

*The Development of a Gas
Fired Thermal Power Facility
at Sheberghan: Key
Stakeholder Workshop 07
July 2005*

Backup Technical Data

Gas Production Costs

□ World Bank minimum cost

- Exploration and development of undeveloped fields
- Rehabilitation of developed cretaceous reservoirs
- Depletion premium for Sour Gas (low value)
- Cost of production (minimal)
- Gas Treatment
- Transmission (minimal to station gate)
- Distribution (minimal to station gate)
- Taxes/ royalties?
- Future expansion?

Gas Processing Cost

- ❑ Power Facility 691,000 m³/day
 - ❑ Total US\$30,000,000
- ❑ 1,000,000 m³/day
 - ❑ Total US\$36,000,000
- ❑ 1,500,000 m³/day
 - ❑ Total US\$41MM

Gas Quality Required

	Raw Gas	Load 1 Power	Load 2 Domestic	Load 3 Fertiliser
H ₂ S	1800-7000 ppm	300ppm	4ppm	300ppm
CO ₂	8.8%	<10%	<4%	<10%
H ₂ O	3800 mg/m ³	100 mg/m ³	100 mg/m ³	100 mg/m ³

Technology Advantages

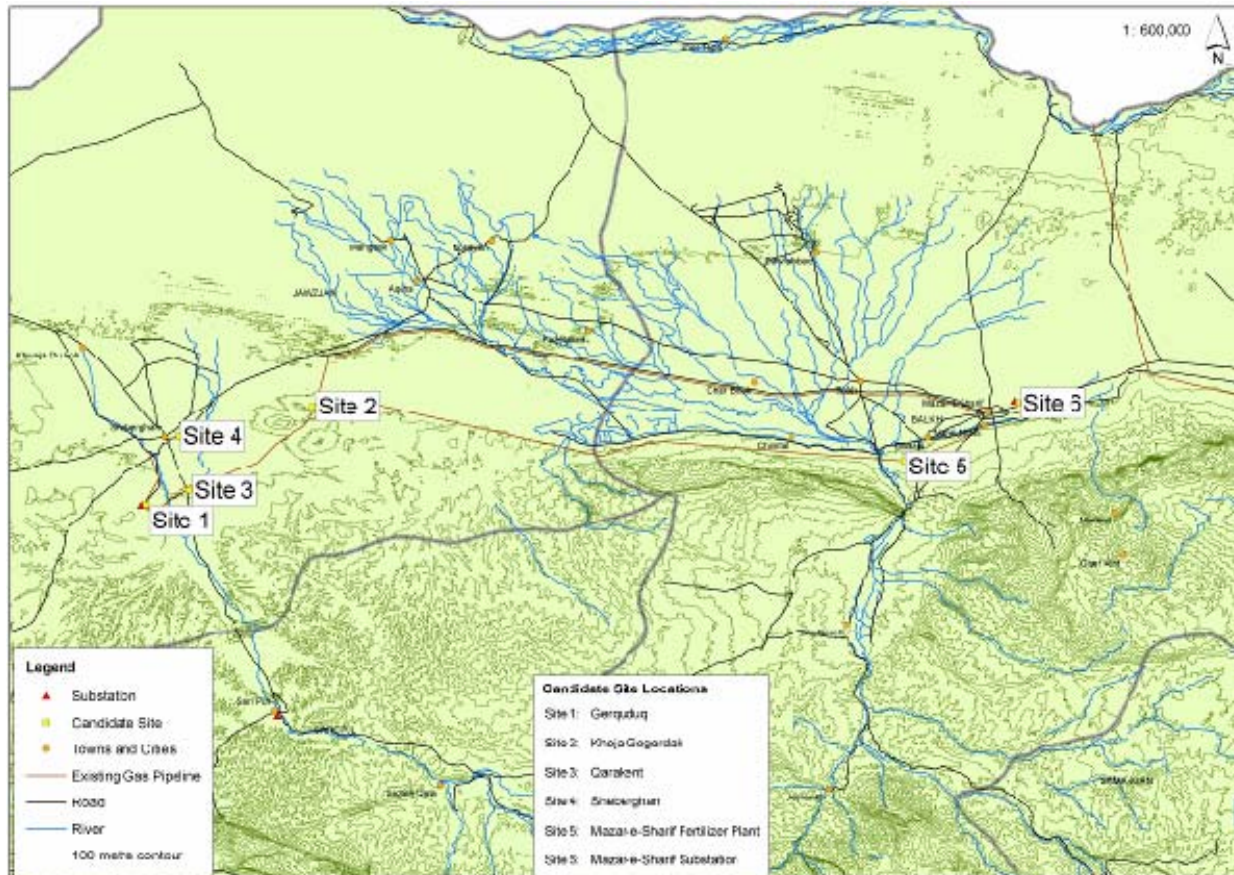
Gas Engines	CCGT
No Water use	Lower O&M costs
Shorter Delivery Schedule	Efficiency advantage for large unit size
Higher Availability	
Lower Capital Cost	
More Local Involvement	

Power Station Cost

excludes contingency, indirect costs and owners costs

No off	Size MWe	Technology	Equipment supply US\$ $\times 10^6$	Installation US\$ $\times 10^6$	Direct Costs US\$ $\times 10^6$
16	6.57	Engines	54	19	73
6	17	CCGT	77.4	23.6	111
1 (2+1)	130	CCGT S206B	73.3	30.7	104
1 (1+1)	106	CCGT S106FA	60.5	25	85.5

Sheberghan Power Project Site Selection Locality Plan



Sheberghan Power Project Site Selection

□ Six Sites Considered

- 1- Gerquduq Gas Field
- 2- Khoja Gogerdak Gas Field
- 3- Qarakent Pumping Station
- 4- Eastern Outskirts of Sheberghan
- 5- Adjacent to Fertilizer Plant at Mazar-e-Sharif
- 6- Adjacent to DABM Substation at Mazar-e-Sharif

Feasibility Study Recommendation: Site 1, Gerquduq

- ❑ Close to existing gas transmission and collection infrastructure, conveniently located with respect to undeveloped fields
- ❑ Close to existing transmission grid infrastructure
- ❑ Highly secure water supply from Qarakent
- ❑ Government owned land
- ❑ Preferred choice of MMI and MEW
- ❑ No new easement requirements for gas or water supplies
- ❑ No land use conflict
- ❑ Land has little economic or environmental opportunity cost
- ❑ Impact of emissions on community and ecology expected to be minimal

Major Differentiating Characteristics of Gerquduq Site

- ❑ Proximity to suitable fuel source
- ❑ Proximity to existing power transmission assets
- ❑ No conflicting land utilisation
- ❑ Simplistic land ownership/easement issues