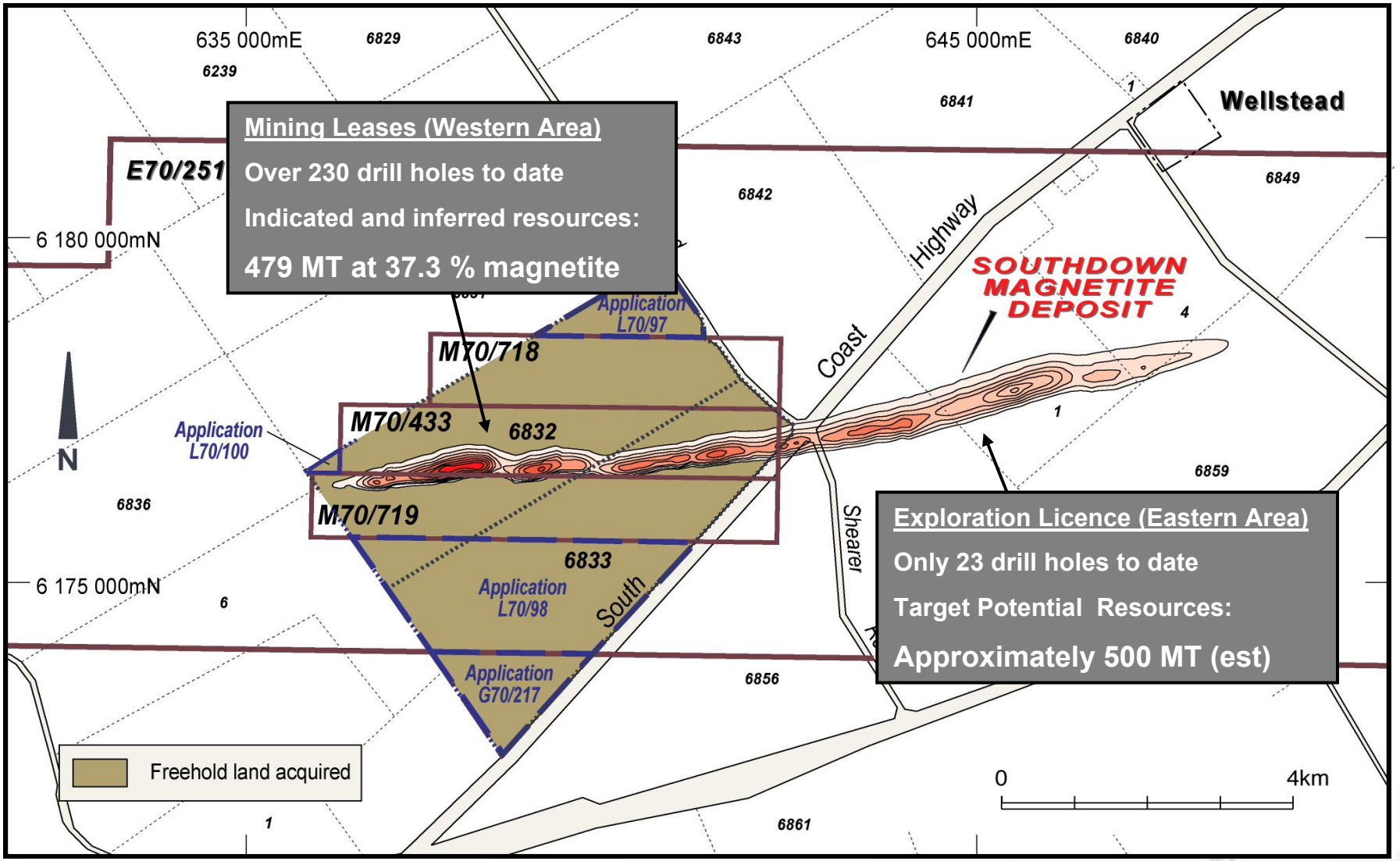
# Tenement & Deposit Location



# Southdown Resource




Total Southdown open cut mineable resource potential ~ 0.7bn tonnes sufficient for a project life of +30years (Total resource >1bn tonnes)

# Metallurgical & Pelletising Testwork

| | Kobelco Concentrate | Kobelco Pellets |
|---|---|---|
| | % | % |
| Fe | 69.76 | 67.23 |
| $SiO_2$ | 1.00 | 1.24 |
| $Al_2O_3$ | 1.39 | 1.42 |
| $TiO_2$ | 0.40 | 0.40 |
| Mn | 0.03 | 0.03 |
| CaO | 0.07 | 0.65 |
| MgO | 0.13 | 0.15 |
| P | <0.005 | <0.006 |
| S | 0.125 | 0.004 |
| $Na_2O$ | 0.007 | |
| $K_2O$ | 0.009 | |

| Binder | Bentonite (0.55%) |
|---|---|
| Strength (CCS) | 296kg |
| Tumbler Index | 97.7% |
| Abrasion Index | 1.3% |
| Linder Reduction Test | |
| Fragmentation (-3.35mm%) | 0.48% |
| Strength after Reduction (>50kg) | 45.6kg |
| Metallisation | 96.2% |

**Comprehensive programme of metallurgical test work completed, culminating in the successful production of high quality DR and BF grade pellets from Kobelco (Japan) and Lurgi (Germany)**

- **Extremely low phosphorus <0.006%**
- **Initial Design parameters for concentrator and pellet plant completed**
- **Metso currently reviewing design and conducting testwork to provide Process Guarantees.**
- **Basket test underway to confirm performance and characteristics in the DRI process**

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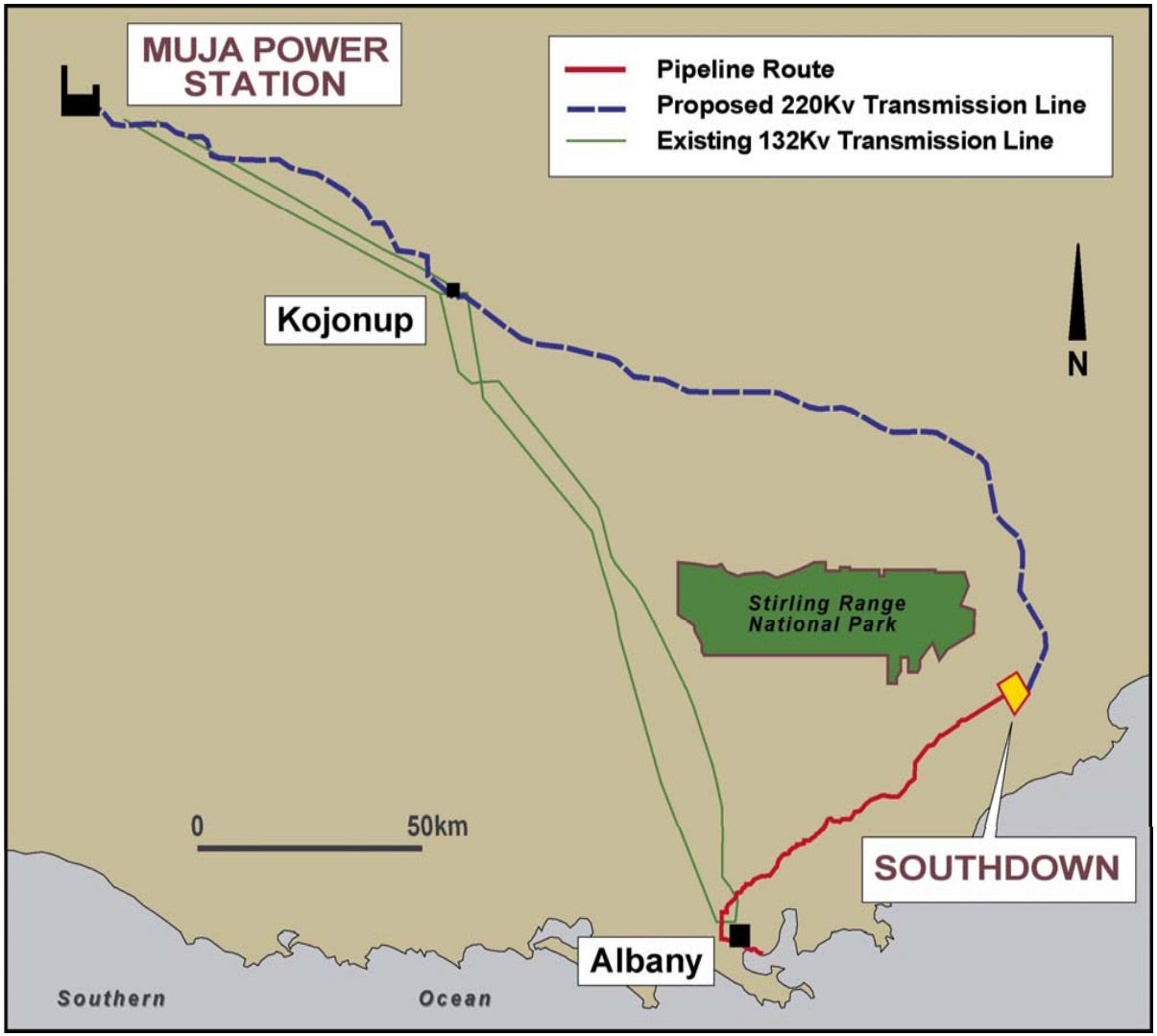
# Project Infrastructure – Southdown & Albany

**All key infrastructure in place or well advanced**

| | |
|---|---|
| ☑ **Water** | Pit dewatering, site water harvesting, retreating Albany waste water, groundwater |
| ☑ **Power** | Premier Power (Wesfarmers) (coal and natural gas potentially augmented by wind power) |
| ☑ **Power Transmission** | Western Power Networks |
| ☑ **Concentrate Transport** | Slurry Pipeline (to date agreement on easements reached with most landowners) |
| ☑ **Workforce** | Local communities with skilled workforce |
| ☑ **Deep Water Port** | Albany Port to be dredged to 16m to take Capesize vessels |

# Project Infrastructure – Southdown & Albany




## Slurry Pipeline

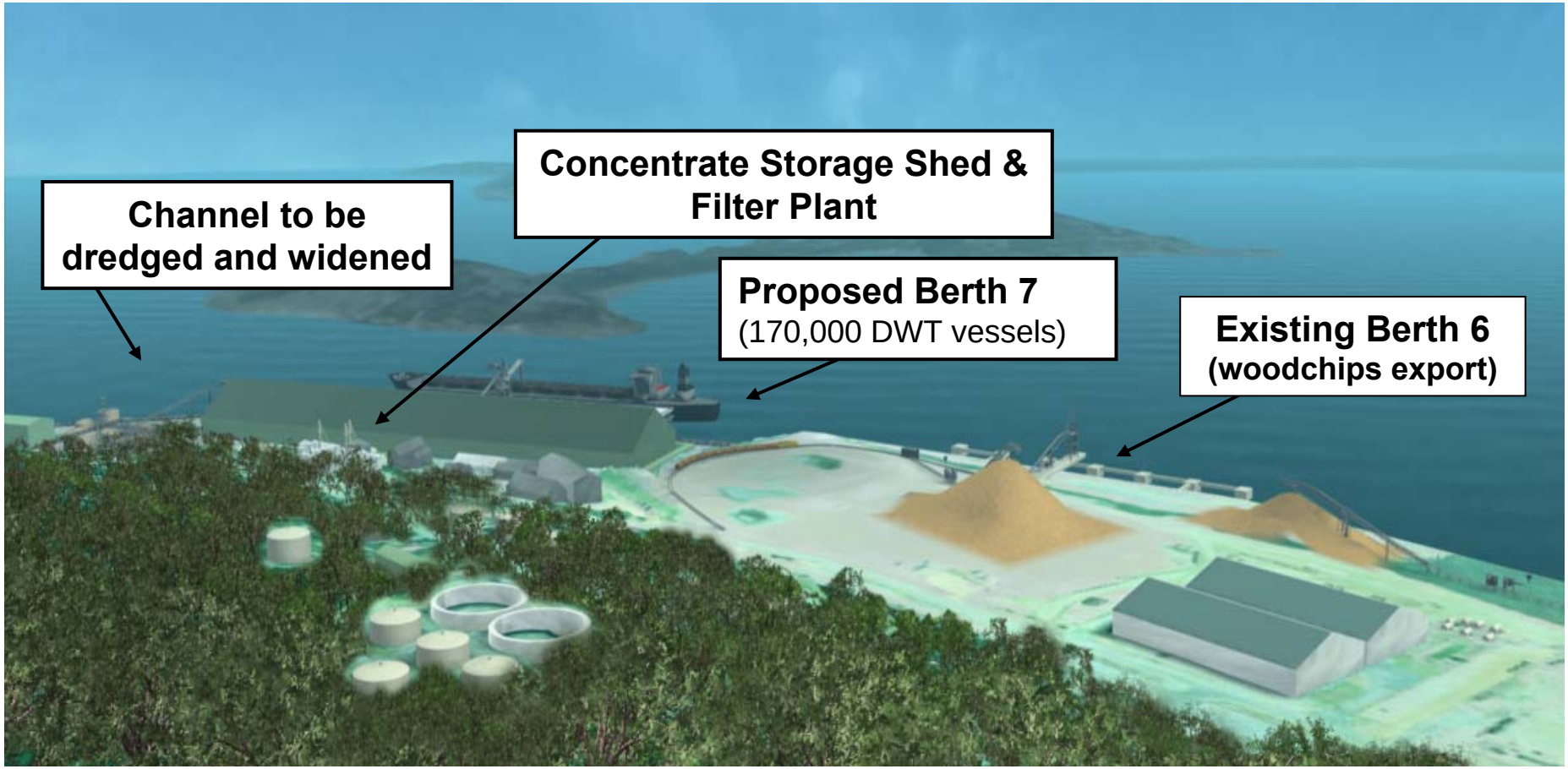
- Optimal transport method
- Finalising easements with landowners

## Power

- Western Power Networks 220kv line from Muja (150MW capacity). No EPA Assessment
- Interconnected to SWIS[1]
- Transmission line easement progressing

[1] South West Interconnected System (Western Australia)

# Project Infrastructure – Port of Albany




- Work advancing on port design and pre-development engineering
- Heads of Agreement signed with Albany Port Authority for Port development

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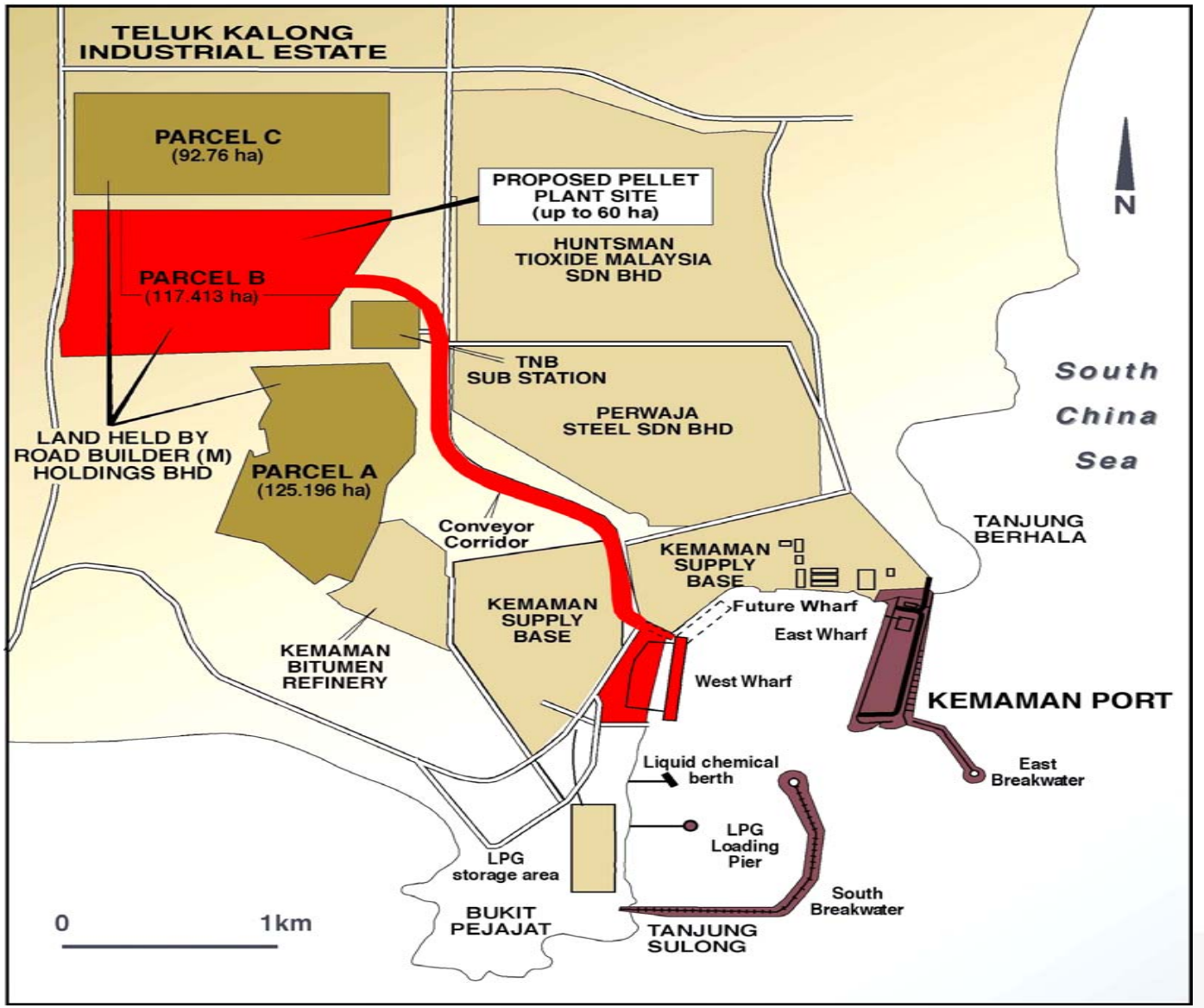
# Project Infrastructure - Kemaman

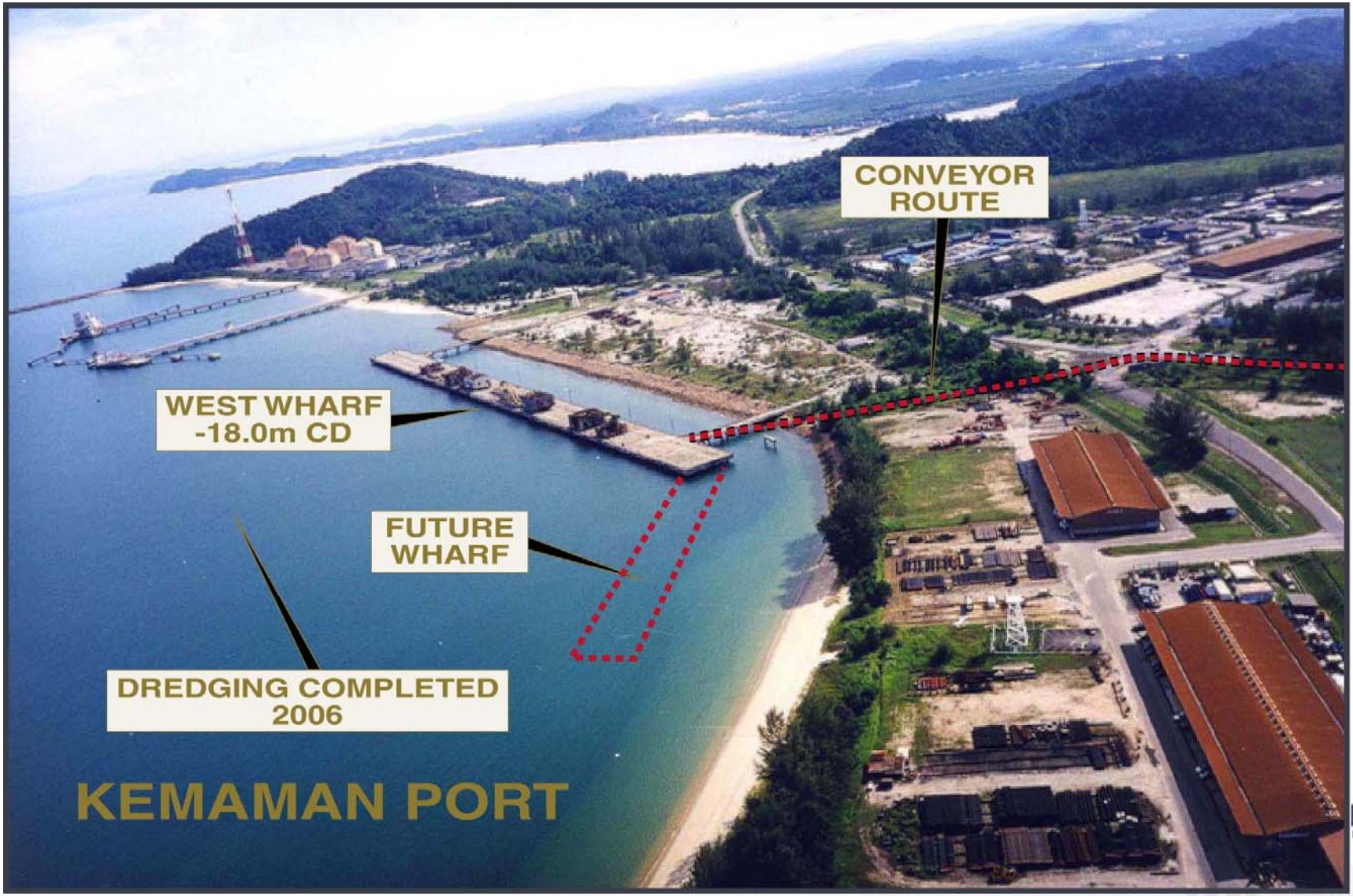
**All key infrastructure in place**

| | |
|---|---|
| ☑ **Deep Water Port** | Existing Wharf at Kemaman (West Wharf)<br>Suitable for Capesize vessels |
| ☑ **Transport** | Conveyor corridor between Port and pellet plant |
| ☑ **Power, Gas & Water** | Power – TNB (substation adjacent to site)<br>Gas – Petronas, Water – mains supply |
| ☑ **Workforce** | Local population – skilled and unskilled |
| ☑ **Investment Incentives** | 15 Year Tax Holiday – granted by Malaysian Govt<br>Various other concessions granted |
| ☑ **Markets** | Excellent proximity to key DR and BF markets<br>(Perwaja DR Plant, on adjacent land) |

# Project Infrastructure – Kemaman Site



# Project Infrastructure – Kemaman Port



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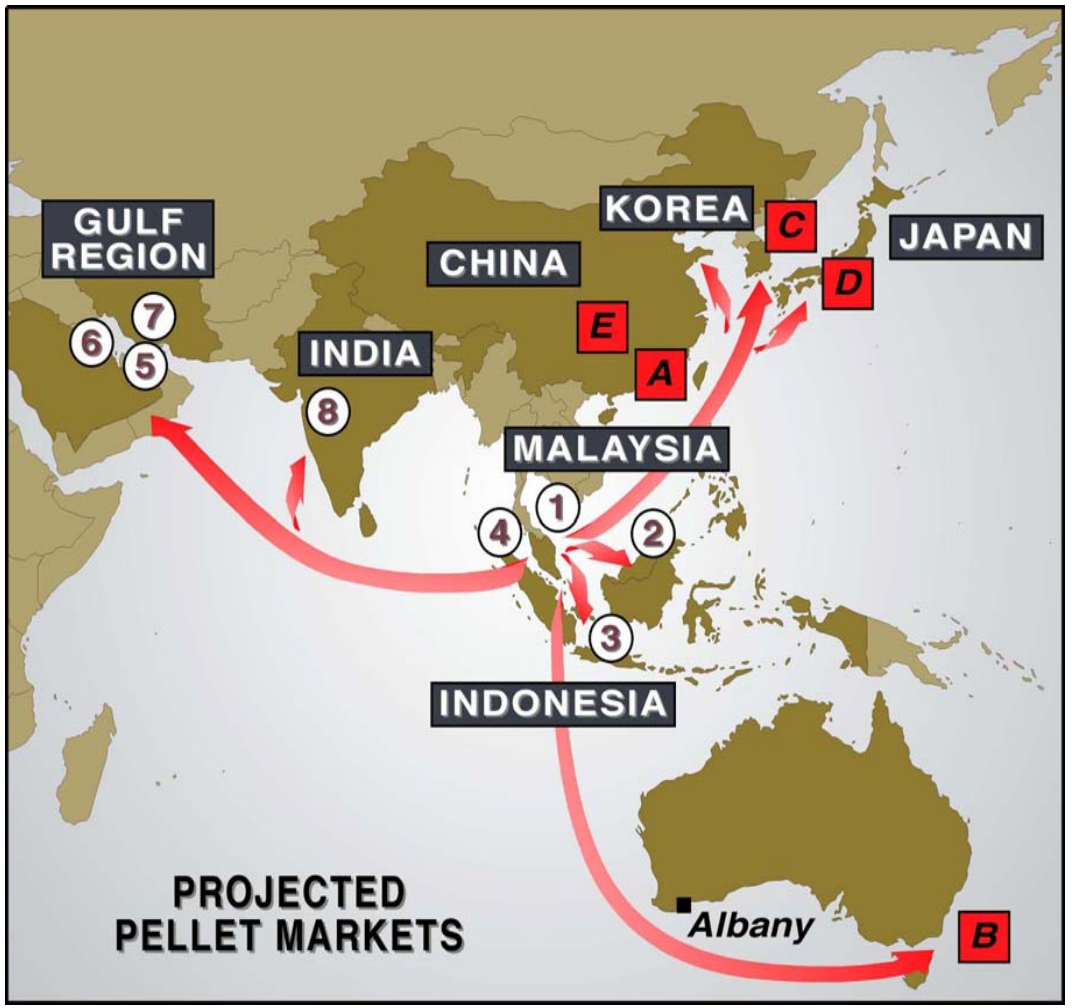
# Kemaman Pellet Plant – Strategic Position
# Proximity to Customers

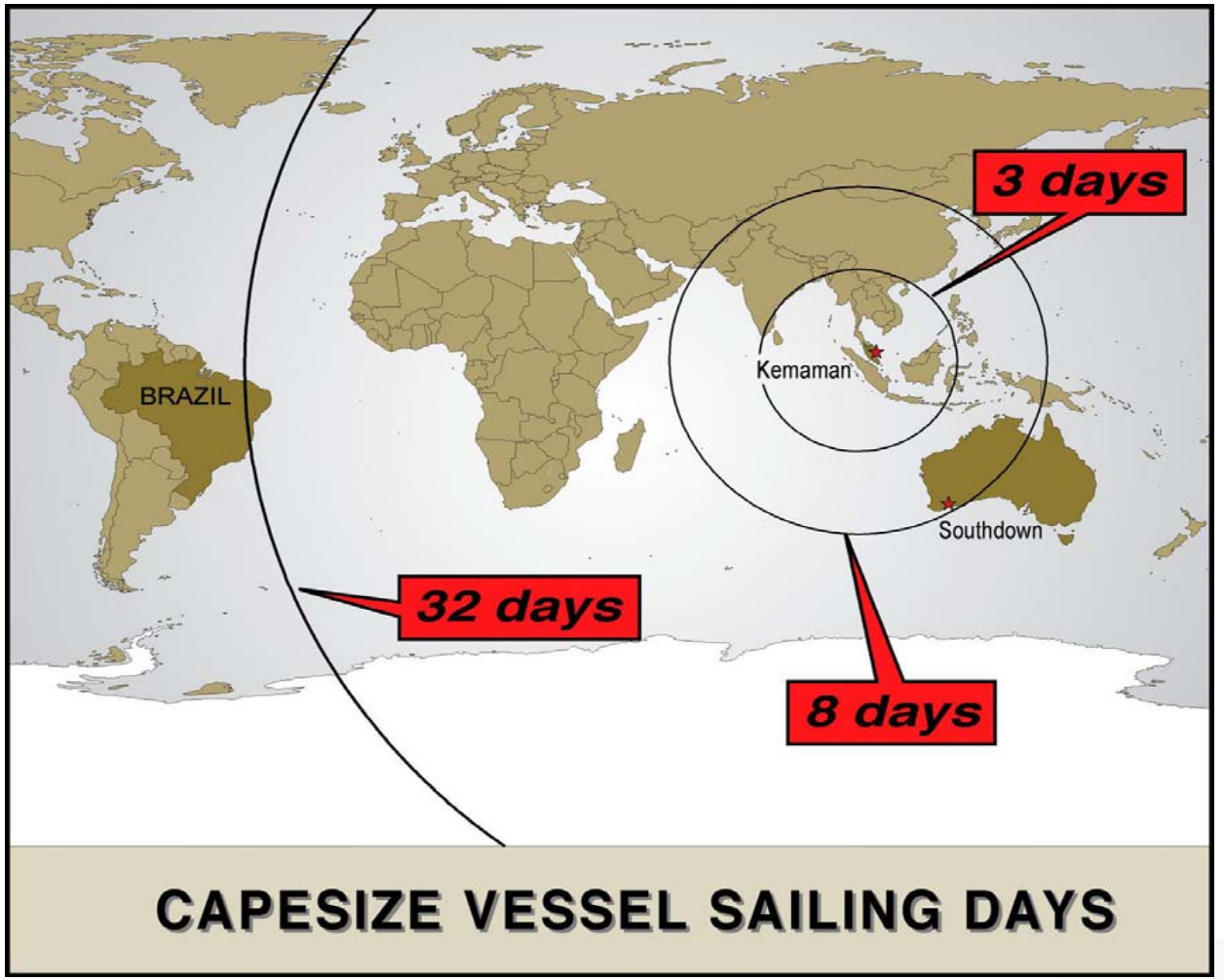



| DR PELLET CONSUMERS | COUNTRY |
|---|---|
| ① Perwaja Steel | Malaysia |
| ② Amsteel | Malaysia |
| ③ Krakatau Steel | Indonesia |
| ④ Megasteel | Malaysia |
| ⑤ Qasco | Qatar |
| ⑥ Hadeed | Saudi Arabia |
| ⑦ Various | UAE |
| ⑧ Various | India |

| BF PELLET CONSUMERS | COUNTRY |
|---|---|
| A China Steel Corp. | Taiwan |
| B Bluescope Steel Ltd | Australia |
| C Posco | Sth Korea |
| D Japanese Steel Mills | Japan |
| E Chinese Steel Mills | China |

# Kemaman Pellet Plant – Strategic Position
# Kemaman Freight Advantage

**Kemaman has distinct freight advantages over South American pellet producers**




- **Close to key markets hence reduced shipping costs**
- **Panamax size vessels can economically deliver smaller quantities to ports not able to handle capesize vessels**
- **The close proximity to key consumers reduces working capital costs for customers**

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# Operating and Capital Costs

**Project costs are well understood and are the product of a detailed feasibility study**
(Note: Costs below are as at June 2007)

| Operating & Capital Costs | US$ |
|---|---|
| **Operating Costs** | **(US$/t pellets)** |
| ▪ Southdown Mining & Processing[1] | 35.4 |
| ▪ Shipping to Malaysia (incl. handling) | 10.6 |
| ▪ Pelletising | 6.2 |
| **Total Cost (FOB Kemaman)** | **52.2** |
| **Capital Costs** | |
| ▪ Southdown | **839** |
| ▪ Kemaman | **534** |
| **Total Capital Cost** | **US$1,373m** |

Note: Source currencies of €, AUD, MR all converted to US$ at A$/US$ 0.75

1. Includes WA State Royalties

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# Project Status

**The Southdown & Kemaman projects are well advanced with feasibility complete, most infrastructure in place and approvals in progress.**

| Item | Status | Expected Timing |
|---|---|---|
| Initial Feasibility Study | ☑ | Refinement of process flowsheet work underway with Metso Minerals (Q3 2008) |
| Kemaman Environmental Approval | ☑ | |
| Kemaman Investment Incentives | ☑ | |
| Southdown Environmental Approval | In progress | ▪ Full Ministerial Approval expected Q3 2008 (mine & pipeline) & Q4 2008 (port) |
| Commence Construction | | ▪ 2009 |
| First Production Year | | ▪ 2012 |

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# Summary of Grange's DR Pellet opportunity

***An advanced Iron Ore Project for the Direct Reduction Pellet Market***

- **Grange has the ore, the land and access to infrastructure.**
- **Grange's Pellets will be a premium Direct Reduction grade.**
- **Our pellets will be sold into a niche market:**
  - ***Geographically advantageous location – Mid East***
  - ***Targeting DR and Electric Arc Furnaces, not Blast Furnaces***
  - ***Expanding faster than Direct Ship Iron Ore***
  - ***Higher value product.***
- **Annual production 7 million tonnes potentially for > 35 years.**
- **US$1 billion revenue potential per annum.**
- **Annual EBIT potential US$400m to US$500m.**

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# Key Contacts


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