ES 25-04-2016

*** 1500 MVA WITH 2 CIRCUITS, 2 COND/PHASE ***

HDD & TRENCH OPTION (Rev 3)

Note; NG have not presented any cost build up for the HDD option for Jacobs to compare against. Jacobs estimate has been updated to align with revised Compund and cable selections in line with the estimates for the Trench option.

Solution Over OHL with NG Identified Efficiency Applied	**£**	**18,444,427.34**	
Potential Efficiencies	**-£**	**1,000,000**	This includes the £1m NG identified could be saved by amendeding compounds and tower spans at meeting 25th May 16
Total Estimated Net Additional Costs for Trench Solution Over OHL	**£**	**19,444,427.34**	
NG Identified Savings from RCP OHL Elements			
Savings from OHL Conductors	-£	980,000	As per Opportunities in Trench Option
Nett Tower Reduction (-1) (PC9)	-£	405,000	As per Opportunities in Trench Option
total ESTIMATED	**£**	**20,829,427.34**	*Includes Variable Operating Costs*

Notes on Amendments Made to Jacobs Estimates following review with NG against NG Cost Estimate

Removed percentages basis of estimate which were for WRMP14 estimating, and for stand-alone schemes. categories remain as WRMP14. Jacobs have now revised to include realistic estimates if alternative incorporated with RCP scheme.

Updated in line with Trench estimate

Client and project management	£	236,250		RCP Project Office can support plus additional QS, 50% of scheduler, cost controller and project engineer max.
Feasibility and outline design (3%)	£	478,036	% of (G+H)	Jacobs experience of Detailed design for NG is that 2.5% is sufficient allowance for this.
Planning approvals and PR				Included in DCO Hearing category below.
IET Document allows 20% for these; Jacobs now used overall 20% — Site investigation / topo survey (2%)	£	318,691	% of (G+H)	Geotech investigation and Topgraphic work on underground route. 2% gives generous allowance.
Detailed design and contract documents (5%)	£	796,727	% of (G+H)	Jacobs experience of Detailed design for NG is that 5% is sufficient allowance for this.
Supplementary Note to EIA (1.5%)	£	239,018	% of (G+H)	Small amount of additional survey & amendedments to chapters in ES
Land & legal	£	-		Incl. in below
Land purchase	£	325,000		NG estimated £325 for land. Some reductions are likely to be possible
Land agent and legal	£	-		Incl. in above item
Client commissioning (1%)	£	159,345	% of (G+H)	Reasonable at 1%
DCO Hearing	£	350,000	% of (G+H)	Additional costs only. Reasonable to say generous allowance of £350k.
Same %age as IET report — BUILD CONTINGENCY (15%)	£	1,991,818	J = % of G	IET Document states 15%
Contractors Profit/Overhead (20%)	£	2,655,757	H = % of G	Only 2% here as included contingency in drill costs estimated rate
Build Cost Built Up Below — ESTIMATED BUIL D ONLY	£	13,278,785	G = (A+B+C+D)	

No	ITEM	UNIT	QTY	UNIT £	TOTAL £	NOTES	
	CableSealingEndCompound (CSEC)						
	OUTDOOR SEALING ENDS		24	40000	£ 960,000.00		
	SUPPORT STRUCTURES		24	20000	£ 480,000.00		
	CLAMPS		72	150	£ 10,800.00		
	EARTH SWITCHES		24	20000	£ 480,000.00		
	GANTRIES		4	30000	£ 120,000.00		
	SURGE ARRESTORS		24	15000	£ 360,000.00		
	TERMINATION INSTALLATION	NR	24	40000	£ 960,000.00		
	EHV AFTER LAY TEST	NR	1	150000	£ 150,000.00		
	SHEATH TESTING	NR	8	5000	£ 40,000.00		
	ISS		1	50000	£ 50,000.00		
					£ 3,610,800.00	(A)	
	Route components						
	1X1200 Cu, 400KV	m	12000	195	£ 2,340,000.00	metal prices as per IET Doc ***1**, Al 1484£/T Cu 5742£/T	Jacobs originally priced for technically feasible 1600mm2 Alu cable; NG have preference for copper so re-priced for 1200mm2 Cu
	BONDING CABLE	m	4300	30	£ 129,000.00		Jacobs included here for Earth Bonding cable and Earth Continuity Conductor
	SHUNT REACTOR				£ -	not priced at this stage, too few parameters available	Agreed with NG item not required
					£ 2,469,000.00	(B)	
	Variable installation activities				£ -		
	CABLE SUPERVISION	NR	2	60000	£ 120,000.00		Similar to NG ok
	CABLE INSTALLATION	m	4000	25	£ 100,000.00		Jacobs view rate used as industry typical
	CABLE CONTRACT MANAGER	NR	1	60000	£ 60,000.00		Jacobs priced for 1 No PM for max 26 weeks as reasonable
					£ 280,000.00	(C)	
	Civil works						
	TRENCH EXCAVATION AND BACKFILLING	m	800	75	£ 60,000.00		Similar to NG ok
	HDD drill (assumes 12 separate drills)	m	9000	285	£ 2,565,000.00	Extrapolated value plus 5% efficiency due to scale	
	MATERIALS FOR TRENCH AND HDD	m	4000	30	£ 120,000.00		
	SITE SETUP	NR	1	120000	805,754.01		Amended as per Trench Option
	OTHER METAL WORK	NR	12	5000	£ 60,000.00		Similar to NG ok
	SITE SETUP HDD	NR	1	30000	£ 30,000.00		Specific to HDD Contractor into compound and set up provided only
	SITE SECURITY	NR	1	60000	156,670.89		Amended as per Trench Option
	OTHER MATERIALS (TILES ETC)	M	4000	15	641,560.00		Amended as per Trench Option
	CONTRACT AND PM	NR	1	50000	140,000.00		Amended as per Trench Option
	AIS COMPOUND	NR	2	20000	2,340,000.00		Amended as per Trench Option
					£ 6,918,984.90	(D)	
	Variable Operating Costs					Not including Variable operating costs in estimate	
	POWER LOSSES				£ 300,000	to IET report values ***1**	
	ENERGY LOSSES				£ 533,333	to IET report values ***1**	
	OPERATION AND MAINTENANCE COSTS				£ 100,000	to IET report values ***1**	
					£ 933,333.33	(E)	

Previous revision had not multiplied up for 2 ends. Now revised

Notes:

1. IET Report does not include for HDD technique
2. The Variable Operating Costs are included in this build-up but for comparison to additional costs the OHL capital and Variable Operating costs components should be deducted
3. Build Costs derived using data of recently installed 400kV buried cables, Jacobs data and revised following discussion with NG as per Trench option.