Table 1 - Froghall to Denstone cost estimate

	Unit	Quantity	Unit Cost £k	Sum £k	Total £k	Comments
Site Clearance	ha	34.44	3.60	123.98	**123.984**	11.48km, 30m wide corridor
Canal Pounds						
Froghall to A52	m	170	1.353	230.01		Urban canal with hard edges
A52 to Ch1300 at embankment	m	800	0.895	716.00		Rural Canal
Embankment at Tang Wood/Ross Bridge	m	800	1.863	1490.40		Rural canal on embankment
Ch2100 To Ch2530 past Jackson Wood	m	430	0.895	384.85		Rural canal
Ch2530 To Ch2880	m	350	2.085	729.75		Rural canal in cutting
Ch3010 To Ch3270	m	260	1.863	484.38		Rural canal on embankment
Ch3270 To Oakamoor	m	920	0.895	823.40		Rural canal
Oakamoor	m	380	0.895	340.10		Rural canal
Oakamoor to existing channel north of Crumpwood	m	3200	0.895	2864.00		Rural canal
Existing channel Lock to Crumpwood	m	2100	0.600	1260.00		Restoration of existing channel
Crumpwood to Ch11000	m	820	0.895	733.90		Rural canal
Ch11000 To Denstone	m	480	0.600	288.00		Restoration of existing channel
Disposal of contaminated material	m3	2500	0.100	250.00		South of A52
Retaining walls	m	1000	2.000	2000.00		Assumed 3-4 metre piled wall
Crumpwood Weir	sum		200.00	200.00		
Headwalls to existing outfalls	nr	5	25.00	125.00		Assumed for stream courses
Provision for waste weirs	nr	3	100.00	300.00		Assumed
3m Footpath	m	11480	0.10	1148.00		
Landscaping	sum			1000.00	**15367.79**	
Locks						
Single lock restoration	nr	3	300.00	900.00		Froghall to A52 x2, Crumpwood x1
Single lock new construction	nr	10	775.00	7750.00	**8650.00**	
Bridges						
A52 cross and tunnel works	nr	1	1495.00	1495.00		100m

River Churnet Crossing	nr	2	870.00	1740.00		At Oakamoor
Lift bridge at Oakamoor	nr	1	650.00	650.00		13m wide, 5m span, to include traffic management
Lord's Bridge accommodation bridge	nr	1	300.00	300.00		
Existing rail bridge at Alton	nr	1	250.00	250.00		Provision for protection to foundations
Swing bridge for access track	nr	1	250.00	250.00		At Crumpwood - 5m x 5m
Works to existing bridges	nr	3	100.00	300.00	**4985.00**	
Footbridges						
Whitson Bridge	nr	1	150.00	150.00		
Ross Bridge	nr	1	150.00	150.00		
Bank House farm	nr	1	150.00	150.00		
South of Alton Towers	nr	1	150.00	150.00		
By Alton Pumping Station	nr	1	150.00	150.00		
Crumpwood	nr	1	150.00	150.00	**900.00**	
Total Measured Cost (£k)					£30,026.77	
Add Contingencies	%	30			£9,008.03	
Total Construction Cost (£k)					**£39,034.81**	
Indirect Costs						
Service diversions				£5,000.00		
Client/Construction Supervision, admin & management	%	10		£3,903.48		
Design	%	6		£2,342.09	**£11,245.57**	
		Total Cost (£k)			**£50,280.38**	

Table 2 – Denstone to Uttoxeter cost estimate

	Unit	Quantity	Unit Cost £k	Sum £k	Total £k	Comments
Site Clearance	ha	20.4	3.60	73.44	**73.44**	6.8km, 30m wide corridor
Canal Pounds						
Denstone to JCB lake	m	1500	0.895	1342.50		Rural Canal
Alongside sports ground	m	220	0.895	196.90		Rural Canal
Woodseat Lodge to A5030	m	80	0.895	71.60		Rural Canal
A5030 to River Tean crossing	m	3200	0.895	2864.00		Rural Canal
Headwalls to existing outfalls	nr	10	25.00	250.00		Assumed for stream courses
Provision for waste weirs	nr	10	100.00	1000.00		Assumed
3m Footpath	m	6800	0.10	680.00		
Landscaping	sum			1000.00	**7405.00**	
Locks						
Single lock restoration	nr	0	300.00	0.00		
Single lock new construction	nr	5	775.00	3875.00		
Double lock new construction	nr	1	1025.00	1025.00	**4900.00**	
Bridges						
B5032 Denstone Road	nr	1	500.00	500.00		To include some road raising
B5031 at JCB	nr	1	500.00	500.00		To include some road raising
Hollington Road	nr	1	500.00	500.00		To include some road raising
B5030	nr	1	1495.00	1495.00		To include some road raising
Accommodation bridges	nr	4	314.00	1256.00		
River Tean crossing structure	nr	1	750.00	750.00	**5001.00**	
Lake Crossings						
Entrance works	nr	6	50.00	300.00		
Dredging - Provisional Allowance	m3	10000	0.04	400.00	**700.00**	
Footbridges						
For paths around JCB lakes	nr	4	150.00	600.00		

General	nr	3	150.00	450.00	**1050.00**	
Total Measured Cost (£k)					£19,129.44	
Add Contingencies	%	30			£5,738.83	
Total Construction Cost (£k)					**£24,868.27**	
Indirect Costs						
Service crossings				£2,000.00		
Client/Construction Supervision, admin & management	%	10		£2,486.83		
Design	%	6		£1,492.10	**£5,978.92**	
			Total Cost (£k)		**£30,847.20**	

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Summary

Froghall to Denstone Section
11.5 km length

Item	Cost / £k		
Works Items	£30,026,774		
Contingency	£9,008,032		
Indirect Costs	£11,245,569		
Total	**£50,280,375**	= £4,372,207	per km

Denstone to Quarry
6.7 km length

Item	Cost / £k		
Works Items	£19,129,440		
Contingency	£5,738,832		
Indirect Costs	£5,978,924		
Total	**£30,847,196**	= £4,604,059	per km

Total Costs
18.2 km length

Item	Cost / £k		
Works Items	£49,156,214		
Contingency	£14,746,864		
Indirect Costs	£17,224,493		
Grand Total	**£81,127,571**	= £4,457,559	per km

Risk	**£7,000,000**

Grand Total inc Risk   **£88,127,571**

Cost assessed June 2009.

It is recommended that for future use, this cost is inflated using the Price Adjustment Formulae for Construction Contracts, also known as the NEDO or Baxter Indices, published by the Office for National Statistics.

3.8   *Phasing*

If funding were in place for the construction works, an engineering scheme of this size would be likely to take in the order to 5 – 7 years to complete.

In this case, it is difficult to determine what the likely timescale of the project may be as this will be dependent on funding availability.

As described above, the scheme can be easily divided into two parts, the restoration to the north of Denstone and the new cut to the south. Each of these sections could be approached in a different manner. In order to demonstrate to external bodies that a scheme is going to happen, it can useful to have exemplar sections of channel restore.

A pragmatic approach may therefore be, in the short to medium term, to restore such sections as can be done relatively simply within the northern sections, with the southern section only tackled once funding is secured.

A possible phasing approach to achieve this is shown below.

ID	Task Name	Duration	Gantt Chart
1	**Volunteer led early works**	**1584 days**	
2	Clearance of Alton to Crumpwood section	6 mons	Volunteers
3	Excavation and profiling of Alton to Crumpwood Section	6 mons	Possibly Volunteers
4	Restoration of Froghall Flight to A52	24 mons	Possibly Volunteers
5	Restoration of existing structures between Froghall and Denstone	36 mons	Possibly Volunteers
6	**Main Restoration works**	**3168 days**	
7	Studies and investigation works	24 mons	Project Team led
8	Funding applications	60 mons	Project Team led
9	Detailed design and planning application works	36 mons	Project Team led
10	Construction Froghall to Denstone	36 mons	Main Contractor
11	Construction Denstone to Uttoxeter Quarry	36 mons	Main Contract