

# Project Cost Summary

Sheet 1

DESCRIPTION	Currency	Reference Exchange Rate	Amount in Million Rs.
<b>EPC Contract</b>			
Off-Shore			
On-Shore			
Duties Taxes			
Clearing & Forwarding			
<b>Total EPC Cost</b>			
<b>Non-EPC Cost</b>			
<b>A. Project Development</b>			
Company Formation Expenses			
Feasibility Study			
Technical Consultants			
Legal Documentation (International and Local)			
Travelling			
Land & Land Development			
Soil Investigation			
<b>Sub-Total A</b>			
<b>B. Project Implementation</b>			
O&M			
Start-up & Production			
Mobile Equipment Purchase			
Insurance during Construction			
Land lease and office rents			
Owner's Engineer			
General and Administration			
IT and special Equipment			
LTSA Spares			
Non-LTSA Spares			
Standby L/C			
<b>Sub-Total B</b>			
<b>C. Residential Colony</b>			
<b>D. Financing Fees &amp; Charges</b>			
Stamp Duty			
Upfront/commitment fee			
Arrangement Fee			
Legal Fee			
Financial Advisory			
<b>Total Financing Fees &amp; Charges</b>			
<b>E. Interest during construction</b>			
<b>Total Project Cost</b>			

## EPC Price Break Down

NO	ITEM	AMOUNT		
		(EUR Million)	(US\$ Million)	(Rs. Million)
1	GTG			
2	STG			
3	HRSG/BYPASS STACK			
4	MECH BOP			
	Steam Bypass System			
	Surface Condenser & SJAE			
	Boiler Feedwater Pumps			
	Condensate Extraction Pumps			
	#1 & #2 External Condensate Preheater			
5	INSTALLATION-MECHANICAL			
	Gas Turbine Generators			
	Heat Recovery Steam Generators			
	Steam Turbine			
	Generator Transformers			
	Piping works			
	Fuel Systems			
	Water Systems (Service Cooling & Potable water)			
	Air System			
	Fire Fighting System			
6	SWYD/ELEC&I			
	POWER TRANSFORMER for GTG AND STG			
	132/220kV SWYD			
	GCB AND IPB FOR GTG STG			
	CONTROL AND INSTRUMENTATION			
7	INSTALLATION-ELECTRICAL			
	Transformers			
	Generators			
	Switch Gear			
	Cables and wiring			
	UPS & DC system			
	Lighting			
	Misc System (Earthing System, Cathodic Protection, phone system, CCTV, F&G system, PA system, weather system and emission monitoring system)			
	Instrumentation			
	Switch Yard Equipment			
7	FUEL GAS SYSTEM			
8	COMPRESSED AIR SYSTEM			
9	FIRE FIGHTING SYSTEM			
10	MAIN/AUX COOLING WATER SYSTEM			
11	COOLING TOWER			
12	WATER SUPPLY/TREATMENT SYSTEM			
13	WASTEWATER TREATMENT SYSTEM			
14	TELEPHONE/PAN/CLOCK			
15	OTHERS(WORKSHOP EQUIP/SPARE/ETC)			
16	UNIT/AUX TRANSFORMER			
17	BLACK START/EMERGENCY D/G			
18	MV/LV SWGR			
19	CABLING/WIRING/PANEL			
20	OTHERS(CCTV/LCD/FIRE ALARM/ETC)			
21	DUTIES & TAXES			
21-1	Import Licence Fee			
21-2	L/C Opening Charges			
21-3	Import Duty			
21-4	Sales Tax			
21-5	Marine Insurance			
22	CLEARING & FORWARDING EXPENSES			
22-1	Wharfage			
22-2	Agency Commission			
22-3	Inland Freight			
22-4	Unloading & Miscellaneous			
23	TRAINING & COMMISSIONING FOR OFFSHORE-1 PORTION			
23-1	Training			
23-2	Commissioning			
24	MANAGEMENT/ENGINEERING			
24-1	Engineering			
24-2	Project Management (Head Office)			
24-3	Project Management & Coordination (Site Office)			
24-4	Lodging/Accommodation etc			
22	BUILDING & CIVIL WORKS			
22-1	Main Plant Building			
22-2	Engine Foundation/Piles			
22-3	F-eds & Pads			
22-4	Gate Office			
22-5	Admin /Office Block			
22-6	Staff Residences			
22-7	Boundary Wall			
22-8	Structure			
	Sub-Total Off-Shore			
	Sub-Total On-Shore			
	Total EPC			

### AUXILLARY POWER CONSUMPTION

	Description	Operating Load [kW]
1	Gas Turbine Generator and Auxiliaries	
2	Heat Recovery Steam Generator(HRSG) and Auxiliaries	
3	Steam Turbine Generator and Auxiliaries	
4	Condensate System	
5	Feed Water System	
6	Make-up Water System	
7	Raw Water Pre-Treatment & Filtration System	
8	Make-up Water and Demineralization System	
9	Reverse Osmosis System (Waste Water Treatment)	
10	Oily Water Treatment System	
11	Sanitary Wastewater Treatment System	
12	Potable Water System	
13	Service Water System	
14	Cooling Tower	
15	Main Cooling Water Pumps	
16	Circulating Water Chemical Dosing System	
17	Aux Closed Cooling Water System	
18	Compressed Air System	
19	HSD Supply System	
20	Fire Fighting System	
21	HVAC / Lighting	
22	Transformer Loss	
23	Mech. Miscellaneous	
	<b>TOTAL</b>	

## IDC Calculation Local/Foreign

Debt Amount -  
 KIBOR/LIBOR 0.00%  
 Premium 0.00%  
 Total Interest Rate 0.00%

		Construction			Debt		
		Period			Principal	IDC	Fin. Fees
Year		1st Year	2nd Year	3rd Year			
Opening Balance		-	-	-			
1st Quarter		%	%	%			
Principal Amount		-	-	-	-		
Financing Fee 0.5%		-	-	-			-
Interest		-	-	-		-	
Closing Balance		-	-	-			
Opening Balance		-	-	-			
2nd Quarter		%	%	%			
Principal Amount		-	-	-	-		
Interest		-	-	-		-	
Closing Balance		-	-	-			
Opening Balance		-	-	-			
3rd Quarter		%	%	%			
Principal Amount		-	-	-	-		
Interest		-	-	-		-	
Closing Balance		-	-	-			
Opening Balance		-	-	-			
4th Quarter		%	%	%			
Principal Amount		-	-	-	-		
Interest		-	-	-		-	
Closing Balance		-	-	-			
Total Debt Incl. IDC					0.00	0.00	0.00

Sheet 5

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SUMMARY OF PRICE (EXTERNAL DEVELOPMENT WORKS)  
(Based on current Lowest Market Prices)

Sr. No.	Description	Estimated Quantity	Unit of Rate	Unit Rate (Rs)	Amount (Rs)
1	Roads		Square Meters		
2	Sewerage		Running Meters		
3	Water Supply		Running Meters		
4	Foot Paths		Square Meters		
5	Car Parking Lots		Square Meters		
6	Landscaping		Square Meters		
TOTAL TENDER PRICE OF PROJECT (EXTERNAL DEVELOPMENT WORKS)					

**SUMMARY OF PRICE (BUILDING FACILITIES)**  
(Based on current Lowest Market Prices)

Sr. No	Facility	Type of Construction	Gov. Area (S.Ft.) Each Unit	No. of Units	Total covered Area (S. Ft.)	Rate (Rs.) per S.Ft.	Amount (Rs)
1	Plant Manager's Residence	A-Type					
2	Sr. Officers' Residences	A-Type					
3	Officer's Residences	A-Type					
4	Officer's Hostel	A-Type					
5	Staff Hostel & Community Hall/Centre	B-Type					
6	Staff Quarters	B-Type					
7	Shops / Market Post Office. Tele. Exchange & Dispensary .	B-Type					
8	Mosque	A-Type					
9	Rest House, & Club	A-Type					
			Total Coverd Area				
					Grand Total		

**Bill of Quantities**  
**Boundry Wall and Fencing**  
**(Based on current Lowest Market Prices)**

Sr. No.	Description of Items	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
<b>A. CLEARING, GRUBBING, STRIPPING AND GRADING</b>					
1	Clearing grubbing, stripping and grading of project area	Sq m			
<b>B. BOUNDARY WALL</b>					
1	Pacca brickwork for boundary wall including striking of joints upto 3.00 meters height in cement sand mortar 1:4 all as per drawing and specification	Cu.m			
2	providing and laying brick wall coping 115x38 mm in 1:3 cement sand mortar including 13mm thick plaster in 1:4 complete in all respect	Meter			
3	Provide and erect precast columns and grade beams of specified size in PCC 1:2.4 foundation including boundary wall main gate pillars and foundation complete as per drawing and specification	Cu m			
4	Providing and fixing 3 strand barbed wire fencing over brick masonry wall fixed on galvanized angle iron 37x37x3mm supporting arms complete as per drawing and specification	Sq m			
<b>C. CHAIN LINK FENCING</b>					
1	Furnish and install line intermediate and end post of 65mm O.D. GI pipe in PCC 1:2.4 foundation centre to centre all along the fencing alignment at 3M excluding gate posts complete as per drawing and specification	Each			
2	Providing and fixing of chain link fabric No 9 gauge wire mesh 50x50 mm with line posts using clamps, tension wires, stretcher bars, wire ties including fences grounding material all as per drawing and specification	Sq m			
3	Providing and fixing 3 strand barbed wire fencing over brick masonry wall fixed on galvanized angle iron 37x37x3mm supporting arms complete as per drawing and specification	Sq.m			
4	Provide and erect fence gate posts of 165mm outer dia GI pipe in 1:2.4 PCC foundations (600x600x750) at location as shown on the drawing including fixing of hinges etc	Each			
5	Providing and fixing fence gate panels comprising of GI pipe tubular frame 50mm dia pipe and strengthening with bracing pipe truss rods, chain link fabric and all bracing assembly including gate pad lock and gate opening accessories all as per drawing and specification	Sq.m			
<b>D. SECURITY TOWERS</b>					
1	Construction of security towers at locations as shown on the drawing	Each			
2	Construction of guard rooms 4.00x4.5x2 m at main gate with all accessories and facilities as shown on the drawing	Sq.m			
<b>E. MAIN GATES</b>					
1	Provide and Install 2 panel swing type steel main gate comprising of MS box pipe frame 50x50 mm with 18 SWG steel sheet on both faces and angle iron cross bar strengthening including locking arrangements hold fasts, logo and other accessories all as per design / drawing and specification	Sq m			
				<b>Total</b>	



**Bill of Quantities**  
(Based on current Lowest Market Prices)

Sub Station

Item No.	Description of Items	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
<b>1. SUBSTATION BUILDING</b>					
1.1	Trench excavation in overburden including disposal of excavated material to areas designated by the Engineer	M <sup>2</sup>			
1.2	Pacca brick work in foundation with cement sand mortar 1:5 all as per drawing and specification	M <sup>2</sup>			
1.3	Pacca brick work in ground floor and super structure with 1:4 cement sand mortar.	M <sup>2</sup>			
1.4	Providing and laying 37 mm thick damp proof course in cement concrete 1:2:4 and applying two coats of horizontal bitumen at 0.8 Kg/ M <sup>2</sup>	M <sup>2</sup>			
1.5	Supplying, placing and compacting structural concrete 3000 Psi in roof slab including formwork all as per drawing.	M <sup>2</sup>			
1.6	Supply and fabricate M.S. reinforcement for reinforced concrete (Deformed bars)	Tonne			
1.7	Providing and laying cement sand plaster (1:4) on				
1.7.1	Internal surfaces (1:4)	M <sup>2</sup>			
1.7.2	External surfaces (1:3)	M <sup>2</sup>			
1.8	Providing and fixing in position 1 No. steel flush door with 16 SWC MS Sheet frame and door leaf till as per drawing and specification.	M <sup>2</sup>			
1.9	Providing and fixing in position 1 No. anodized aluminum door with glazing as per drawing and specification window 6' x 4'.	M <sup>2</sup>			
1.1	Laying and compacting approved till material, 100 mm glass thick brick ballast and 50 mm thick plain concrete 2000 Psi under floor including fixing of 37' x3'mm glass dividers all as per drawing.	M <sup>2</sup>			
1.11	Provide and lay terraze tiles 300x300x25mm in gray/white cement including 125 mm wide marble strips.	M <sup>2</sup>			
1.12	Providing and applying 3 coats of approved weather shield paint to exterior plastered surfaces including surface preparation etc complete in all respect.	M <sup>2</sup>			
1.13	First class tile roofing consisting of 100 mm thick earth and 25 mm thick mud plaster, 1 layers of polythene sheet over 2 coats of hot bitumen (0.9 Kg/M <sup>2</sup> ) on RCC slab all as per drawing and specification.	M <sup>2</sup>			
1.14	Compacted back fill behind and round structures with material obtained from approved source	M <sup>3</sup>			
1.15	Providing and applying 3 coats of plastic emulsion of approved quality to interior plastered surfaces i/c surface preparation complete in all respect.	M <sup>2</sup>			
1.16	Providing and applying 3 coats of approved weather shield paint to exterior plastered surfaces i/c surface preparation etc complete in all respect.	M <sup>2</sup>			
1.17	Providing and fixing rain water down CI pipes 4 inches internal dia.	M <sup>2</sup>			
				<b>SubTotal</b>	

Bill of Quantities  
(Based on current Lowest Market Prices)

Item No.	Description of Items	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Supply and installation and testing of Over Head HT line complete in all respect including nuts, bolts and hardware, danger plates, foundations and excavation including earthing system and pc poles with following details (Drawing # PES-NMD-EE-01)				
	(1) DOG 163 sq INCH (4 1402 sq mm) conductor for HT line (Drawing # PES-NMD-EE-01)	Meter			
	(2) Wasp conductor for LT line (Drawing # PES-NMD-EE-02)	Meter			
2	Supply, Installation and commissioning of following pad mounting transformer on RCC foundation with Glands and other hardware included relevant circuit breakers as per drawing all complete				
	200 KVA	Nos			
	100 KVA	Nos			
3	Supply, Installation and commissioning of following pole mounted transformer substation as per drawing all complete (WAPDA reference drawing)				
	25 KVA	Nos			
4	11 Kv change over panel with vacuum circuit breaker	Nos			
5	Supply and installation of XLPE/SWA 11 Kv HT copper cable from D-fitting set to transformer, including heat shrink termination kit, cable glands all complete 75mm	Meter			
6	Supply, installation and commissioning of diesel generator 100 kVA capacity including AMF Panel, control board and LT Panel, cooling system, service tank, semi rotatory pump, silencer, hood for hot air, auto change over etc all complete	Nos			
7	Supply and installation, connecting and commissioning of PVC insulating PVC sheathed non armoured copper cable 600/1000 V grade 4 core cables as per Site conditions complete in all respect and at both ends with necessary lugs, terminals, brass, n				
	i) 185 mm <sup>2</sup>	Meter			
	ii) 95 mm <sup>2</sup>	Meter			
	iii) 70 mm <sup>2</sup>	Meter			
	iv) 35 mm <sup>2</sup>	Meter			
	v) 25 mm <sup>2</sup>	Meter			
8	Supply and installation of tubular street light poles for 6.0m mounting height, including base plate and single mast arm, terminal box PCC 1.2.4 foundation in excavated holes, all complete including light fittings as per drawing (Drawing # PES-NMD-EE-06)				
	i) Single Arm	Nos			
	ii) Double Arm	Nos			
	iii) Pole for 250W Son-E Lantern housing Lamp	Nos			
9	Supply & Erection of bracket for PC pole light with related accessories as per drawings (Drawing # PES-NMD-EE-05)	Meter			
10	Supply & Erection of 4 mm <sup>2</sup> single core PVC insulated copper conductor required as per site condition complete with all PVC conduit accessories, steel pull wire, junction boxes, bends, cuttings and repairing surfaces for security lights complete in all respect	Meter			
11	Supply and installation of street light fittings for above poles with lamps, holder, control gear etc wired with circuit breaker, twin twisted flexible 4 mm <sup>2</sup> cable from terminal box to light all complete as per drawings (Drawing # PES-NMD-EE-06)				
	i) 250 W Son				
	ii) 250W Son-E-Lantern housing Lamp				
12	Supply, installation and commissioning of flood light on security towers with pre-wired gear tray 3600 (adjustment with tripple aiming facilities, 99.8% pure aluminium reflector, anodized and brightened with 1.6 mm front glass cover for down lighting and 4	Nos			
13	Supply and Installation of copper weld Earth Electrodes 3m long and 15mm dia driven vertically in ground, with thermo weld jointing of ECC with related PVC pipes as per drawings Drawing 3 PES-NMD-EE-05)	Nos			
14	Supply and installation of 6mm <sup>2</sup> standard copper conductor for earth lighting system as per drawings (Drawing # PES-NMD-EE-03)	Meter			
15	Supply, installation and commissioning of 3 TP MCCB feeder pillar with thermal protection and magnetic adjustable	Nos			
				Total	
				Grand Total	

## Heat Rate Calculation

Sr. No	Item	Unit	
1	Ambient Temp	°C	
2	Altitude	m	
3	Barometric	bar	
4	RH	%	
5	Inlet pressure loss	mmH <sub>2</sub> O	
6	Exhaust pressure loss	mmH <sub>2</sub> O	
7	GT		
8	Gross output of GT	kW	
9	Heat rate	kJ/kWh	
10	Heat Cons.(LHV)	GJ/hr	
11	Gross Efficiency of GT	%	
12	Exhaust Temp.	°C	
13	Exhaust mass flow	t/h	
14	Fuel consumption	NM <sup>3</sup> /h	
15	Fuel consumption	kg/h	
16	Exhaust compisition		
17	Ar		
18	N <sub>2</sub>		
19	O <sub>2</sub>		
20	CO <sub>2</sub>		
21	H <sub>2</sub> O		
22	HRSG		
23	HP steam pressure	MPa	
24	HP steam Temp.	°C	
25	HP steam mass flow	t/h	
26	LP steam pressure	MPa	
27	LP steam Temp.	°C	
28	LP steam mass flow	t/h	
29		%	
30	Temp. of feeding water	°C	
31	Temp. of condensating water	°C	
32	Exhaust temp.	°C	
33	make-up water	t/h	
34	Steam Turbine		
35	HP steam pressure	MPa	
36	HP steam Temp.	°C	
37	HP steam mass flow	t/h	
38	LP steam pressure	MPa	
39	LP steam Temp.	°C	
40	LP steam mass flow	t/h	
41	Output	kW	
42	Complex parameters		
43	Output of one set of S206B	kW	
44	Gross efficiency of Complex	%	
45	Gross Heat Rate(LHV)	kJ/kWh	
46	Aux. power consumption	kW	
47	Net output	kW	
48	Net efficiency	%	
49	Net heat rate	kJ/kWh	
50	Net heat rate	Btu/kWh	

ESTIMATED VARIABLE O&M COSTS		
HEADS	Unit	REMARKS
O&M Contract		
Routine Spares		These are routine spares that would be replaced on account of routine inspections, faults and breakdowns for the equipment and services in the scope of the O&M contractor.
GT + Filters		
HRSG		
BOP		
ST		
DCS		
I&C		
Services and Outage Cost		Relates to the testing and inspection of equipment other than GTs and ST. Includes HRSG inspections, testing and inspections for piping integrity, safety valve testing, online leak sealing, vibration analysis, filling of fire extinguishers, oil testing, ferrography, DGA analysis, thermography, earthing tests, testing and inspections for ground and foundation settlements.
Chemicals and Consumables		Includes chemicals, lubricants and other plant related consumables including those required for compressor washing and also including refilling required over the period of the contract
Tube Wells and Water Pipelines		
Sealing Material + Solvents + NDT		
LTSA		
LTSA Variable Cost		Relates to the variable costs of LTSA including replacement/refurbishment of major spares of GTs (combustion system parts, turbine stage 1-3 nozzles, buckets, shrouds etc.) and ST
Variable Cost (RslkWh)		



ESTIMATED FIXED COSTS		
HEADS	Unit	REMARKS
<b>Company Expenses</b>		
Corporate Office		Relates to the administrative costs of the Company, including payroll, benefits, general administrative expenses, personnel insurance, office lease/rent/maintenance, regulatory fees (NEPRA/SECPIOGRA), audit fees, provincial taxes
<b>O&amp;M Contract</b>		
Manpower		Relates to payroll and benefits of the O&M Contractor's personnel working on the Complex
Contract Services		Includes the cost of additional services, other than LTSA, required for annual maintenance, combustion inspection, hot gas path inspection and major overhauls. Please note that these costs have been averaged out over the period up to the major overhaul.
Training		Relates to additional training, from time to time, of the existing O&M personnel and also for the training of new employees (turnover in O&M is relatively high)
Operator's Fees		This is O&M contractor's fixed fee for the services, which is also its profit margin.
Insurance		Includes insurance of the O&M personnel and third party insurance.
G&A		Relates to the general administrative expenses of the O&M contractor including security, office consumables, IT expenses, communication expenses, travel, housekeeping, landscaping, vehicle lease and O&M, office building and plant building maintenance, permits/licenses etc.
Colony Maintenance		O&M contractor is also responsible for the maintenance of the residential colony.
<b>LTSA</b>		
LTSA Fixed cost		Relates to the fixed cost of the LTSA.
<b>TOTAL FIXED COSTS</b>		
Fixed Cost (Rs//Hour)		



## Capital Expenditure:

Project development	Engineering Construction & Procurement (EPC)	Total EPC	Total Project Development	Total
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
Total				