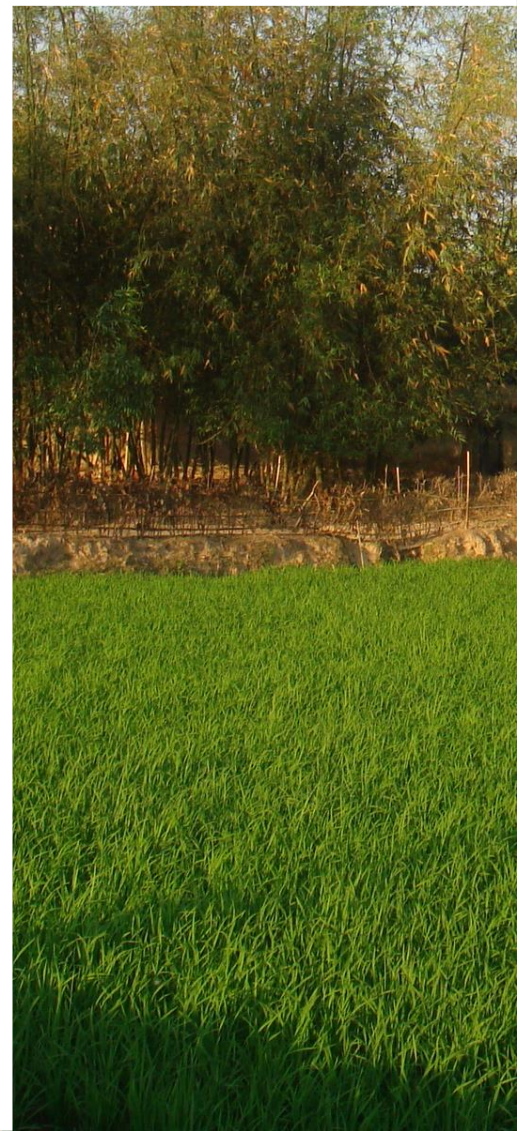
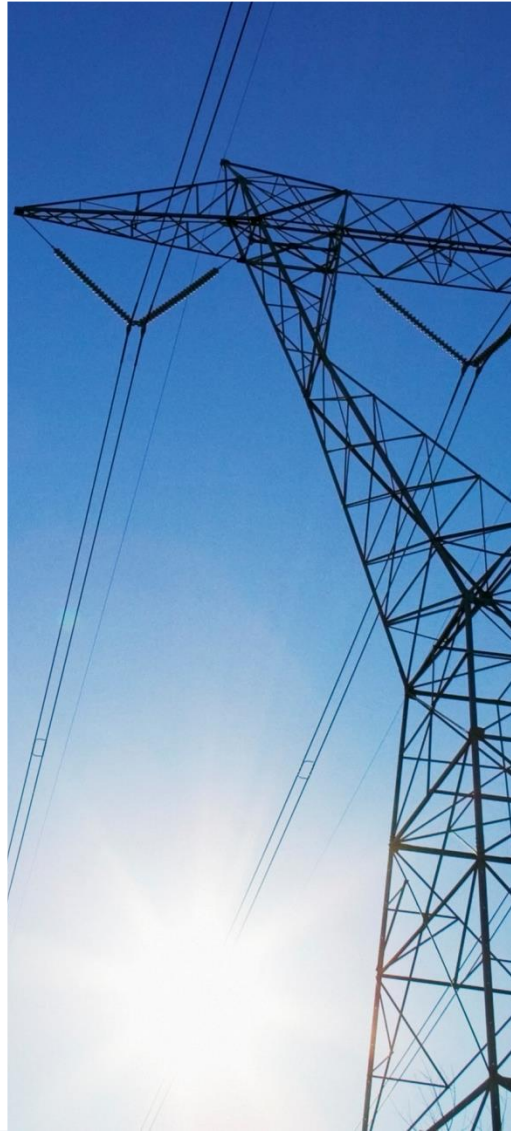


# GCM Resources plc

December 2016



**GCM**  
RESOURCES



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## **Datuk Michael Tang PJN (Executive Chairman)**

- Significant corporate and financial experience in the natural resource, power generation, manufacturing and real estate sectors
- Executive Chairman of globally focused natural resources and mine development investment company Polo Resources Limited
- Principal of investment company Mettiz Capital Limited

## **Nik Raof Daud (Non-executive Director)**

- Over 30 years experience in technical and corporate roles at senior management level
- Industry experience includes mining, oil and gas, industrial products and property.
- Associate of the Royal School of Mines and holds a B.Sc. (Eng.) with First Class Honours in Mining from Imperial College London

## **James Hobson (Finance Director & Company Secretary)**

- Finance professional with 17 years experience, predominantly in mining and international development.
- Fellow of the Institute of Chartered Accountants Australia.

## **Gary Lye (Chief Operating Officer)**

- Over 40 years in the mining industry with extensive experience in large scale open pit mines and community relations
- Previously held senior management positions with leading international mining companies
- Chief Executive Officer of GCM's subsidiary operating in Bangladesh

## **Anwar Islam (General Manager – Environment and Community)**

- Over 30 years technical and management experience in natural resource, development and environment sectors
- Previously a senior government official in the Bangladesh Department of Environment and Head of IUCN's Bangladesh Country Office

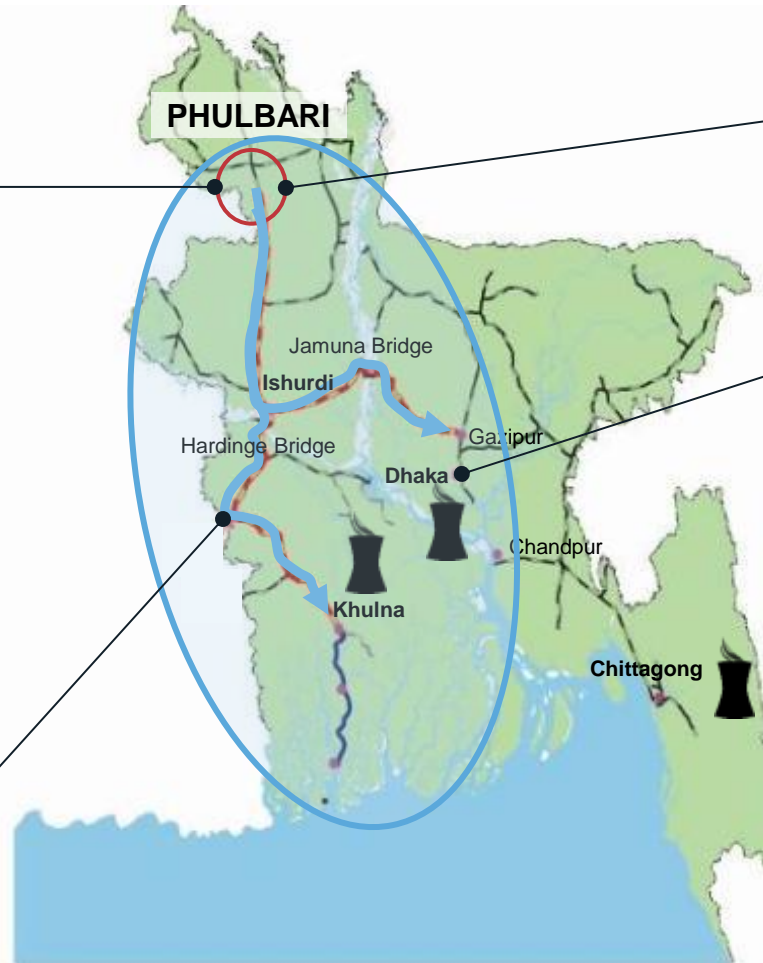
# Phulbari is a world class deposit



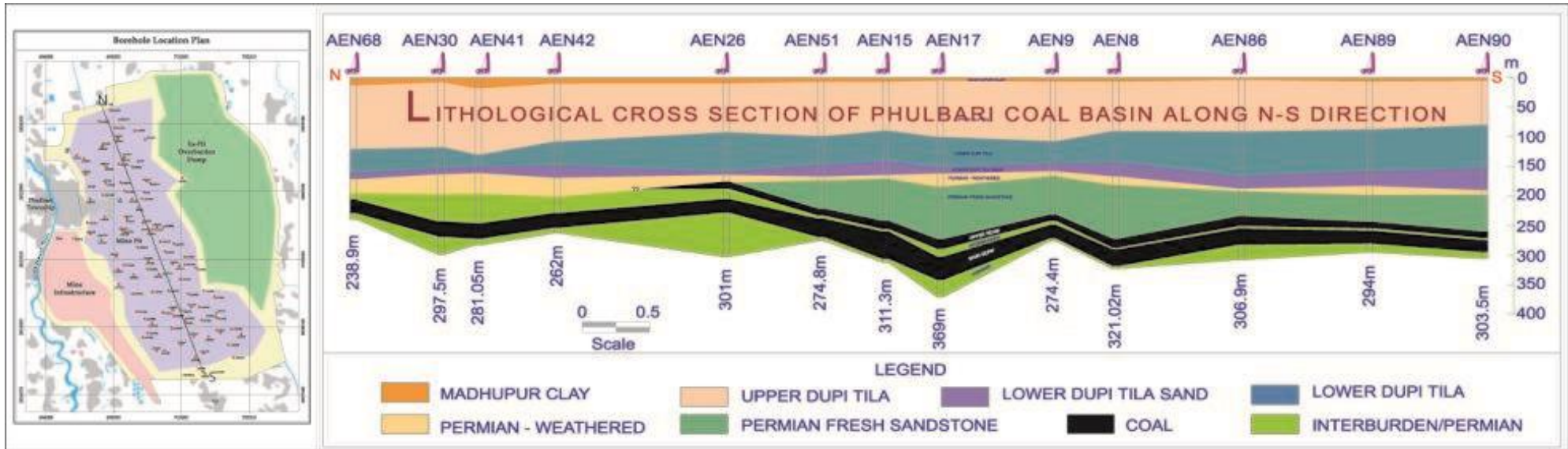
- ▶ **Large reserves of coal (thermal and semi-soft coking coal) and by-products**
  - 572 million tonnes JORC compliant resource
  - Resource open to the north and south
- ▶ **Open cast operations using well-tested techniques**
  - Coal measures at 165-270 metres below the surface
  - Total coal thickness in planned mining area 20-65 metres
  - Thick seams: 90% of coal in two close proximity seams 12-45 metres thick
- ▶ **15 million tonnes per year at full production**
- ▶ **Life 30+ years**

# Phulbari Coal Project

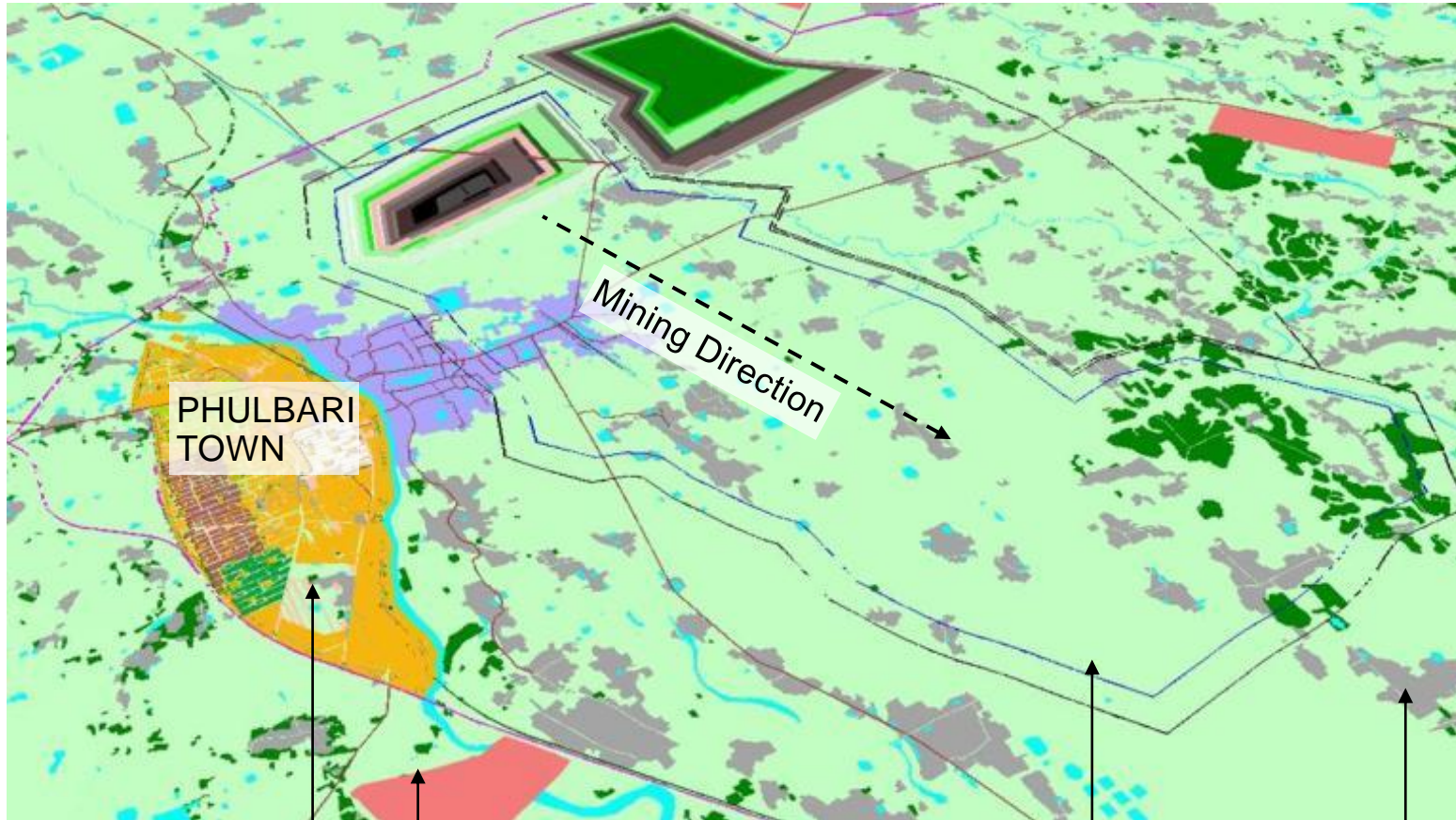
Coal transport via rail and barge to other Government/IPP power plants



# Cross-section



# Mine Plan – Year 1



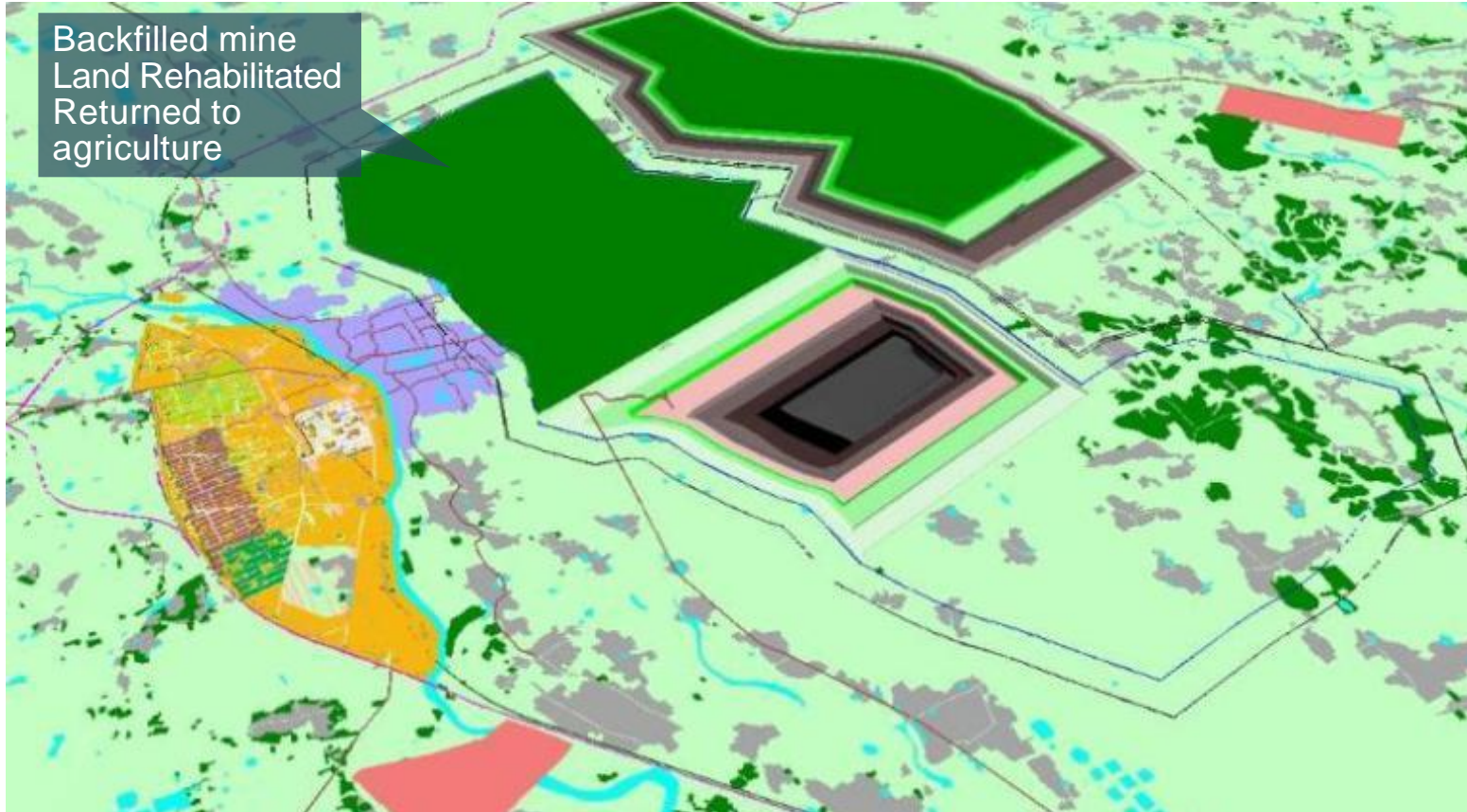
New Town Area  
for 20,000 people

New Village Sites

35-year Mine  
Footprint

Existing Villages

# Mine Plan – Year 20



## Year 1

### Preparation

- Approvals
- Land acquisition & site construction
- Equipment ordering
- First phase of village construction
- Road realignment
- “Creek” diversion
- Temporary rail realignment
- Dewatering commences

## Year 2/3

### Overburden removal

- Coal Handling Plant construction
- Continued Land Acquisition
- Equipment commissioning
- Continued village construction
- Road realignment continued
- “Creek” diversion continued
- Permanent rail diversion
- New town construction

## Year 4 to 35+

### Overburden removal

- Ramp-up to 15+ Mtpa Years 3-8
- 30+ years production

Electricity generating capacity developed in parallel - Phulbari Power Project

	Upper Seam Mt	Main Seam Mt	Lower Seam Mt	Base Seam Mt	Total Mt
Measured	51	237	-	-	288
Indicated	62	124	39	19	244
Inferred	12	28	-	-	40
<b>Total</b>	<b>125</b>	<b>389</b>	<b>39</b>	<b>19</b>	<b>572</b>

## Notes:

- Results based on Geological Model submitted in July 2005
- Table compiled from data contained in Phulbari Coal Project 'In Situ Resource Statement' issued by GHD to Asia Energy, August 2005

# Phulbari High Quality Thermal Coal



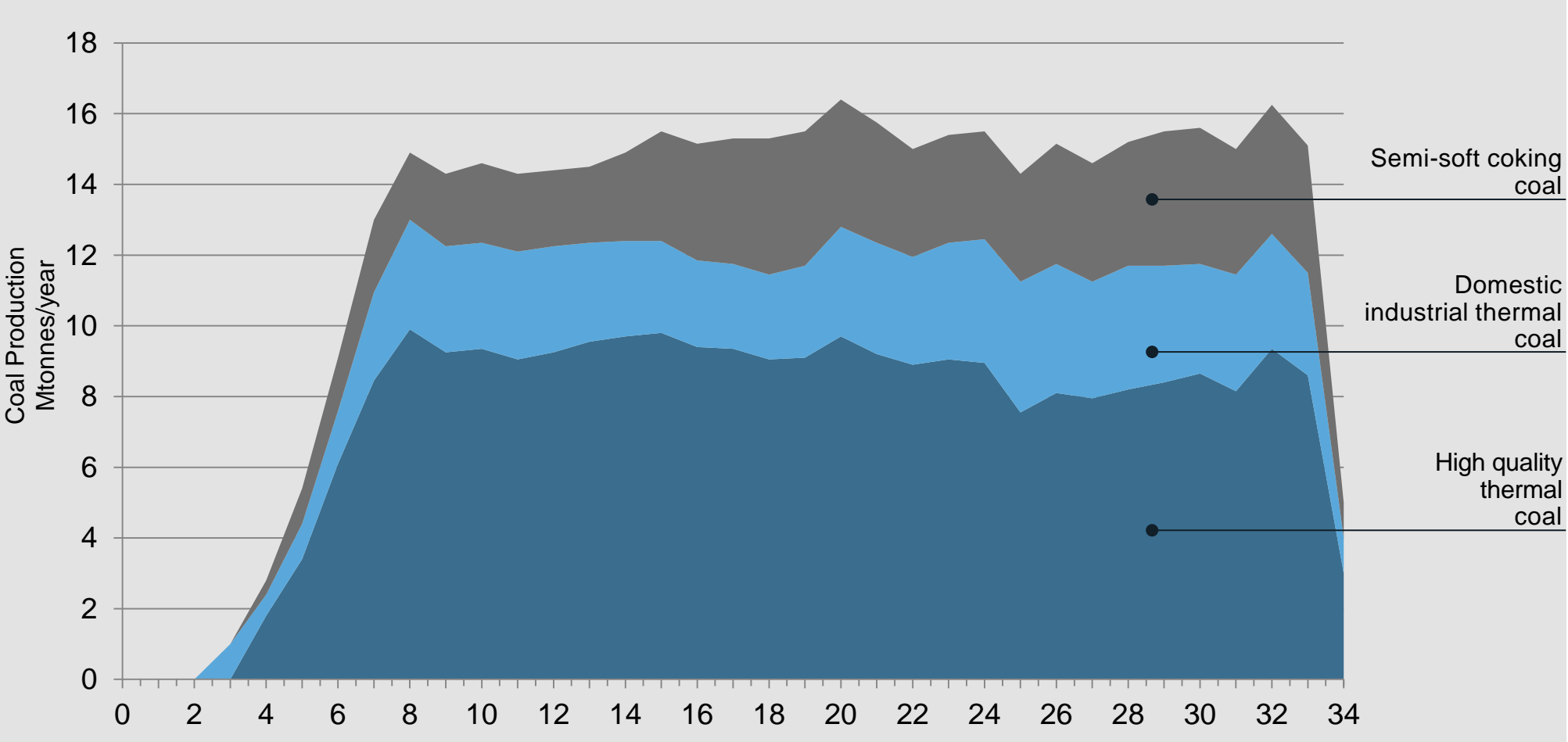
Typical Specification	Market Preference	Phulbari	Hunter Valley
Specific energy (gross Kcal/kg)	>6300	6930	6800
Total moisture (% as received)	<15.0	8.5	9.0
Ash (%)	<16.0	12.0	13.5
Fixed carbon (%)	>45.0	54.2	50.5
Sulphur (%)	<1.0	0.80	0.55

# Phulbari Low Ash Metallurgical Coal

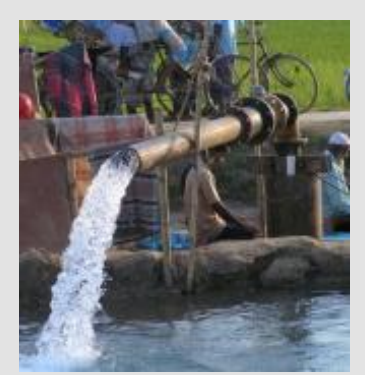


Typical Specification	Market Preference	Phulbari	Hunter Valley
Specific energy (gross Kcal/kg)	>6800	7420	7200
Total moisture (% as received)	<12.0	10.0	9.0
Ash (%)	<11.0	6.8	9.5
Fixed carbon (%)	>50.0	56.7	54.2
Sulphur (%)	<1.0	0.75	0.55

# Coal Sales by Type



# Valuable Co-products



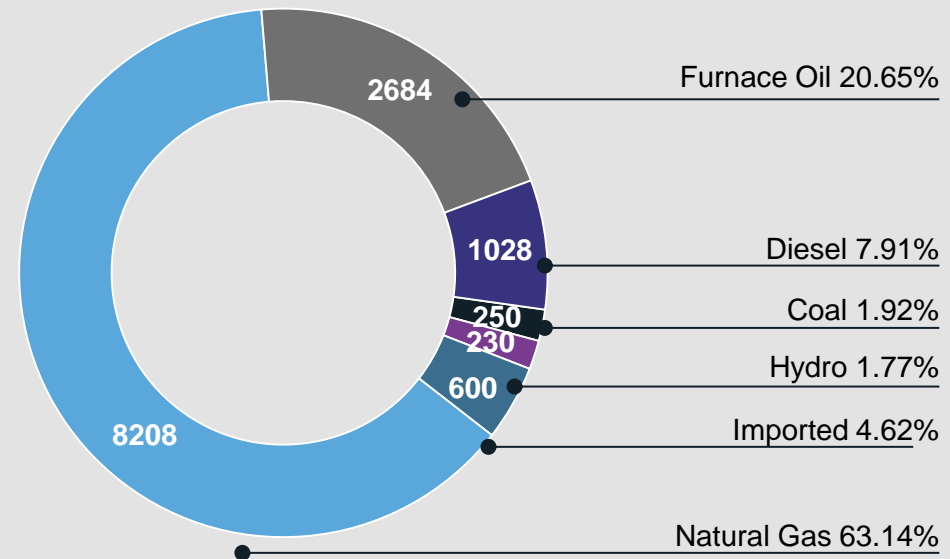
Water also a co-product

# Known Bangladesh Coal Areas

DEPOSIT	DRILLING (holes)	DEPTH (M)	RESOURCE (Mt)	DISCOVERY	STATUS
Barapukuria	33	120-510	<b>390</b> <ul style="list-style-type: none"> <li>• 6 seams</li> <li>• Main seam average thickness 36m</li> </ul>	<b>1985 - GSB</b> <ul style="list-style-type: none"> <li>• 1991: Feasibility study</li> <li>• 1994: BCMCL M/L</li> </ul>	<b>Mining</b> <ul style="list-style-type: none"> <li>• Underground mine production October 2005 (<b>1Mtpa</b>)</li> </ul>
Phulbari	124	150-270	<b>572 (JORC)</b> <ul style="list-style-type: none"> <li>• 6 seams</li> <li>• 90% coal in 2 close seams with average thickness 38m</li> </ul>	<b>1997 – BHP</b> <ul style="list-style-type: none"> <li>• BHP Contract assigned to Asia Energy 1998</li> <li>• Asia Energy intense exploration 2003-5</li> </ul>	<b>Ready to MINE (15Mtpa)</b> <ul style="list-style-type: none"> <li>• Feasibility Study/ Scheme of Development &amp; EIA to GoB 2005</li> </ul>
Dighipara	5	323-456	<b>150-500</b> <ul style="list-style-type: none"> <li>• 7 seams</li> <li>• Average composite thickness 60m</li> </ul>	<b>1995 - GSB</b>	Exploration
Khalashpir	18	239-485	<b>337</b> <ul style="list-style-type: none"> <li>• 8 seams</li> <li>• Average composite thickness 45m</li> </ul>	<b>1989 - GSB</b>	Exploration
Jamalganj	11	640-1158	<b>1053</b> <ul style="list-style-type: none"> <li>• 7 seams</li> <li>• Gas detected</li> </ul>	<b>1962</b> UN-Pakistan Mineral Survey Project	Exploration

- Currently highly dependent on gas & liquid fuels
- Proven recoverable reserves of gas:
  - Not sufficient to support required growth
  - Prospectivity high but development of new field typically takes 10+ years
- Coal is a critical new source of energy:
  - Large known resources – Phulbari resource (572Mt) equivalent to 15 TCF of gas
  - ‘Off the shelf’ mining approach
  - First coal within three years, power within four years
  - Manageable environmental and social issues
  - Major future energy supply
- Coal is a key future source for foreign exchange
- GoB Manifesto:
  - Diversification of energy → Coal must be extracted
  - Coal-fired power generation → gas for strategic industries

## Generation Capacity as at Oct 2016 (by fuel type)



**Total Generation Capacity: 13,000 MW**

Source: Bangladesh Power Development Board

- ▶ **ESIA to International Standards**
  - Project Environment Clearance granted
- ▶ **Environmental Studies:**
  - Air, noise and water quality
  - Biodiversity
- ▶ **Water Studies:**
  - Groundwater extraction & distribution
  - Flooding
- ▶ **Social Impact Assessment:**
  - Socio-Demographic surveys
  - Public Disclosure & Consultation
  - Resettlement Action Plan
  - Livelihood Restoration Plan
  - Entitlement Matrix
  - Indigenous People's Plan
  - Town and Village designs
  - Land Acquisition plan



## ► **Energy security:**

- Major step to solve energy and power crisis
- 3 years to first coal, 4 years to first power
- Reliable large scale energy supplier for over 35 years

## ► **Huge economic impact\*:**

- US\$21 billion contribution to GDP over project life
- Overall effect estimated at approx 1% of GDP every year

\* Independent Consultant Report - GHD "Economic Benefits", (April 2006)

- **Modern planned new town and villages**
  - Improved power, water supply and sanitation, education and medical facilities
- **Improved rail, roads, port and communications infrastructure**
- **Business development opportunities**



Schools



Mosques



Health centres



Bazaars

- **Estimated 17,000 new jobs (direct and indirect)**
- **Thousands more jobs created in industries enabled by:**
  - Power generation
  - Improved regional infrastructure and co-products
- **Preferential employment to maximise benefits for local community**
- **Workforce will be predominantly Bangladeshi**
- **Training to lift skills**
- **Support education facilities in Engineering / Science disciplines**

- ▶ **Enormous associated benefits:**
  - Improved regional infrastructure
  - Major business development and employment opportunities
  - Valuable mine co-products give industrial opportunities:
    - China clay for ceramics
    - Silica sand for glass
    - Bottled water
    - Aggregate materials for construction industry
    - Coal briquettes for domestic and light industrial fuel

**Landmark Foreign Investment for Bangladesh**

**Large low cost coal operation**

**Energy security for Bangladesh**

**Environment and Social Issues manageable**