

MetroWest Phase 1 QCRA Report

Project Name: MetroWest Phase 1
OP Reference: 140569
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GRIP Context

Current GRIP Stage:	2
GRIP Stage(s) to which this report relates:	2-8
Estimated start of significant physical works:	2017

1. Executive Summary

The MetroWest project is a third party project led by a consortium of Local Councils within the South West region. The concept of the MetroWest project is to utilise existing and disused rail corridors to provide a Metro type cross Bristol service of an approximate ½ hourly frequency in order to support economic growth, improve accessibility to the rail network and provide a more resilient transport offer to local communities.

A Qualitative Cost Risk Analysis was required to identify the risks and opportunities for the Phase 1 scheme and to be included as part of the option development report due to be submitted in summer 2014.

- They key assumptions are as follows,
 - Network Rail timetable will accept the new services.
 - RAM will agree to double junction Parson Street Junction
 - Additional cost will not be incurred to the project as a result of re-franchising.

- The highest scored risks are as follows,
 - NR timetable will not accept services
 - Additional works required at Avon Road
 - FOC Interface at Bristol

- The following actions were recorded from the meeting,

Action	Owner	Close Out Date
1 Arrange an internal meeting to discuss the level of Network Rail involvement in the Development Consent Order.	Andrew Holley	23 rd May 2014
2 Arrange joint meeting to discuss and review between Network Rail and North Somerset Council the promotion of the Development Consent Order	James Willcock	30 th May 2014

2. Background

The MetroWest project is a third party project led by a consortium of Local Constituencies, including South Gloucestershire Council, North Somerset Council, Bristol City Council and Bath and North East Somerset Council.

The concept of the MetroWest project involves delivering an enhanced local rail offer in the Bristol area comprising the following,

- Existing and disused rail corridors feeding into Bristol.
- Approximately ½ hourly service frequency (but some variations possible pending business case).
- Cross Bristol service patterns i.e. Bath to Portishead.
- Providing a Metro type service appropriate for a City Region with a population of 1 million.

The primary objectives of the project are,

- Support economic growth, through enhancing transport links to major employment centres across the West of England.
- Deliver a more resilient transport offer, with more attractive & reliable journey times.
- Improve accessibility to the rail network with new and re-opened rail stations.
- Make a positive contribution to improving quality of life.

The supporting objectives of the project are,

- Contribute to reducing traffic congestion.
- Contribute to enhancing the capacity of the local rail network.
- Contribute to reducing the overall environmental impact of the transport network.

The scope of the project is to deliver a solution that provides a ½ hourly service (approx and subject to Network Capacity Analysis) for the Severn Beach to Bristol line, a local service between Bath Spa and Bristol and the reopened Portishead to Bristol Line.

The following engineering works have been proposed as part of phase 1,

- Rebuild the Portishead to Pill Line.
- Closure of historic crossings.
- New station at Portishead.
- Reopen former station at Pill.
- Double track works at Pill and Ashton Gate area.
- Improve highway access to Pill tunnel.
- Environmental mitigation measures.

- Enhancement to Parson Street Junction.
- Re-signalling the entire line between Temple Meads and Portishead.
- Bathampton Turnback.
- Possible additional signalling at Avonmouth station.
- Possible reinstatement of Down Relief Line to assist recessing / regulation of freight trains.

The MetroWest phase 1 programme consists of the following stages,

Project Stage	Stage Description	Indicative Timescales
Stage 1	Option Development (inc GRIP 1-2)	Summer 2013 to Summer 2014
Stage 2	Scheme Case (inc GRIP 3)	Summer 2014 to Winter 2015/16
Stage 3	Planning Powers and Procurement (including GRIP 4-5)	Winter 2015/16 to Autumn 2017
Stage 4	Construction & Opening (inc GRIP 6-8)	Autumn 2017 to Spring 2019

Network Rail have been tasked with developing the options for the MetroWest project including GRIP 1-2 and building up the construction cost estimate to be presented as part of the Scheme Case.

A Qualitative Cost Risk Analysis was required to identify the risks and opportunities for the Phase 1 scheme and to be included as part of the option development report due to be submitted in summer 2014.

3. Methodology

A Qualitative Cost Risk Analysis (QCRA) workshop was held at The Tri-Centre, Swindon on Tuesday 13th May 2014 with the objective of identifying the projects risks for the Metrowest Phase 1 project. Representatives of Network Rail, URS, North Somerset Council, CH2M Hill and West of England were present. All participated in the deliberations.

The objectives of the meeting were to:

- identify significant risks to the achievement of the project objectives
- establish a project risk register in Active Risk Manager (ARM)
- conduct an assumption analysis and identify any constraints

The risks to the project were identified in a brainstormed session and a risk owner was allocated. Each risk was then analysed to understand the probability of occurrence and impact of the risks on the project outcome.

Each risk probability and impact was scored qualitatively based on categories ranging from very high likelihood of occurrence / impact to very low likelihood of occurrence / impact. The qualitative assessments were uploaded into ARM and a score for each risk was automatically generated based on a probability/impact matrix.

4. Assumptions Analysis

A number of assumptions were identified and an assumption analysis exercise was undertaken, details are shown in the table below. It should be noted that these assumptions are potentially risks that could occur and actions should be taken to reduce their likelihood of occurrence or impact. Where scored as 'CC' or worse they must be included as a risk in the analysis.

Table 4.1 Assumptions Analysis Key

Stability	Sensitivity
A B C D	A B C D
A – Very Confident	A – Minor Impact
B – Fairly Confident	B – Manageable Impact
C – Uncomfortable	C – Significant Impact
D – Very Uncomfortable	D – Critical Impact
Will the assumption turn out to be correct?	How much does it matter if the assumption turns out to be true?

Assumption	Stability	Sensitivity	Justification
1 Acceptable Benefit Cost Ratio (BCR)	A	C	Project has an acceptable BCR in its current format. Any changes need to be evaluated to see if project viability is affected.
2 Local Transport body accepts business cases	A	B	Body with oversight of transport will need to agree business case with sponsor of project
3 The Metrowest scheme is affordable.	A	C	The budget that is to be bid for must be within acceptable limits
4 There will be local political and stakeholder support	A	C	In order to progress to budget, the scheme must have wide support. Objections will add to cost
5 Scope deliverables include all major infrastructure	B	C	Current scope does not omit any large construction item that is required to implement service.
6 Ashton Gate Station is not to be delivered as part of this project	A	D	Station is under consideration by a number of parties, but is not specified in the metrowest scope. Any new application will come with its own funding.
7 Development Consent Order will be awarded with current scope	A	D	Order will be sought on basis of current scope. Any new items would add to cost.
8 Network Rail timetable will accept the new services.	B	D	Timetable modelling still to be completed. Needs to take into account new services including mooted hourly London to Weston

			Super mare service.
9 RAM will agree to double junction Parson Street Junction	B	D	Timetable depends on this being installed. RAM will have to weigh against costs of maintenance.
10 RAMs will agree to other infrastructure changes	A	C	Multiple assets being installed will have to be approved. Need is known by RAMs
11 Network Change will be approved	A	C	Process to be initiated, is not expected to be complex.
12 Freight Services can be accommodated at the present freight service	A	C/D	Signalling and other systems are adjudged to be capable of maintaining freight service despite introduction of passenger services.
13 Additional cost will not be incurred to the project as a result of re-franchising	B	D	Demands of new franchisee not known and is therefore a risk of changes due to differing management.
14 Pill double track can be delivered under permitted development rights.	A	B	Assumed to be within the current boundaries and is operational use.
15 Pill Station would be Equalities Act compliant	A	A	Estimated costs inclusive of compliance to Equalities Act
16 Adequate resources can be brought into the project	A	A	Assumed that by design / construction phase all the resources will be sufficient that it will not impact on programme.
17 Legal agreements can be agreed	A	A	Agreement will have to be signed by NR and Local Authorities for works on the railway.
18 No judicial review of scheme by outside parties	A	A	This would delay implementation. Local stakeholders are expected to be broadly in support of scheme.
19 Adequate solutions to Environmental / property issues	A	A	All areas where new land is required have expected solutions that are implementable.
20 No adverse impacts of mitigated scheme	A	A	No permanent environmental or neighbourhood impact as a result of deliverables from scheme
21 No delays in confirming location of Portishead Railway Station	A	A	Sites have been identified and a length of time for process has been identified that should be sufficient
22 No delays to other Network Rail schemes (4-tracking, resignalling)	A	A	Project has some dependency on other projects. Programme is calculated to avoid all but the most severe delays.
23 BASRE Commissions as per design.	A	A	Design will assume commissions are as expected in order to link in new assets. Time gap to new project should be sufficient to iron out issues.
24 Stakeholder objections do not cause issues at DCO	A	A	Planning objections are expected to be small and to be able to be accommodated within programme
25 There will be no objections from	A	A	Programme anticipates level of negotiation

land owners at Portbury Station.			required
26 There will be no electrification requirements (only passive provision).	A	A	No plan to electrify Phase 1 sections in this project. Passive provision will only be provided where there is no significant cost impact.
27 Access for construction will be available as planned	A	A	Sites will be identified as methodology is developed. Assumed that access will be sufficient for contractors needs and minimise local impact.
28 Structures works will remain as per current scope.	A	A	No significant loading change is anticipated. Repairs are included where known.
29 No objections from Statutory Environment Bodies.	A	A	Consultation process at early stage, all potential sites of interest are identified.
30 Habitats will not be impacted or cause additional expense	A	A	Consultation process at early stage, all potential sites of interest are identified.
31 Additional Signaller workload is acceptable.	A	A	Expected that can be accommodated within existing plans.
32 Pill GSMR will provide coverage to Portishead.	A	A	Telecoms team expect that aerial will cover all of the new project and that no new infrastructure would be required.

5. Results

The table below displays the top five risks by current Probability / impact scoring;

Table 5.1 Top 10 Risks by Probability / Impact scoring scheme

Risk					Current Qualitative Impact		Current Score	
Risk ID	Risk Title	Risk Description	Risk Owner	Risk Type	Probability	Cost		
328074	NR timetable will not accept services	There is a risk that the current timetables do not have the capacity to accommodate the new Metrowest services, therefore the NR timetable will not accept the services.	Leighfield Finch, Rachel	Risk	3: Medium	4: High	7.	Major
328136	Additional works required at Avon Road	There is a risk that more works are required at Avon Road, such as embankment works / reconstruction of the asset leading to costs over and above the provision in the estimate.	Leighfield Finch, Rachel	Risk	3: Medium	4: High	7.	Major
328076	FOC Interface at Bristol	There is a risk that the FOC request additional scope at Bristol	Leighfield Finch, Rachel	Risk	2: Low	4: High	6.	Significant
328140	Ergonomics of signalling systems	Due to additional signals required on the network to accommodate the Metrowest services, there is a risk that changes to ergonomics of signalling systems causes additional work not estimated for.	Leighfield Finch, Rachel	Risk	2: Low	4: High	6.	Significant
328073	DCO causes additional works	There is a risk that additional works may be identified during the DCO process in order to meet their requirements.	Leighfield Finch, Rachel	Risk	3: Medium	3: Medium	6.	Significant
328108	Additional works at Portished station	Additional works at Portished station	Leighfield Finch, Rachel	Risk	3: Medium	3: Medium	6.	Significant
328127	Construction road access restrictions	Construction road access restrictions (Bristol port negotiations, unknown scope)	Leighfield Finch, Rachel	Risk	3: Medium	3: Medium	6.	Significant
328134	Rail possession access	Rail possession access at Double Junction and freight line access agreement	Leighfield Finch, Rachel	Risk	3: Medium	3: Medium	6.	Significant
328070	Inflation assumptions under estimate costs	Inflation assumptions under estimate costs	Leighfield Finch, Rachel	Risk	2: Low	3: Medium	5.	Significant
328071	Additional deliverables at Detailed Design	Additional deliverables at Detailed Design	Leighfield Finch, Rachel	Risk	2: Low	3: Medium	5.	Significant

6. Actions

The following actions were recorded in the workshop. Owners were assigned from people within the room. These actions should be entered in to the project plan where capital expenditure or time is taken to complete the action.

Table 6.1 Action Table - Example

Action	Owner	Close Out Date
1 Arrange an internal meeting to discuss the level of Network Rail involvement in the Development Consent Order.	Andrew Holley	23 rd May 2014
2 Arrange joint meeting to discuss and review between Network Rail and North Somerset Council the promotion of the Development Consent Order	James Willcock	30 th May 2014

7. Appendix A – Attendees

Table 7.1 Attendees List

Name	Role	Company
Pete Hillier	CEM	URS
Colin Field	Town Planning Manager	Network Rail
Helen Spackman	Transport Planner	CH2M Hill
James Willcock	Project Manager	North Somerset Council
James White	Programme Manager	West of England
Robert Sully	Senior Project Engineer	Network Rail
Thomas Garner	Assistant Project Engineer	Network Rail
Matt Redstone	Senior Project Engineer	Network Rail
Carolyn Francis	Environment Manager	CH2M Hill
Karl Hatala	Project Manager	URS
Mike Summerfield	Civil Engineering Manager	URS
James Coram	Graduate Civil Engineer	URS
Andrew Holley	Senior Development Manager	Network Rail
Geoff Thomas	Telecommunications Project Engineer	Network Rail
Steve Davey	Senior Legal Counsel	Network Rail
Nick Lake	Designated Project Engineer	Network Rail
Rachel Leighfield Finch	Project Development Manager	Network Rail
Andy Buller	Signalling Design Engineer	Network Rail
Lorna Buckland	Risk and Value Analyst	Network Rail
John Holdway	Risk and Value Manager	Network Rail

8. Revision History

Table 8.1 Document History

Version	Date	Author	Comments
0.1	16 th May2014	Lorna Buckland	Draft
1.0	27 th May 2014	Lorna Buckland	Final – To be QA'd

9. Full Risk Register

Risk			Current Qualitative Impact			Current Score	
Risk ID	Risk Title	Risk Description	Probability	Cost	Time		
328074	NR timetable will not accept services	There is a risk that the current timetables do not have the capacity to accommodate the new Metrowest services, therefore the NR timetable will not accept the services.	3: Medium	4: High	NIL	7	Major
328136	Additional works required at Avon Road	There is a risk that more works are required at Avon Road, such as embankment works / reconstruction of the asset leading to costs over and above the provision in the estimate.	3: Medium	4: High	NIL	7	Major
328076	FOC Interface at Bristol	There is a risk that the FOC request additional scope at Bristol	2: Low	4: High	NIL	6	Significant
328140	Ergonomics of signalling systems	Due to additional signals required on the network to accommodate the Metrowest services, there is a risk that changes to ergonomics of signalling systems causes additional work not estimated for.	2: Low	4: High	NIL	6	Significant
328073	DCO causes additional works	There is a risk that additional works may be identified during the DCO process in order to meet their requirements.	3: Medium	3: Medium	NIL	6	Significant
328108	Additional works at Portished station	Additional works at Portished station	3: Medium	3: Medium	NIL	6	Significant
328127	Construction road access restrictions	Construction road access restrictions (Bristol port negotiations, unknown scope)	3: Medium	3: Medium	NIL	6	Significant
328134	Rail possession access	Rail possession access at Double Junction and freight line access agreement	3: Medium	3: Medium	NIL	6	Significant
328070	Inflation assumptions under estimate costs	Inflation assumptions under estimate costs	2: Low	3: Medium	NIL	5	Significant
328071	Additional deliverables at Detailed Design	Additional deliverables at Detailed Design	2: Low	3: Medium	NIL	5	Significant
328072	Scope review due to stakeholder pressure (incl Ashton Gate)	Scope review due to stakeholder pressure (incl Ashton Gate)	2: Low	3: Medium	NIL	5	Significant
328075	Network change process causes additional cost	Network change process causes additional cost	2: Low	3: Medium	NIL	5	Significant
328109	Additional works at Portbury Old Station	Additional works at Portbury Old Station (e.g. land / property acquisition) leading to costs over and above provisions made for in the estimate.	2: Low	3: Medium	NIL	5	Significant
328113	Interfaces with other NR projects	Due to other NR projects in the Bristol area (BASRE etc) and a limited supply of resources / access / plant etc, there is a risk that the Metrowest works are disrupted.	2: Low	3: Medium	NIL	5	Significant
328138	Contaminated land issues	Risk of contaminated land leading to additional waste disposal costs over and above provision in the estimate.	2: Low	3: Medium	NIL	5	Significant
328150	Additional track formation work	Additional track formation work (incl drainage) leading to costs over and above the estimate.	2: Low	3: Medium	NIL	5	Significant
328153	DCO evidence base causes additional work	DCO evidence base causes additional work	2: Low	3: Medium	NIL	5	Significant

Infrastructure Projects

328112	Gallingway footbridge - local impact	There is a risk that works to Gallingway footbridge causes a negative local impact (for e.g. environmental impact) not costed for in the estimate.	3: Medium	2: Low	NIL	5	Significant
328126	Stakeholder engagement activities over and above estimate	Stakeholder engagement activities over and above estimate (i.e. public meetings, political, additional meetings)	3: Medium	2: Low	NIL	5	Significant
328137	Additional minor structure repairs / renewals	Additional minor structure repairs / renewals over and above provisions in the estimate	3: Medium	2: Low	NIL	5	Significant
328139	Additional requirements of statutory environmental bodies	There is a risk that statutory environmental bodies require additional assessments / field studies leading to costs over and above the provisions within the estimate and programme delay.	3: Medium	2: Low	NIL	5	Significant
328141	GSMR will cover all services	It has been assumed that existing GSMR infrastructure is sufficient, and therefore no works have been costed for. There is a risk that GSMR infrastructure is not sufficient and additional works is required at additional cost to the project.	1: Very Low	3: Medium	NIL	4	Minor
328069	Additional works requested by local transport body	Additional works requested by local transport body	2: Low	2: Low	NIL	4	Minor
328077	Resource limitations	Resource limitations (i.e. contractors, project staff, equipment, railway resource) leading to programme delay or additional costs associated with resource premiums.	2: Low	2: Low	NIL	4	Minor
328078	Environmental issues	Environmental issues (habitats, watercourses, protected species, flood, Japanese knotweed) causing additional costs and programme delay	2: Low	2: Low	NIL	4	Minor
328105	Impact on residents property	There is a risk that the construction and/or final product disrupt / negatively impact local residents due to noise, construction, visual impacts and operational use, leading to claims over and above the provisions in the estimate.	2: Low	2: Low	NIL	4	Minor
328107	Additional works at Pill Station	Additional works required to the car park at Pill Station.	2: Low	2: Low	NIL	4	Minor
328143	Archaeological works	Archaeological works leading to costs over and above the estimate and programme delay.	2: Low	2: Low	NIL	4	Minor
328151	Procurement delays	Procurement delays due to methodology and market place environment.	2: Low	2: Low	NIL	4	Minor
328155	Pill Tunnel emergency escape road	An escape Road is required at Pill Tunnel, however the planned site for the road is on privately owned land, therefore there is a risk that the cost of acquiring the land is more than envisaged or an alternative escape road will need to be designed and delivered.	2: Low	2: Low	NIL	4	Minor
328156	Additional vegetation clearance	Additional vegetation clearance	2: Low	2: Low	NIL	4	Minor
328157	Train operation assets	Train operation assets (maintenance / no of units)	2: Low	2: Low	NIL	4	Minor
328152	Standards change	Standards change	1: Very Low	2: Low	NIL	3	Minor
328144	Unidentified utilities leading to additional diversions	There is a risk that unidentified services will be identified on site leading to additional service diversions at costs over and above the estimate and programme delay.	NIL	NIL	NIL	0	NIL
328145	Ground obstructions	Ground obstructions, such as asbestos, leading to additional works and costs over and above the estimate.	NIL	NIL	NIL	0	NIL

Infrastructure Projects

328146	Bathampton turn back	Bathampton turn back (OHL rework / world heritage)	NIL	NIL	NIL	0	NIL
328147	Earlier opportunity to deliver bathampton works	Earlier opportunity to deliver bathampton works as part of GWEP	NIL	NIL	NIL	0	NIL
328148	Objections to closure of User Worked Crossings	Objections to closure of User Worked Crossings	NIL	NIL	NIL	0	NIL
328149	Highway Impact at Ashton Gate Level Crossing	Highway Impact at Ashton Gate Level Crossing	NIL	NIL	NIL	0	NIL
328154	New car park drainage issues	There is a risk that drainage issues are identified at the new car park at Pill Station, therefore leading to additional work at extra over cost.	NIL	NIL	NIL	0	NIL