



Western Link

Appendix K - Scheme Cost Report

Document Status

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1. Executive Summary

Warrington Borough Council (WBC) has received development funding from the Department for Transport (DfT) to develop an Outline Business Case (OBC) for the Western Link. The overall aims of the Western Link are to:

- Address the steady rise in congestion levels that are the result of Warrington's recent rapid economic growth, particularly in the town centre; and
- Open up new development land to support continued economic investment in central Warrington.

Proposed Scheme

The proposed scheme will create a new link to address the historical constraints from, the River Mersey, Manchester Ship Canal, West Coast Mainline Railway. Which have acted as barriers creating pinch points on the transportation network.

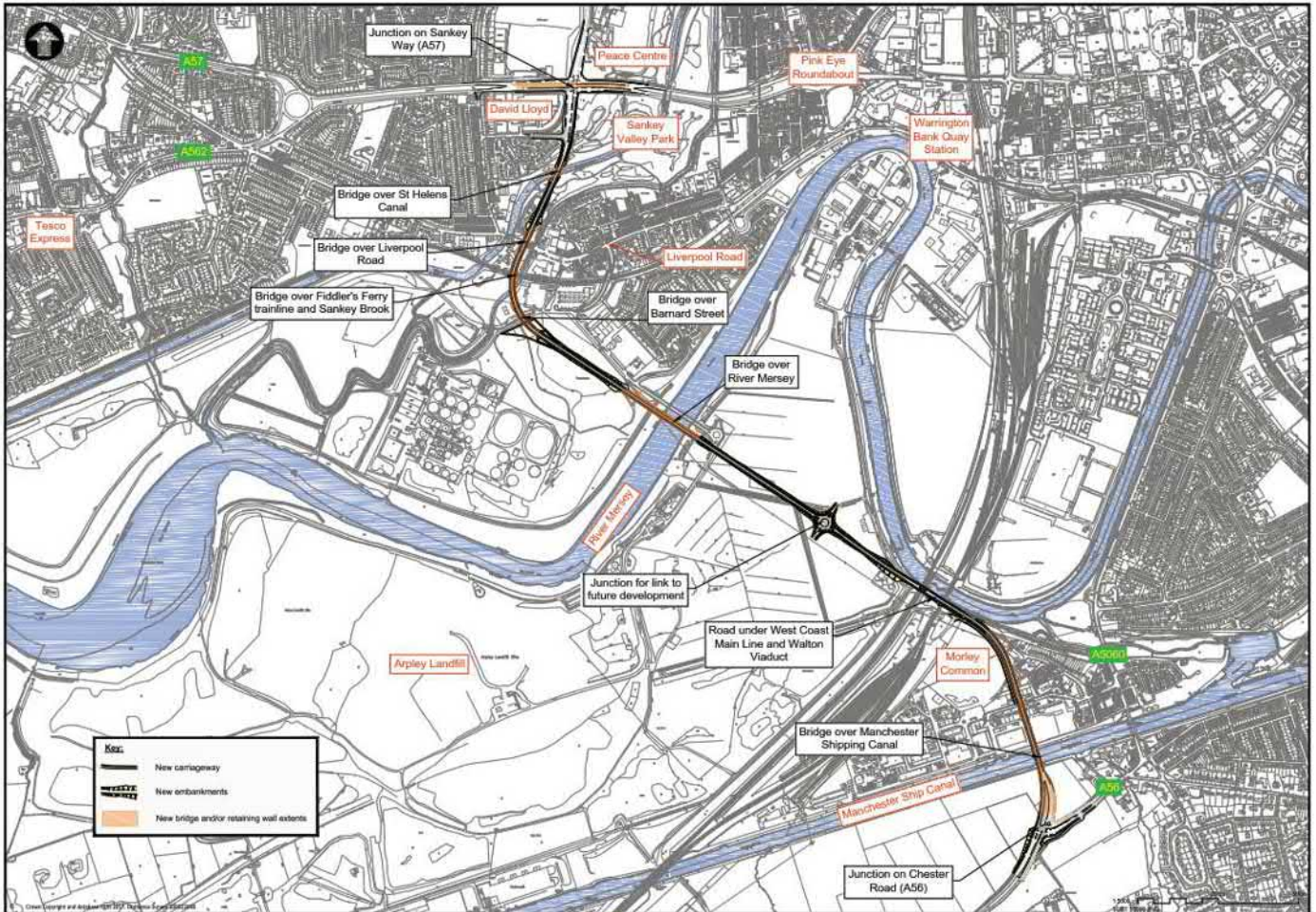
2. Introduction

Balfour Beatty (BB) has previously been appointed by WBC via the SCAPE framework to complete a feasibility budget on a scheme which was used in the Large Local Major Schemes Fund bid by WBC in 2016.

Early in 2017 Balfour Beatty was appointed by WBC to provide support for the Outline Business case process. To provide buildability, risk and budget costing on the design options issued by Mott MacDonald (MM) on behalf of WBC.

During the business case process budget advice has been issued at the end of stage 1 and stage 2a. The scope of this report is to confirm budget costs with the preferred route options selected by WBC, at stage 2b.

3. Preferred Scheme



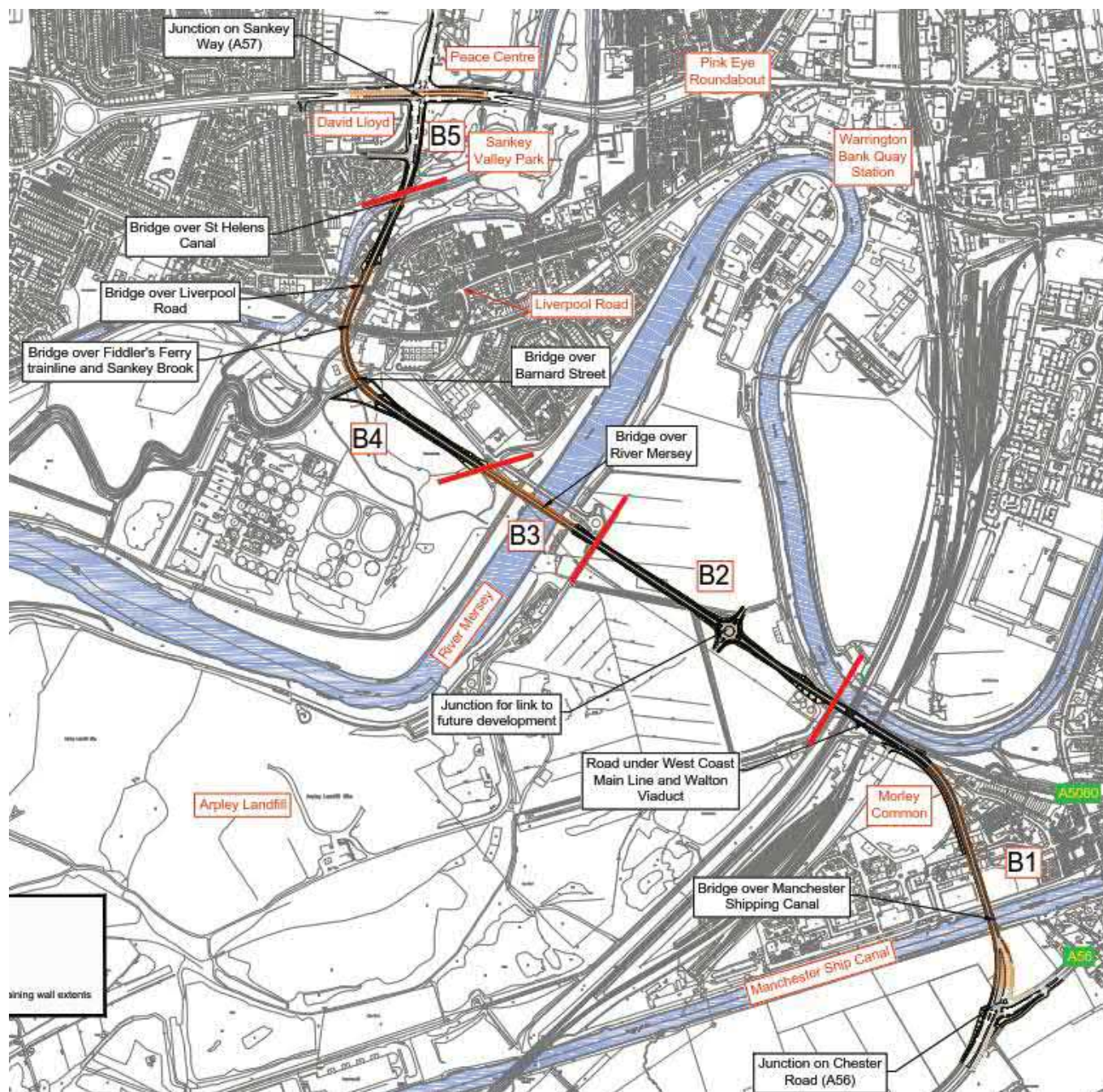
The new road comprises:

A new single carriageway road from A56 Chester Road to A57 Sankey Way with,

- Traffic Signal Controlled Junction on Chester Road.
- High Level Structure Crossing the Manchester Ship Canal.
- Replacement of the existing masonry arch/precast structure on Chester/Helsby Railway over Eastford Road.
- Roundabout Junction on Arpley Meadows to facilitate future development.
- A new structure crossing the River Mersey, the existing Forrest Way structure will be retained for local access.
- New structure's over UU Access Road, Barnard Street, Fiddlers Ferry Freight Railway, Liverpool Road and St Helens Canal.
- A new traffic signal junction on the A57 at the existing Cromwell Avenue junction including a single carriageway flyover for East/West Traffic.

4. Scheme Costs

The preferred route is based on the drawings included in Annex K1. This was broken down into sections 1~5 as below,



4.1 Highways

The route sections were then measured and taken off in SHW sections to give a guide to add the process and allow additional information to be included in the budget where not specifically included in the MM outline design drawings.

An example of the highways schedule for section one is included below, all the detailed sheets are included in the Annex K2.

Balfour Beatty SCAPE MASTER Activity Schedule Feasibility Budget							Section 1	
SHW	Description	Rate	Unit	Reference	Estimators Notes	Quantity	Total	
1200	Traffic Signs							
	ADS signs not greater than 20.0 m2	£ 13,366.21	No	Birchwood	0	3	£ 40,098.63	
	ADS signs not greater than 10.0 m2	£ 6,683.11	No	Birchwood (Pro-rata)	0	3	£ 20,049.33	
	ADS signs not greater than 5.0 m2	£ 2,479.25	No	CPL (Walker Signs Feb 2017)	0	3	£ 7,437.75	
	LDS signs	£ 901.56	No	CPL (Walker Signs Feb 2017)	0	9	£ 8,114.04	
	Regulatory signs (Illuminated)	£ 721.61	No	CPL (Walker Signs Feb 2017)	0	10	£ 7,216.10	
	Footway / cycleway signs	£ 302.46	No	CPL (Walker Signs Feb 2017)	0	20	£ 6,049.20	
	Illuminated bollard (solar)	£ 790.92	No	CPL (Walker Signs Feb 2017)	0	12	£ 9,491.04	
1200	Traffic Signals							
	1 way 100mm diameter Ducting to Traffic signals in verges or central reserves	£ 40.25	m	CPL (D Morgan Quote - Feb 2017)	Based on net rate +13% prelims	450	£ 18,112.50	
	1 way 100mm diameter Ducting to Traffic signals in verges or central reserves	£ 40.25	m	CPL (D Morgan Quote - Feb 2017)	Based on net rate +13% prelims	280	£ 11,270.00	
	NAL Sockets for poles	£ 465.19	No	M62 J8 (D Morgan Quote - Oct 2016)	Based on net rate +12% prelims	28	£ 13,025.38	
	4 way 100mm diameter Ducting to Traffic signals in carriageway	£ 127.67	m	CPL (D Morgan Quote - Feb 2017)	Based on net rate +13% prelims	200	£ 25,534.00	
	300*450 drawpits	£ 359.53	No	M62 J8 (D Morgan Quote - Oct 2016)	Based on net rate +12% prelims	9	£ 3,235.77	
	450*600 drawpits	£ 421.66	No	M62 J8 (D Morgan Quote - Oct 2016) - Pro-rata	Based on net rate +12% prelims	12	£ 5,059.92	
	600*600 drawpits	£ 562.21	No	M62 J8 (D Morgan Quote - Oct 2016)	Based on net rate +12% prelims	6	£ 3,373.24	
	Loop boxes	£ 163.41	No	M62 J8 (D Morgan Quote - Oct 2016)	Based on net rate +12% prelims	18	£ 2,941.34	
	Signal heads, poles and controller including loops and design for three way junction	£ 70,500.00	Sum	CPL (Siemens Jan 2017)	0	1	£ 70,500.00	

The spreadsheet cost data base is built up from the following:

- Sub contractor orders on contracts,
- Sub contractor quotes on contracts/Tenders,
- Historical information from completed contracts.
- Rates built from first principles with outputs, plant, labour and materials.

The spreadsheet cost data base was last updated in Q1 2017.

4.2 Structures

The structures were broken down into route sections. These were measured in relation to:

- Type of structure
- Under/overbridge and the crossing type road/water/rail,
- Abutment Type
- Approach Abutments

The pricing data for the structures was predominately based on completed structures. This allows all the temporary works and ancillary items that would not be included on the design drawings at this stage to be included in the Budget Costs.

The summary measurement table for the structures are included below; the full spreadsheets are included in the Annex K2.

Structures Listed from the South (A56) to North (A57)	Rail/River/ Canal/Road	Type	Clearance height [m]	Clear span [m]	Deck [m ²]	Large Abutments and Piers	Small Abutments [no.]	Number adjacent to Watercourse [no.]
Manchester Ship Canal (MSC) Viaduct	Canal	Steel Composite	22	473.9	7251	8		2
Walton Viaduct	Rail/River	Steel Composite	5.7	17.4	132	2		
WCML Viaduct	Rail/River	New VRS Required to Protect existing Structure						
Forest Way Bridge	River	Steel Composite	10	177.5	2715.8	4		2
UU Access	Road	Pre-stressed Concrete Beams	5.3	13.6	208.1		2	
Barnard Street	Road	Pre-stressed Concrete Beams	5.3	13.6	208.1		1	
Sankey Brook	Canal	Pre-stressed Concrete Beams	0	14	214.2		2	2
Ditton Goods Line	Rail	Pre-stressed Concrete Beams	5.8	13	198.9		2	
Old Liverpool Rd	Road	Pre-stressed Concrete Beams	5.7	16	244.8		2	
St Helens Canal	Canal	Pre-stressed Concrete Beams	2.4	15.4	235.6		2	2
Cromwell Avenue Grade Separated (A57)	Road	Steel Composite	5.7	40	560.0	2		

4.3 Programme

When the stage 2b costing was being completed the business case delivery programme was in complete. Following discussion with the project team the points below were used to inform the construction programme,

Design up to planning submission – Starting Jan 2018 and ending (between August and December 2018)

Design up to construction/target cost - (Starting between August 2018 and December 2018) and ending (between October 2019 and February 2020)

MSBC and approval – Starting between October 2019 and February 2020) and ending (between Feb 2020 and August 2020)

Construction – Starting (between Feb 2020 and August 2020)

The activity schedule developed for the Budget was used by BB to develop an outline construction programme, which gave duration of 154 weeks from commencement. This was used to inform the duration of time based preliminaries in the costs. A summary is included below and expanded version of the construction programme is included in the Annex K3.

4.4 Inflation

In assessing the costs we have used the Building Cost Information Service (BCIS) general civil engineering indices to provide a forecast for the rate of inflation. In Q3 2017 this gave the following information.

- 2018 - 3.0%
- 2019 - 3.4%
- 2020 – 5.2%
- 2021 – 6.1%
- 2022 – 5.3%

This has been averaged over years 2018~2022 at 5.4% and applied to years 2018~2023.

4.5 Statutory Undertakers

The outline utility records were obtained by MM and from this a budget estimate of the anticipated service diversion has been developed. A copy of the anticipated service diversion is included in Annex K4.

4.6 Land Cost Estimate

The land costs estimate has been prepared by Axis. This was £21.2m for the preferred route, based on the plan for permanent and temporary land required for the scheme. As part of the process Axis sub consulted to Terraquest to provide Land Ownership and use information. In preparing the cost estimate Axis considered area of land taken, Injurious Affection/Severance, Disturbance, Professional Fees, Statutory Loss and Part 1 claims.

4.7 WBC

The cost estimates included an allowance for:

- Development of the Outline Business case
- WBC Internal fees in developing the scheme, Archaeology, Public consultation, CPO process and for Public Enquiry
- Allowance for improvements to the WBC road network to maximise the benefit from the new road.

4.8 Design

The fee allowance for the scheme has been based on a percentage of the construction cost and was developed using historical data from Mott Macdonald and Balfour Beatty, this includes the surveys and investigations as part of the detailed design process.

4.9 Network Rail

As the scheme has three structures that affect the Network rail (NR) infrastructure. An allowance has been included in the cost estimate for the costs they will incur as part of the scheme implementation. This includes NR internal costs, APA/BAPA costs and Possession costs.

4.10 Risk

The Quantitative Risk Assessment for the scheme is included in Appendix N of the OBC.

4.11 Maintenance

The maintenance costs have been developed using rate cost information with an indication of rate of duration for various activities.

The costs have been spread over the duration of maintenance. Inflation has been included at the same rate as the capital costs. A discount factor has also been applied in order to provide NPV (Net Present Value).

Annex K1 - Drawings used for Costings

Annex K2 - Activity Schedule

Annex K3 - Programme

Annex K4 - Service Diversions

Annex K1 – Scheme Drawings

- 382900-MMD-07-XX-CD-D-1025_S2.1 Preferred Route GA.
- 382900-MMD-07-XX-CD-D-1037_S2.1 Preferred Route Drainage Plan
- 382900-MMD-07-XX-M2-D-0050_S2.1 Preferred Route VRS for Costing
- WL-MMD-07-ZZ-CD-N-0011 S2.1 Proposed Earthworks
- WL-MMD-07-ZZ-GS-J-0007 Preferred Route Ecological Mitigation
- WL-MMD-07-ZZ-GS-J-0008 Preferred Route Noise Mitigation
- WL-MMD-07-ZZ-GS-J-0009 Preferred Route Landscape Mitigation Overview
- WL-MMD-07-ZZ-GS-J-0009A Preferred Route Landscape Mitigation
- 382900-MMD-07-XX-CD-S-2100-P01.1 – Structures MSC
- 382900-MMD-07-XX-CD-S-2200-P01.1 – Structures Walton Viaduct
- 382900-MMD-07-XX-CD-S-2201-P01.1 - Structures Walton Viaduct
- 382900-MMD-07-XX-CD-S-2202-P01.1 – Structures Walton Viaduct
- 382900-MMD-07-XX-CD-S-2400-P01.1 – Structures Forrest Way
- 382900-MMD-07-XX-CD-S-2401-P01.1 - Structures Forrest Way
- 382900-MMD-07-XX-CD-S-2500-P01.1 – Ditton Goods Rail Viaduct
- 382900-MMD-07-XX-CD-S-2501-P01.1 - Ditton Goods Rail Viaduct
- 382900-MMD-07-XX-CD-S-2600-P01.1 – St Helens Canal Bridge