
Fission Energy Ltd
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Mt. Thirsty Joint Venture
Mt Thirsty
Barra Resources Ltd & Fission Energy Ltd
Western Australia
Emerging Cobalt-Nickel-Manganese Producer
May 2010
China Nickel Conference Shanghai
Domenic Furfaro, Gary Berrell, Guy LePage

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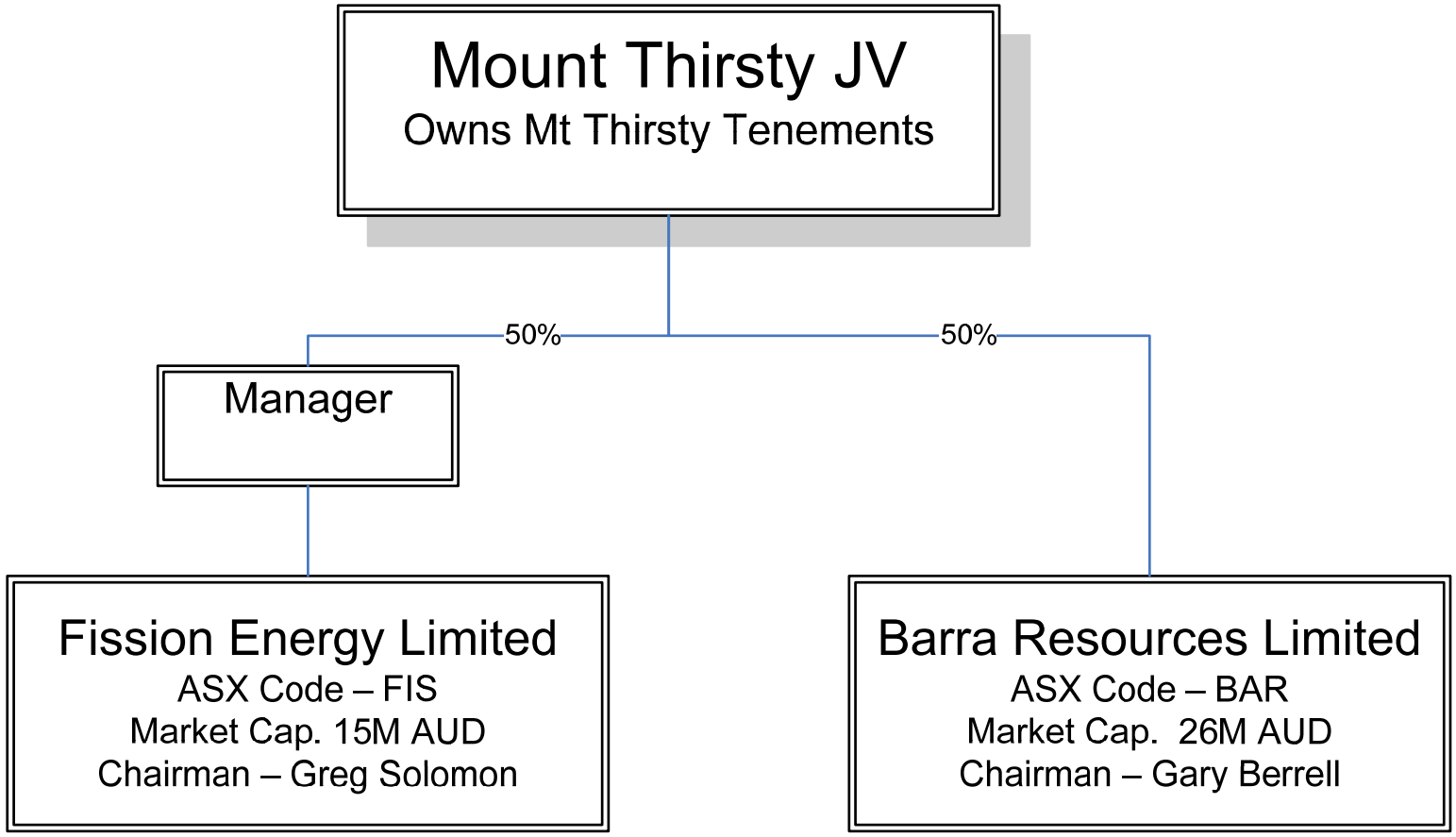
Mt. Thirsty Joint Venture

Mt Thirsty– Key Points

- 29 million tonnes at 0.14% Co, 0.56% Ni and 0.9% Mn
- 2 Mtpa throughput for 15 year mine life
- 4,000 tpa Co and 9,000 tpa Ni in a mixed sulphide product
- 13,000 tpa Mn in a manganese carbonate product
- Production by 2015

Company Snapshot



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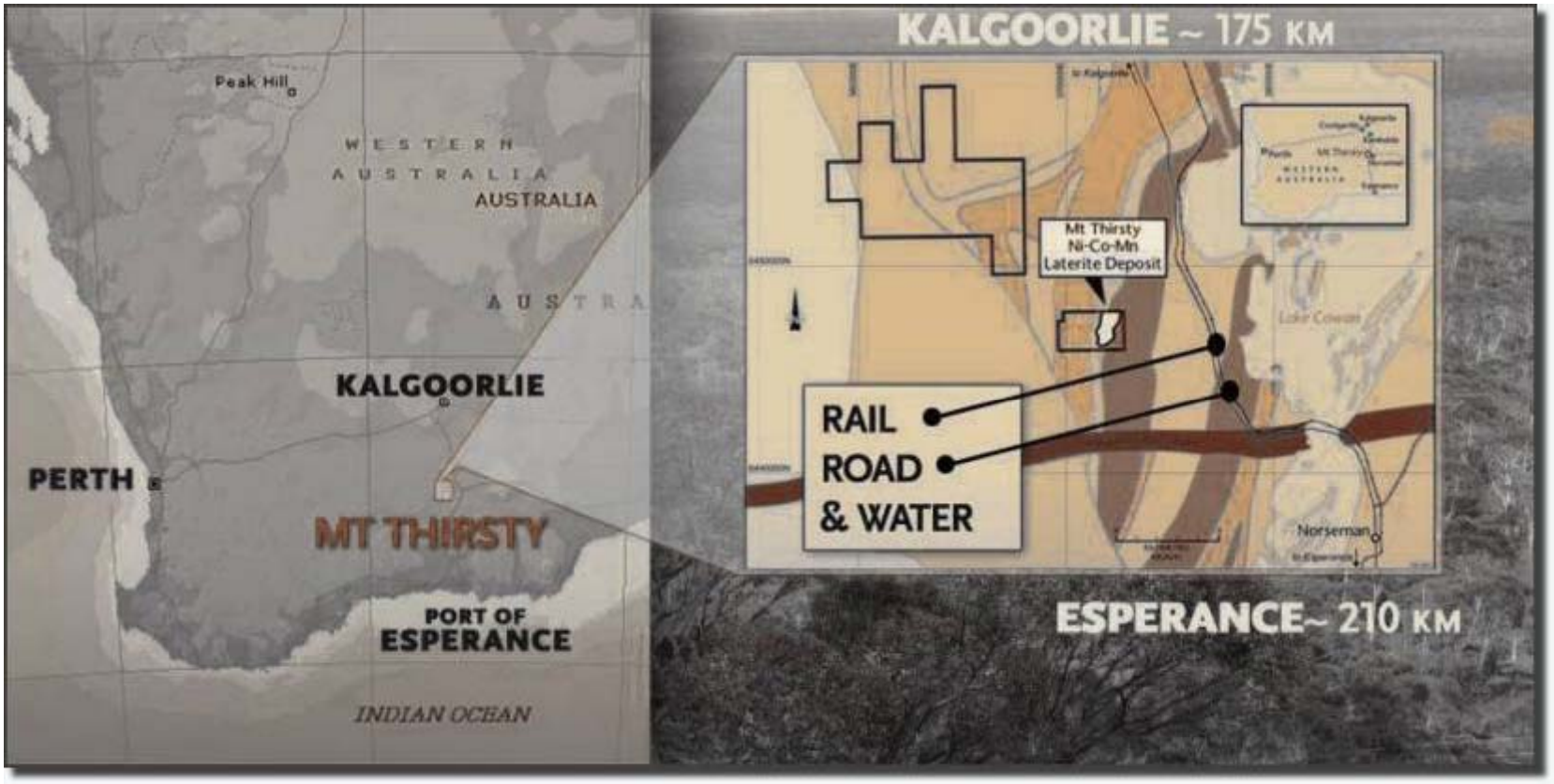
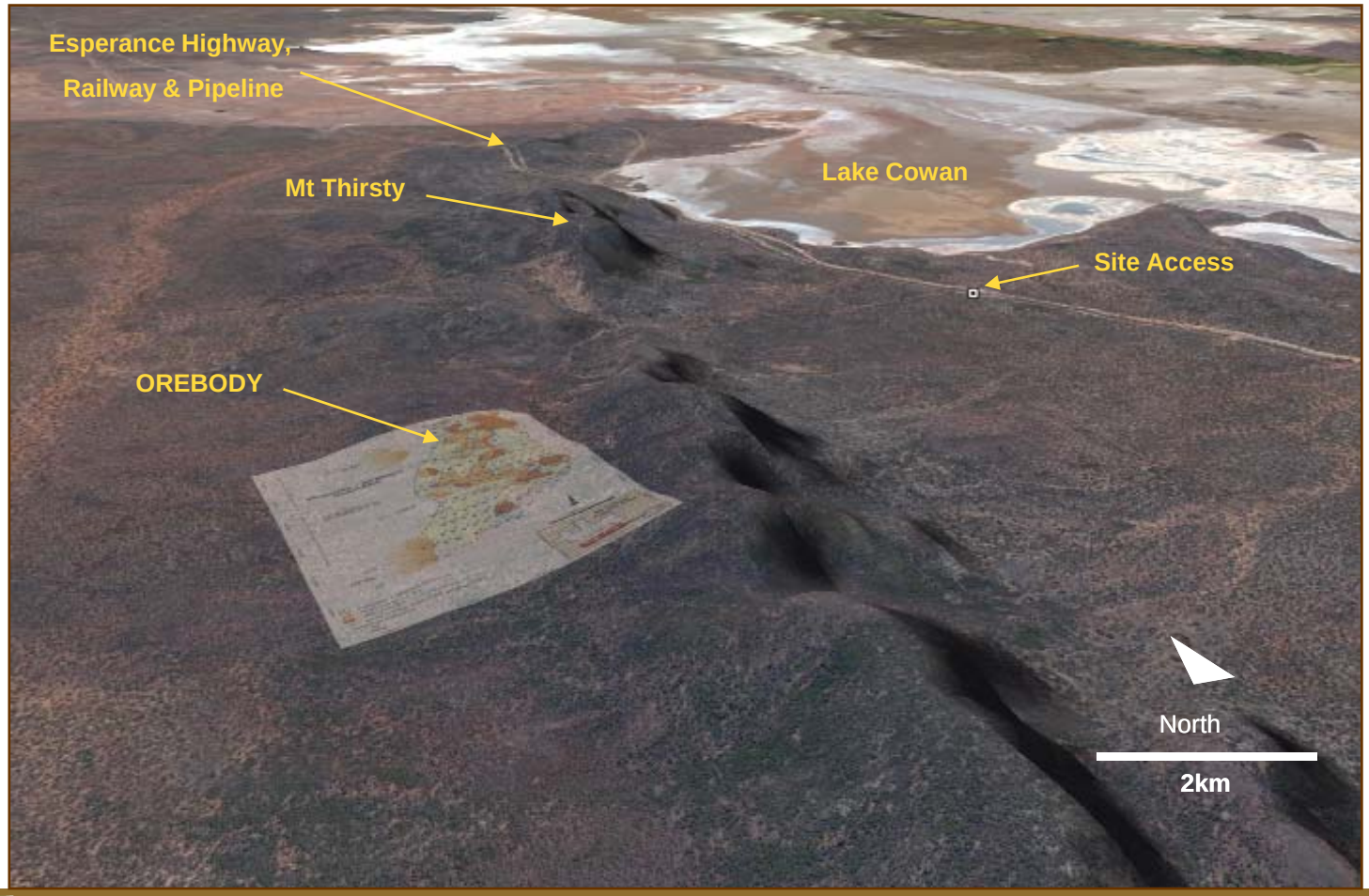
Favourable Project Location

- Excellent logistics
- Located within 4km of existing road and rail infrastructure to the port of Esperance
- Proximity to Norseman allows residential workforce



Attractive Mt Thirsty Site

- Excellent logistics in place with the resource covering an area measuring 1.3km x 0.9km



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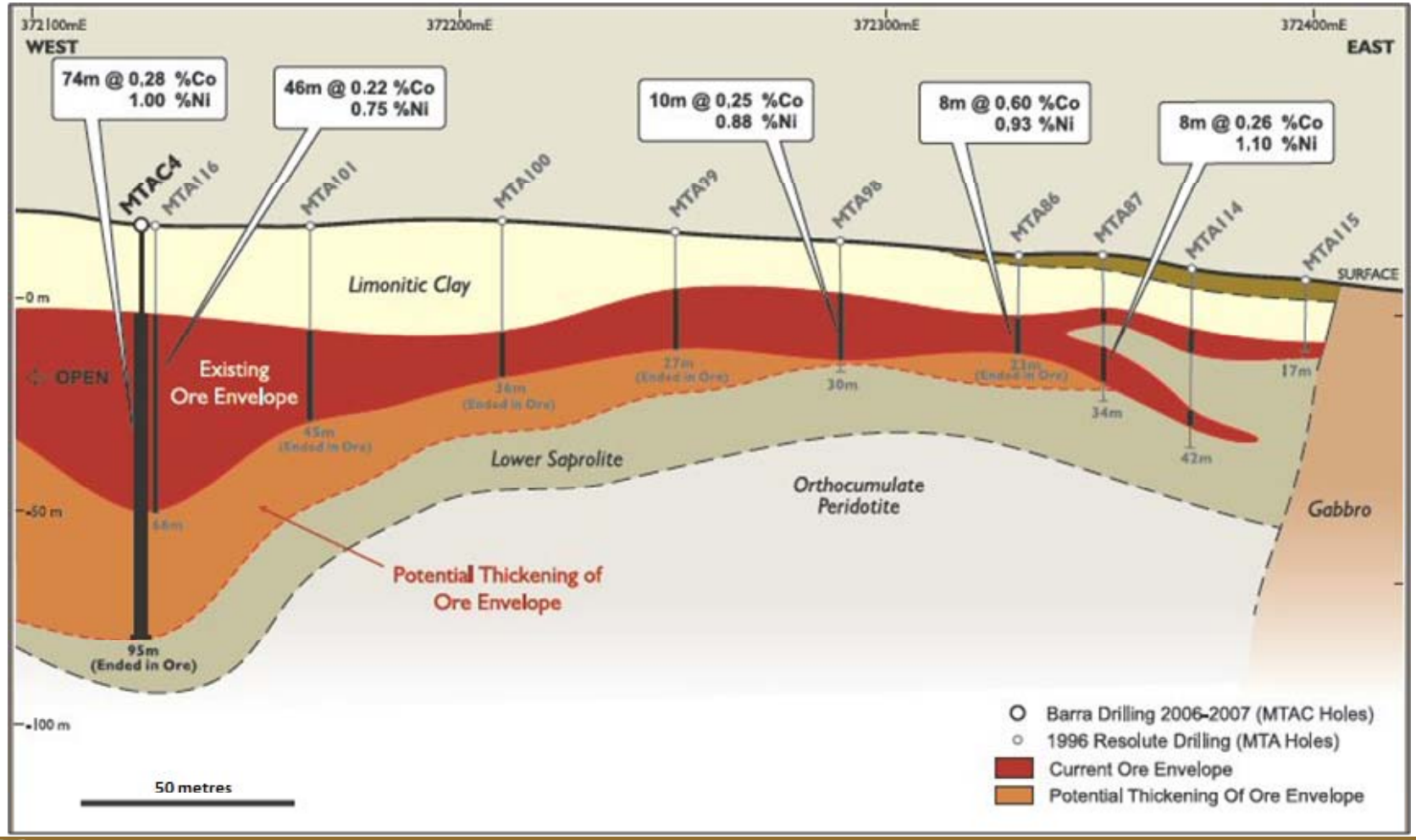
Geology – Not Typical Laterite



Process Development Study

Developed a flowsheet which produces high value intermediate products.

Identified a simple atmospheric leach process with;

Improve leach selectivity →

low range acid consumption and good residue handling

Produce high quality product(s) with high recovery

Ordinary equipment & elegant chemistry

Process Mineralogy

- **Chemical composition**

Assays (%)						
Co	**Ni**	**Mn**	**Fe**	**Al**	**Mg**	**Si**
0.13	**0.65**	**0.93**	**22.4**	**4.2**	**3.9**	**18.3**

- **Mineralogy**
  - Goethite (Fe – Ni) , Kaolinite (Al), Serpentine (Mg-Ni), Asbolane (Mn –Co), low Chromite.
- **Impacts on processing**
  - Clay
  - High in Mn (MnO_2) - Co and Mn easy to leach
  - Ni in Goethite and Mg-silicates – hard to leach

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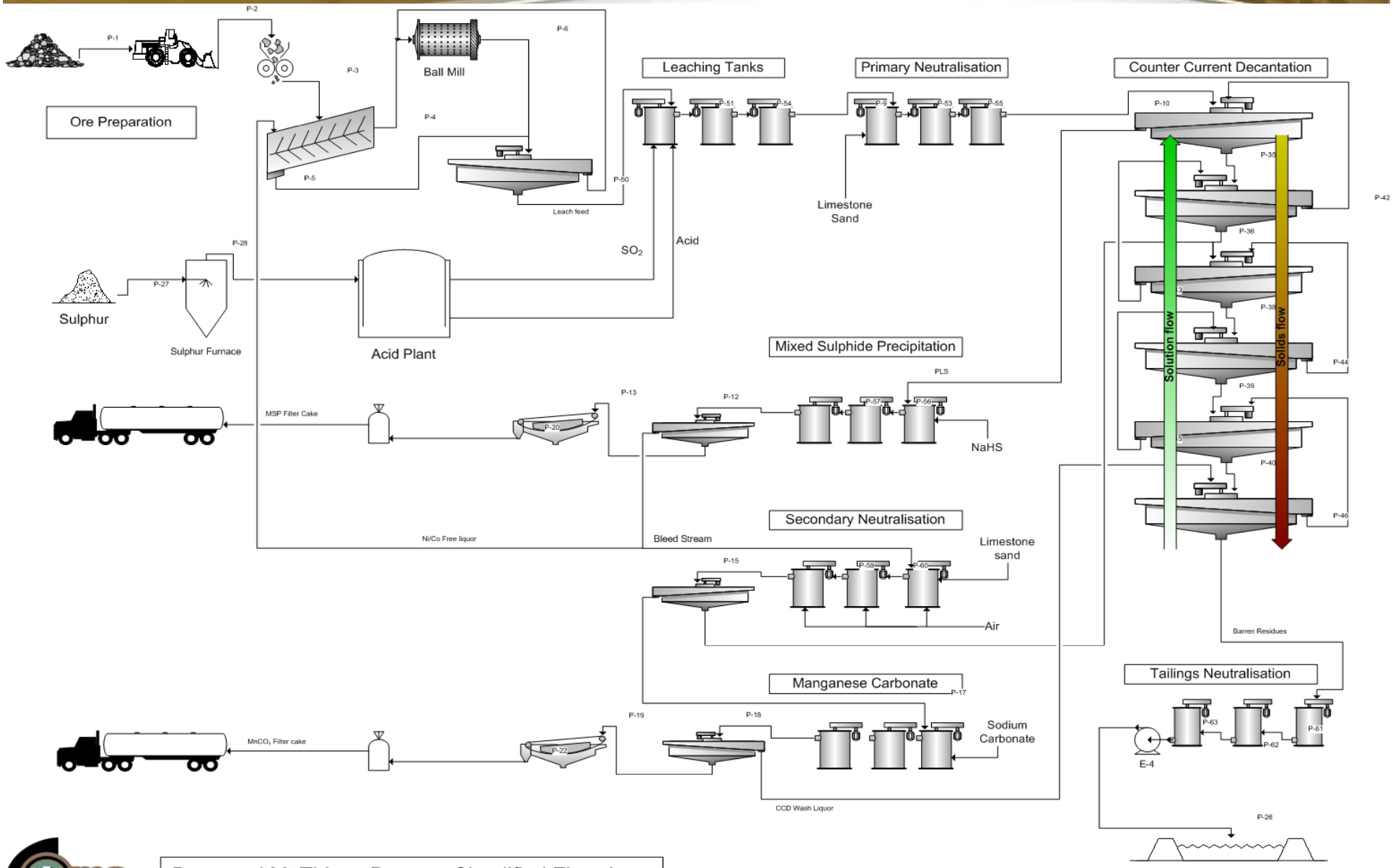
Simple Mt Thirsty Flowsheet



Proposed Mt Thirsty Process Simplified Flowsheet

Simple Ore Preparation

- **Free digging ore, friable, no drill blast required**
- **Scrubbing at 50% solids in saline water, dispersion process**
- **No beneficiation likely**
  - Ni concentrates in the fines
  - Co and Mn concentrates in the coarse fraction
- **Greater than 90% of the ore is -1 mm, coarse fraction is milled to -1 mm prior to leach**

Leaching

- **Leaching at atmospheric pressure, NO autoclaves**
  - Saline water enabled similar performance to HPAL
- **Reductive and two stage leach evaluated and rejected in favour of a single stage atmospheric leach**
- **Ni recovery more sensitive to acid dose and leach time**
- **SO_2 required to achieve high Co and Mn recovery, relatively fast**
- **High leach solids density achieved (45% w/w) due to saline water**

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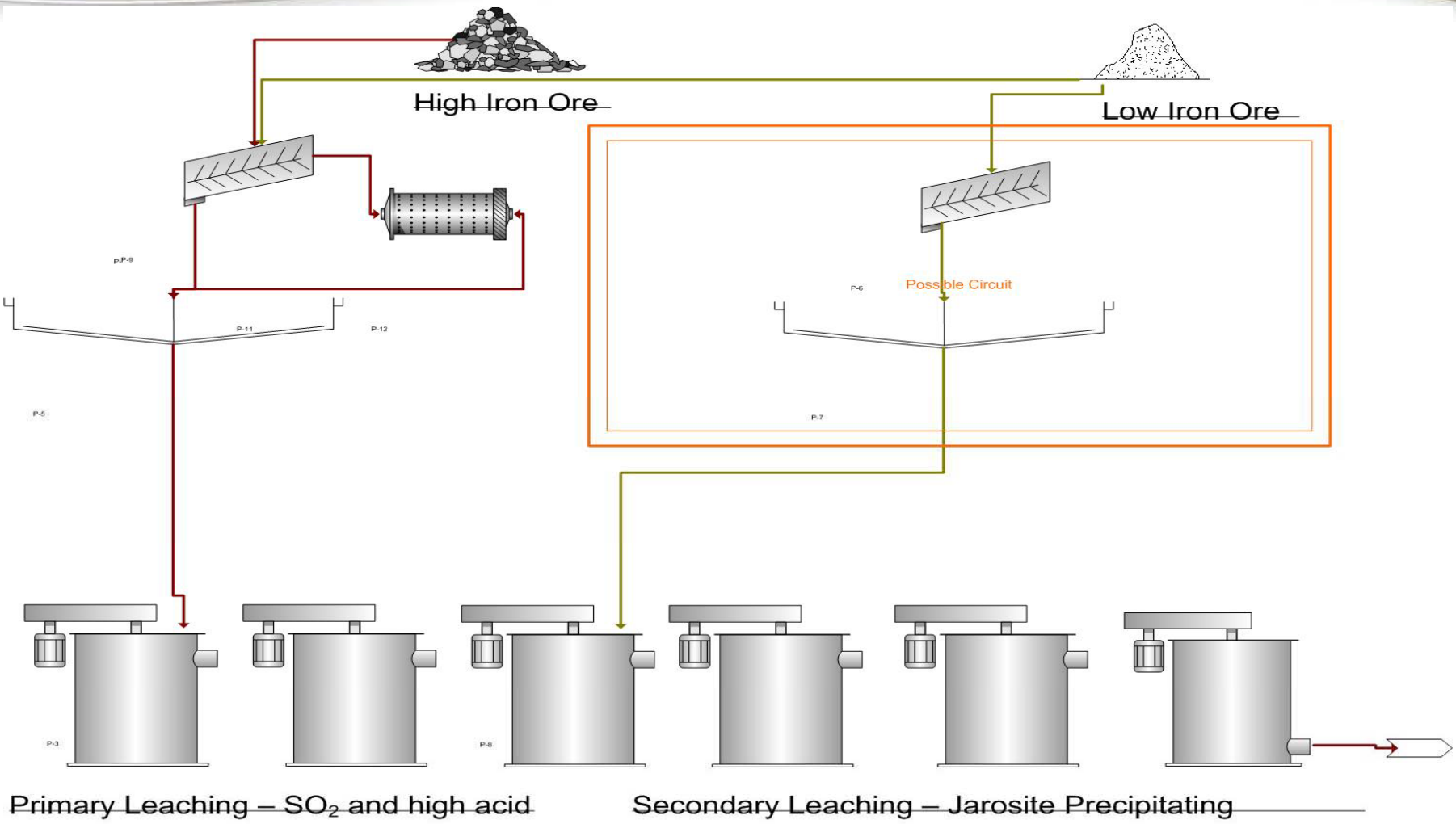
Low Leach Complexity



Leach Comparison

Leach	% Dissolution			Liquor Tenors (g/L)		
	Ni	Co	Mn	Ni	Fe	Fe(II)
Reductive	73	92	95	4.0	***113***	***92***
Two Stage	78	91	94	4.0	6	1
Single Stage	75	91	95	3.8	5	1

Similar recoveries but reductive leach consumes more sulphur and generates higher contaminants in solution but has lower residence time. Single stage leach selected as optimum

Robust Leach

Percentage of Resource	Acid Dose kg/t	% Extraction			Liquor Assays (g/L)		
		Ni	Co	Mn	Ni	Fe	Fe(II)
7%	420	82	96	96	4.4	23	1
35%	**350**	**85**	**96**	**98**	**4.6**	**9**	**1**
11%	337	85	91	94	4.3	11	4
32%	388	81	92	96	6.3	12	7
4%	357	85	99	99	3.8	12	5

Good leach response over a range of ore types

Neutralisation and CCD

Reactive Limesand locally available, 70% $CaCO_3$.

- Silicon (quartz) is the main impurity
- 97% pass 425 micron
- No milling required

Neutralisation to pH ~2.5 removes all Fe (III) and free acid with minimal (<1%) Ni, Co, Mn losses.

Slurry exhibits good settling characteristics, ~53% u/f density at <100 g/t flocculant doses.

Six stage CCD at 1.6:1 wash ratio to achieve >99% recovery

CCD = Counter Current Decantation

High Quality Sulphide Product

- > 99% Ni and Co recovery from solution
- Fast kinetics, 5 minutes to reach steady state
- Good selectivity against most contaminants
- Sodium sulphide or sodium hydrosulphide suitable
- Product settles and filters well
- High quality sulphide product generated with minimal solution purification and low capital

Secondary Neutralisation

- Impurity removal prior to Manganese recovery
- Al and Cr precipitate quickly above pH 4.5
- Fe(II) oxidation is rate limiting, increasing pH reduces residence time but increases Mn losses
- ~5 hours residence time required at pH 5, <2% Mn losses
- Flocculant doses >300 g/t required, ~25% u/f density, seeding should improve settling performance

Manganese Carbonate

- Sodium carbonate addition
- Fast kinetics, 10 minutes to reach steady state
- 1 g/L Mn required to minimise Mg contamination
- Reducing temperature may improve purity
- Very good settling and filtration

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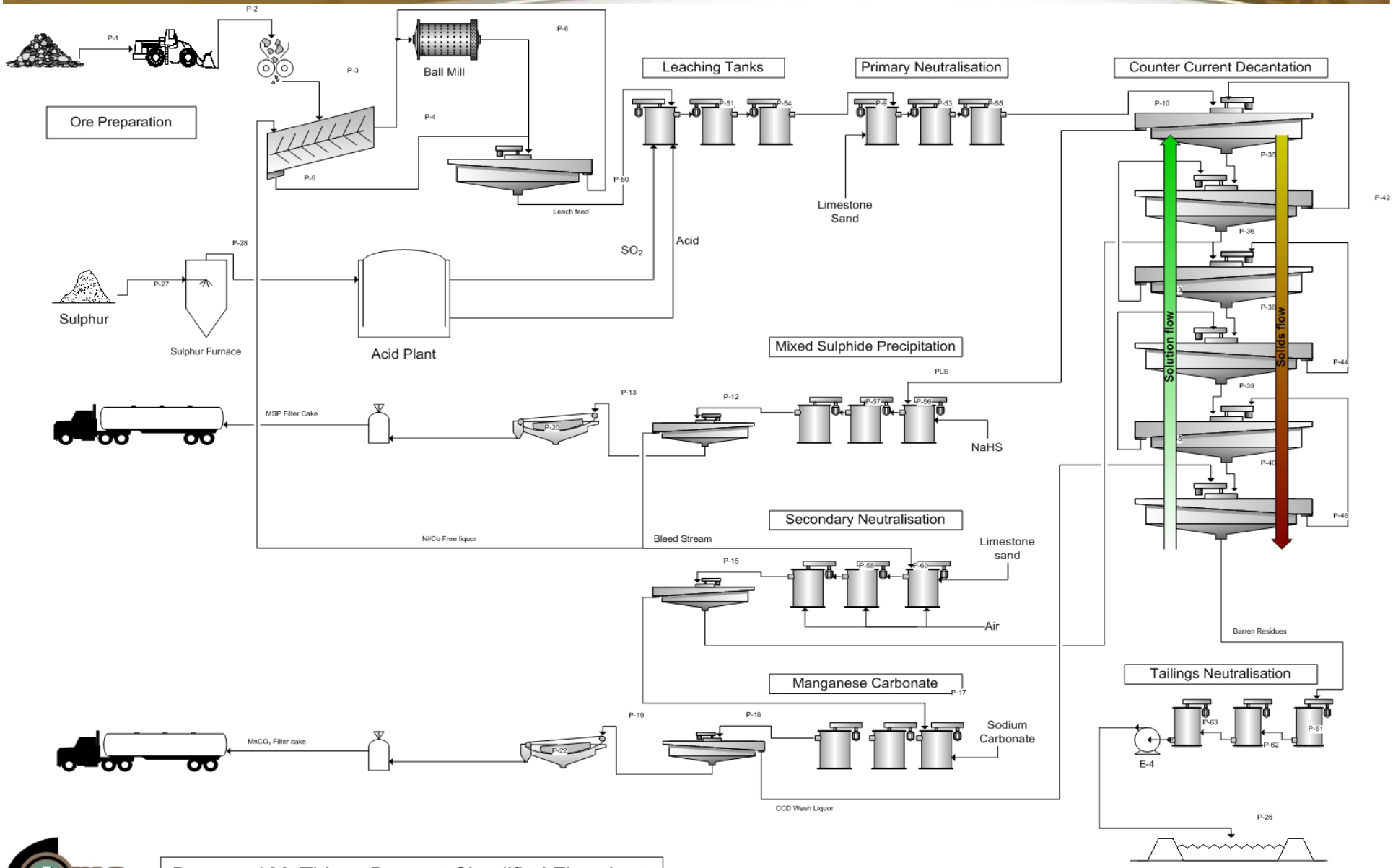
Mt Thirsty Flowsheet for PFS



Proposed Mt Thirsty Process Simplified Flowsheet

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Real Products

Manganese Carbonate

Ni/Co Mixed Sulphide

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High Value Sulphide Product

- 79% Ni and 91% Co recovery to sulphide product from ore
- Vacuum filtration rate 250 kg/hr/m^2

ASSAYS (%)						
Ni	Co	Mn	Fe	Cu	Zn	S
43	10.2	0.24	3.1	0.24	2.4	35.6

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$MnCO_3$ Product Specification

- 70% Mn recovery to manganese carbonate product from ore
- Vacuum filtration rate 1000 kg/hr/m2

Assays (%)					
Mn	Ca	Mg	Al	Na	S
44	1.0	1.2	0.02	0.45	0.8

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Project Status – On Track

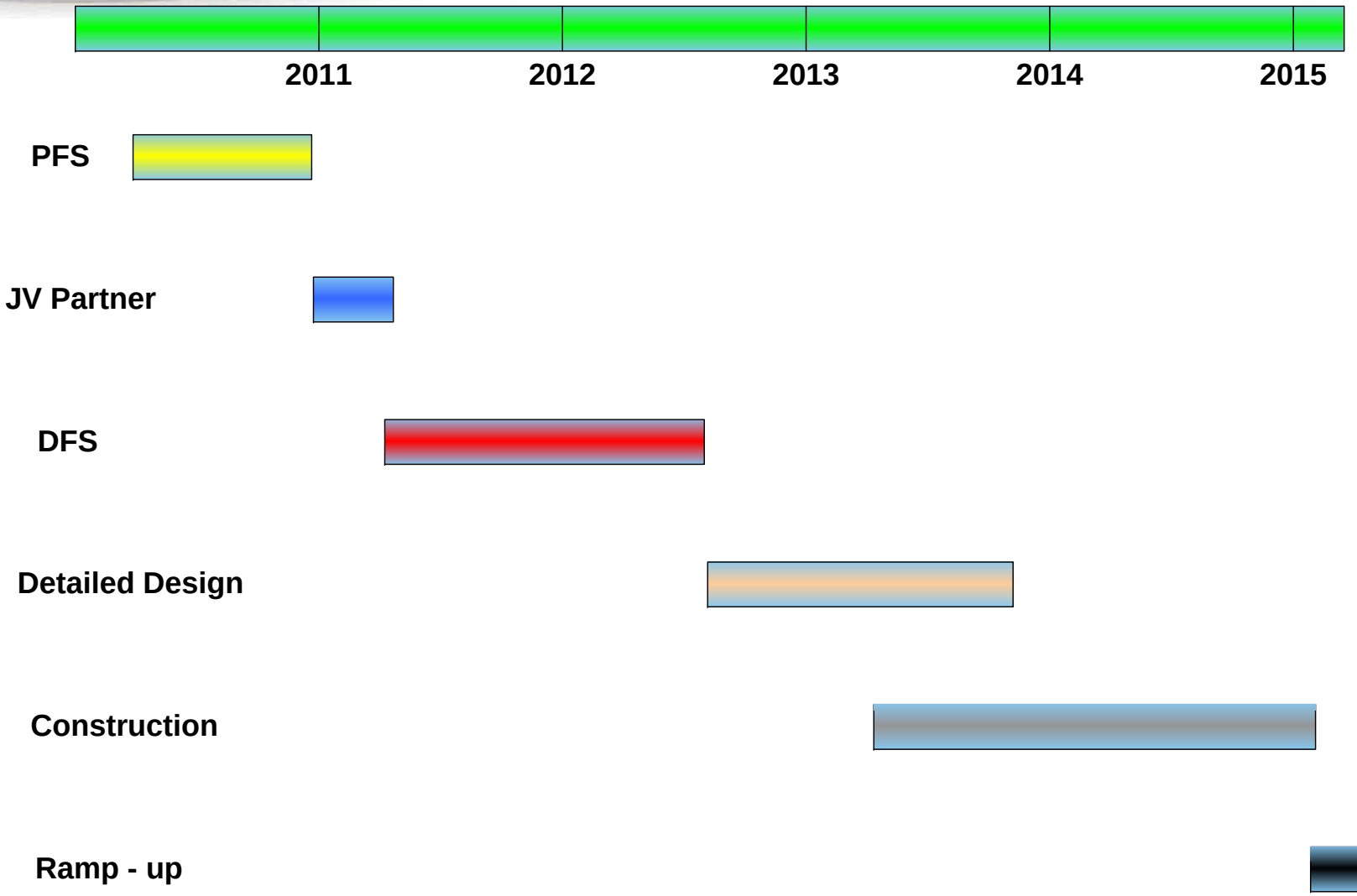
- **Geology**
  - Resource is well defined
  - More infill drilling planned for April
  - More high grade ore located to the North

- **Metallurgy**
  - Main unit operations identified and tested
  - Flowsheet fixed
  - More fresh ore for testwork

- **Prefeasibility study**
  - Underway and to be completed by end of 2010

Development Schedule

Mt. Thirsty Joint Venture



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Project Advantages

- ✓ Located in a developed country with low sovereign risk
- ✓ Located in a mining friendly state with skilled labour force locally available
- ✓ Large proportion of revenue from cobalt
- ✓ Good infrastructure
- ✓ Suitable water source available locally
- ✓ Favourable metallurgy which requires no autoclaves for high recoveries and low acid consumptions
- ✓ Low rainfall area enabling relatively low cost tailings disposal and use of evaporation ponds

Questions

- Longterm stable supply of quality product
- Favourable metallurgy
- Great location

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Disclaimer

The information in this presentation, insofar as it relates to Mineral Resources, is based on information compiled by Michael J. Glasson and Robert N Smith, who are members of the Australian Institute of Geoscientists, both of whom have more than five years experience in the field of activity being reported on. Mr Glasson and Mr Smith are consultants to the Mount Thirsty Joint Venture. Mr Glasson and Mr Smith have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Glasson and Mr Smith consent to the inclusion in this presentation of the matters based on their information in the form and context in which it appears.

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Project Highlights & Potential

Company Making Project	**Potential to be a top 10 primary cobalt producer** ▪ 4,000 tonnes of cobalt annually in early years ▪ 3 - 4% share of global annual cobalt supply
Attractive Project Economics	▪ Operating expenditure - forecast to be bottom quartile (<US$2.50lb Nickel) ▪ Capital expenditure – moderate requirement of approximately US$700M ▪ Multiple commodity price exposure
Excellent Metallurgy	▪ Amenable to treatment at low cost, simple processing – no new technology required ▪ Atmospheric tank leaching ▪ Low sulphur consumption
World Class Resource	▪ JORC compliant Resource: Indicated 14.8 million tonnes at 0.14% Cobalt, 0.59% Nickel and 0.99% Manganese Inferred 14.2 million tonnes at 0.11% Cobalt, 0.52% Nickel and 0.77% Manganese **Total 29 million tonnes at 0.14% Cobalt, 0.56% Nickel, 0.9% Manganese (1.5% Ni equiv.)** ▪ Contains 35,000t Cobalt, 162,000t Nickel, 255,000t Manganese
Stable Supply to Growing Market	▪ ~50% of global reserves reside in the Democratic Republic of Congo (DRC) ▪ Supply constraints following a moratorium on the export of raw concentrates from the DRC 2007