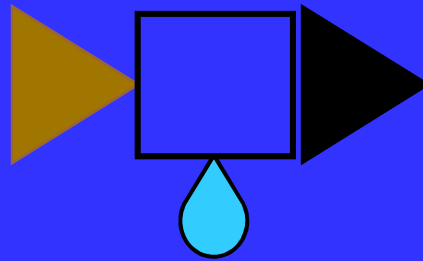


La Trobe Lignite Developments



Brown Coal Processed for the Future

March 2008

The Project and the Technology

Brown Coal Densification (BCD)

Processing Brown Coal to enable the separation and utilisation of Water, Fixed Carbon and Hydrocarbon Gases

Enables recovery of components for best economic value and optimum environmental outcomes

The Brown Coal challenge

- Vic. Brown Coal: Australia's largest energy asset
- inherent low efficiency power generation
- very high greenhouse gas emissions

the total consumption of Brown Coal

for electricity generation only

is poor economics and poor environmental practice

The Project development

- Two decades of research history in separation and attritioning process (CRA work)
- 1997 – maximise carbon output/value (PEH work)
- 2000 – develop metallurgical carbon products
- 2002-2005 – back to mining basics
 - Q. what are the components of biomass ore body ?
 - Q. What is best outcome for each component ?
 - A. Water is recovered, carbon processed to upgraded products, hydrocarbons to be burnt
- 2006-2007
 - Scale-up, and demonstration of reduction in Global Warming

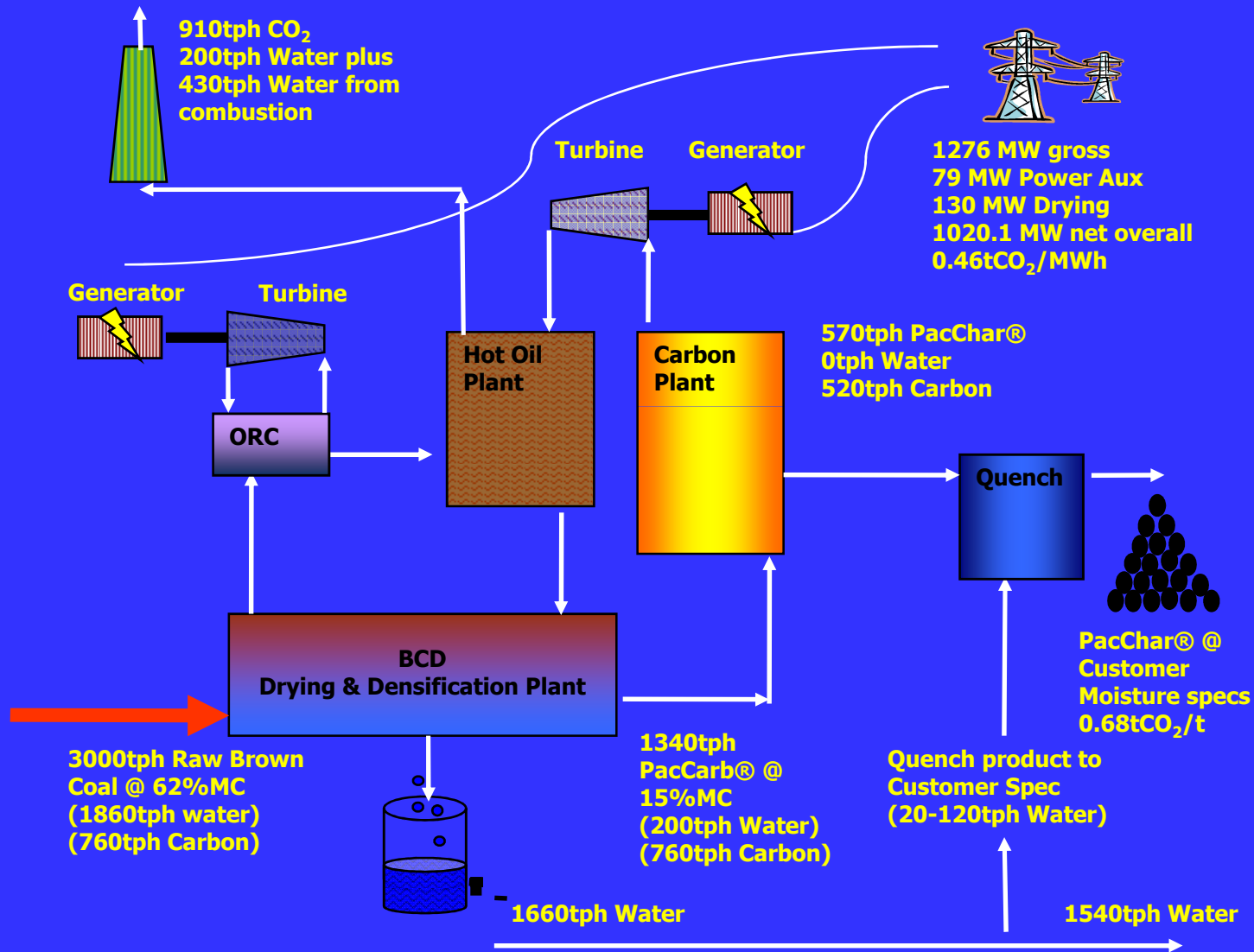
The Project objectives

- Back to basics
 - Avoid burning carbon → avoid making CO₂
 - Must operate at all ambient temperatures
 - Must operate in 'wet' or 'dry' conditions
 - Must be a continuous flow process
 - Must not use 'free' water
 - Must be lowest cost
 - Must be able to add CCS if ever mandated ...??
 - Must work with current equipment

Brown Coal Densification (BCD)

- BCD is a Patented combination of
 - mechanical, thermal and chemical processes
 - accelerates the natural transformation from Brown Coal into a Black Coal equivalent. This would typically take place over 10 million years.
- BCD allows:
 - water and hydrocarbons to be removed and recovered for better use
 - extraction of 'fixed carbon' suitable for steel industry
 - Activation of 'carbon'

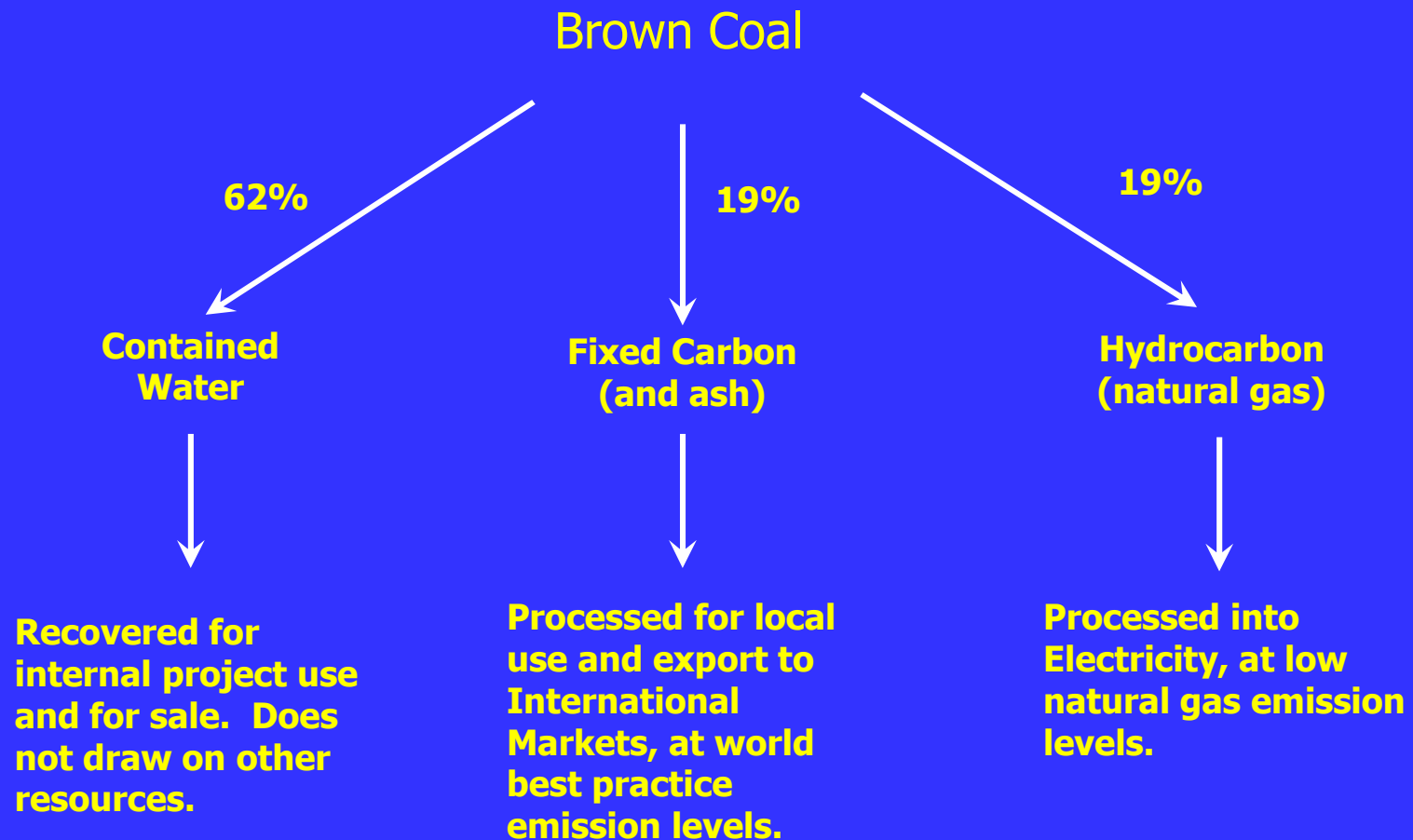
Process Flow Diagram



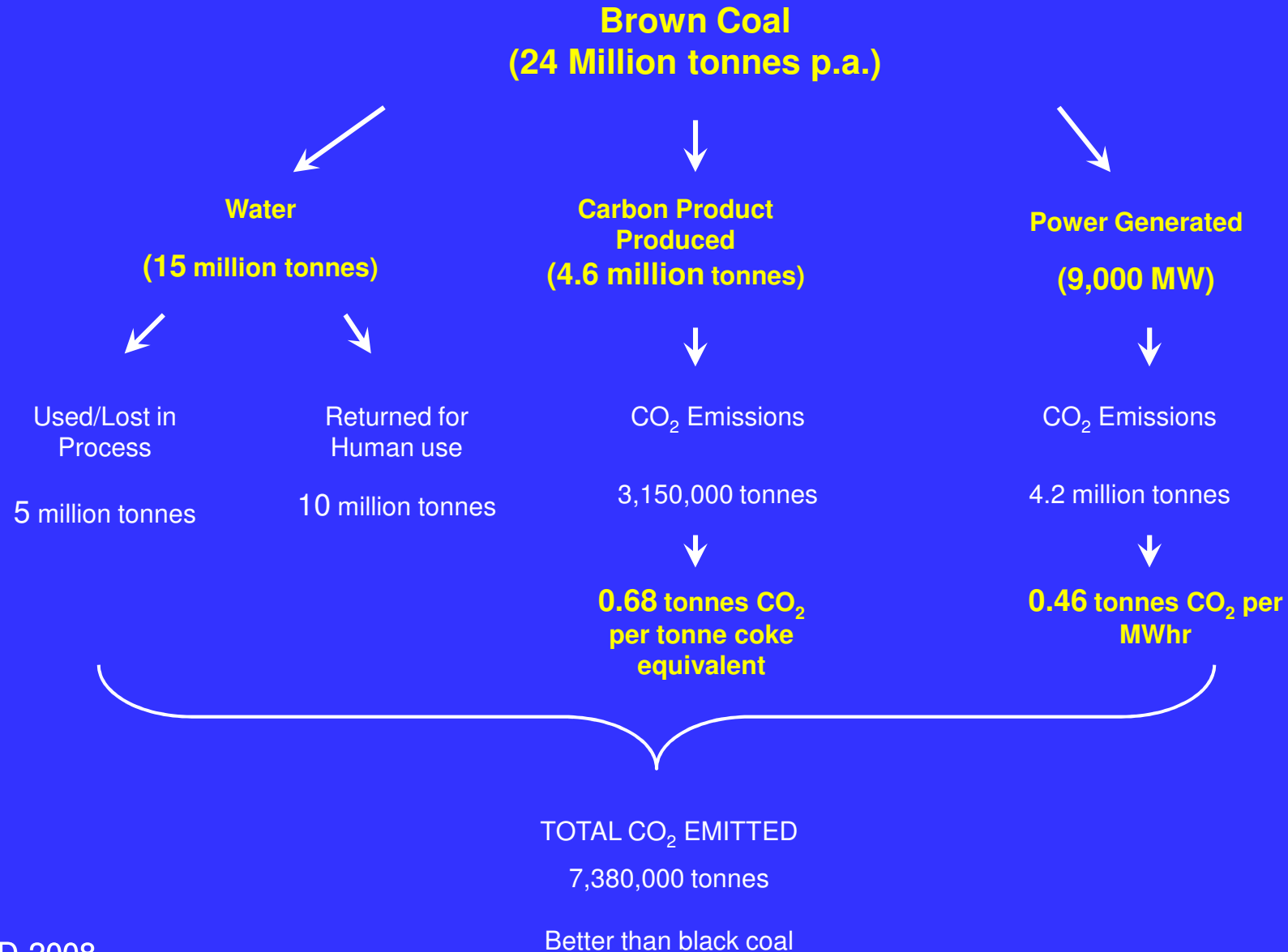
The market :

- BCD is Patented in Australia, USA, Germany, India, Canada, Indonesia
- Brown Coal reserves – Australia (Vic) 25%, USA 30%, Germany 8%, China 33%
- Steel market – > 1.5 billion tonnes of carbon p.a.
- Activated Carbon market – massive need for water treatment in Asia Sub-Continent and Africa

What BCD can do



Commercial scale – (input 3000 tonnes per hour)



Current Status – Pilot Plant

Coimadai Plant



Elevation from East



Elevation from West
Confidential

12/02/2008

2

Risk profile

- Pilot plant works – technical risk is minimal
- Plant uses items which currently operate continuously – technical risk remains minimal
- Pilot plant is small (5 tph) – next stage is to scale up plant
- Scale up in three stages to spread risk
 - \$30m: 30 tph - cash neutral / no capital return
 - \$300m: 300 tph- minimal return
 - \$2.6B: 3000tph – EBITDA return $\geq 20\%$

Reward profile

- Competition still burn coal to destruction
 - They cannot remove water for free
 - They cannot scale-up the old ideas (SFB)
 - Victoria has world's best brown coal
 - Latrobe Valley \$15 billion spend 2020-2030
 - Patented technology can be used globally
 - Carbon to electricity @ \$85 tonne
- versus
- BCD Carbon to steel industry @ \$200 tonne

Beneficial Outcomes / Value Generated

- Brown coal asset values increase
- Patented brown coal technology – licences
- Sustained low cost electricity - globally
- New investment and employment
- Sustained reduction in GHG emissions
- Value-added products and exports
- Victorian water resources enhanced at low cost
and

Latrobe Valley 'clean gas' could power Australia's
Eastern seaboard for 200 years

Comparison– 1000 MW 'base load' power station (@ \$35 per MW)

	Plant A Loy Yang	Plant B LLD	Plant C Gas IGCC
Capital cost	\$1.8 billion	\$ 2.6 billion	\$1.0 billion
Brown Coal input– per hour	1,200 tonnes	3,000 tonnes	nil
Power produced – p.a.	8,000 GW	8,000 GW	8,000 GW
Carbon Product produced	nil	4.5 M tonnes	nil
Revenue from electricity	\$ 280 mill	\$ 280 mill	\$280 mill
Revenue from Carbon sales	nil	\$ 600 mill	nil
EBITDA on Total Capital	≤ 10%	≥ 20%	≤ 10%
Water used / (recovered)	10 Gigalitres	(10 Gigalitres)	5 Gigalitres

Comparative evaluation

■ Annual CO₂ emissions

– Electricity Plant

8,960,000

3,680,000

3,680,000

– Carbon products Plant

nil

3,060,000

nil

– Total Annual emissions

8,960,000

6,740,000

3,680,000

Emissions per MW (power only)

1.12

0.46

0.46

Emissions per tonnes (Coke / water)

nil

0.68

nil

Emission per MW (combined Plants)

1.12

0.85

0.46

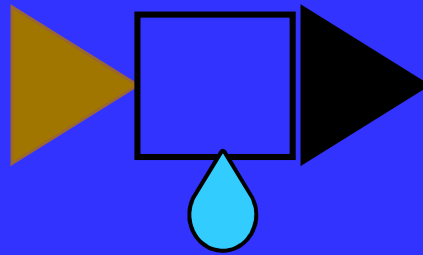
Plant A
Loy Yang
tonnes

Plant B
LLD
tonnes

Plant C
Gas IGCC
tonnes

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Thank You



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