Estimate summary

Sequence of remedial works:		Totals
Step 1	Installation of water management works to reduce ground water levels and allow existing ground to dry out	377,000
Step 2	Ground investigation	254,000
Step 3	Embankment construction to aid piling operations	1,536,000
Step 4	Installation of bored piles	3,523,930
Step 5	Capping beam construction	285,400
Step 6	Tie bar installation	350,000
Step 7	Facing construction to front of wall	132,000
Step 8	Permanent water management	520,000
Step 9	Road reinstatement	150,000
Step 10	Professional fees and other costs	429,617
	Grand total	7,557,947

	Item	Quantity	Rate	Total
Step 1	**Installation of water management works to reduce ground water levels and allow existing ground to dry out**			
	Assume a line of wells sunk to rock level with water is removed for 18 months			
	Say 20 well points at 15 metre centres, 8 to 10 metres deep	20	7,500	150,000
	Provision of Pump system maintained for 18 months	18	5,000	90,000
	Outfall facility to river including settling pond	1	20,000	20,000
	Maintenance of the above for 78 weeks	78	1,500	117,000
				377,000
Step 2	**Ground investigation**			
	Access off road at east end	1	10,000	10,000
	Access trackway - two routes in - access track sconsisting of geotextile matting 2.4 m wide and 600m long - hire for two months	2	20,000	40,000
	Labour and plant to lay tracking and in attendance of GI contractor - 9 weeks to lay and take up	9	6,000	54,000
	Drilling contract - 24 boreholes estimated at 150000	1	150,000	150,000
				254,000
Step 3	**Embankment construction to aid piling operations**			
	Removal of poor material - to be carried out after excess poer water pressures are relieved. Assumed to be 5 metres deep 12000 cu m	12,000	35	420,000
	Import of suitable	24,000	24	576,000
	Disposal of unsuitable	12,000	45	540,000
				1,536,000

	Item	Quantity	Rate	Total
Step 4	**Installation of bored piles**			
	Assume 1050 dia bored piles to produce a contiguous wall, 18 metres to rock head plus 3 metres in sand stone. Length of wall total length = 300 metres = 220 piles			
	Pro-rata price from PJ Edwards for 250 no piles 750 dia			
	- Establishment @24000	1	24,000	24,000
	- Extra rig @23000	1	23,000	23,000
	- Bore and concrete 250 no piles 750 dia length 5250 m @232/m	4,620	464	2,143,680
	- Supply and install pile reinforcement 500T@1040	875	1,040	910,000
	Disconnect existing rock anchors - 45 number	1	20,000	20,000
	Attendances - 4050 cu m say 8000T = 500 wagon loads			
	Say 2 loads per day = 250 wagon days @ 11 hour days	2,750	45	123,750
	Two excavators 10 weeks @55 hour weeks	1,100	45	49,500
	Disposal of arisings - tipping fees	4,000	45	180,000
	Gang @ 5000 per week with attendant plant for 10 weeks	10	5,000	50,000
				3,523,930
Step 5	**Capping beam construction**			
	Assume 1200 mm wide by 1000 mm high by 300 m long with pockets for recess of anchors			
	Cut piles down to level say cropper 1 month hire	1	5,000	5,000
	Blinding 75 thick	30	200	6,000
	Rebar	45	1,000	45,000
	Shutters F4 300 metres long * 1 m high	600	100	60,000
	Concrete 300 long by 1 by 1.2	360	175	63,000
	JCB attendance @£30 per hour 10 hour days 16 weeks	16	1,650	26,400
	Gang attendance @ £5000 per week 20 metre length per week	16	5,000	80,000
				285,400

	Item	Quantity	Rate	Total
Step 6	**Tie bar installation**			
	100 no anchors required working load 1750Kn. Embedded length fo 17 metres to rock			
	Based on previous scheme carried out - assume £3000 ea	100	3,000	300,000
	Gang attendance @ £5000 per week for 10 weeks	10	5,000	50,000
				350,000
Step 7	**Facing construction to front of wall**			
	Assuming a 2 metre depth below capping beam to be made good with back of wall drainage layer tied to drainage system			
	Drainage layer to piling, 220 no *2*0.6 = 275 sq m	275	20	5,500
	Drainage system and piping	1	5,000	5,000
	Shuttering to wall face	600	125	75,000
	Concrete facing	150	250	37,500
	Rebar etc	300	30	9,000
				132,000
Step 8	**Permanent water management**			
	Assuming a system comprising 3 meter diameter shafts along the back of road line sunk down to say 10 meters below ground level. Shafts are connected by drains installed by thrust boring say 300 mm diameter. Drains run downhill to catchment shaft and exit embankment by another line to discharge into river.			
	3 metre dia shafts 10 metres deep at 25 meter centres	13	30,000	390,000
	Thrust bore - say 4 drives to link shafts	4	25,000	100,000
	Drain system - 300 mm dia plus river outfall - length 150 metres	150	200	30,000
				520,000

	Item	Quantity	Rate	Total
Step 9	**Road reinstatement**			
	Failed zone to be rebuilt completely over 200 metre carriageway length	200	600	120,000
	Other length to be consolidated with base and wearing say 100 metre length	100	150	15,000
	Drainage to back of road connected to shaft drains	300	50	15,000
				150,000
Step 10	**Professional fees and other costs**			
	Land license	1	5,000	5,000
	Agents fees	1	5,000	5,000
	Ecology consultants	1	10,000	10,000
	Geotechnical fees	1	40,000	40,000
	Topographical survey	1	6,000	6,000
	Monitoring survey over 12 months	12	600	7,200
	Preliminary and detailed design say 5%	1	356,417	356,417
				429,617