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Appendix A

CONTRACT REQUIREMENTS

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Version 1.0

CONTRACT REQUIREMENTS

GRIP Stage 2 - Feasibility

139797

MetroWest Phase 2



CONTROLLED COPY NUMBER	

Produced by: *Rachel Leighfield Finch*
Project Development Manager

Date: *7th August 2014*

Accepted by: *Andrew Holley*
Senior Development Manager

Date: *12th August 2014*

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- Appendix F: Hazard Management Procedure for IP Western & Wales Projects

Issue Record

Issue No	Brief History of Amendment	Date of Issue
0.01	First Draft	11 August 2014
1.00	Contract Requirements	19 August 2014

Distribution List

Name	Position / Organisation	Issue No.
Andrew Holley	Senior Development Manager	0.01
Robin Emmons	DPE	0.01
Simon McClune	Procurement Manager	0.01
Karl Hatala	Senior Project Manager, URS	1.00
Peter Hillier	Technical Manager (Track Design)	1.00

1. EXECUTIVE SUMMARY

This Project is Third Party funded through South Gloucestershire Council on behalf of the West of England Partnership. The West of England Partnership consists of North Somerset, Bath & North East Somerset, Bristol City and South Gloucestershire Councils who are promoting MetroWest Phase 2 to deliver:

- Half hourly train services to Weston Milton and Yate and hourly services on the re-opened Henbury line (capacity for two new Stations) with additional Station(s) on Filton Bank.
- Train services to start operating in 2021 (or sooner if viable)

The West of England Partnership (WoEP) have requested Network Rail undertake a GRIP 2 study to develop the options for the MetroWest Phase 2 scheme.

2. INTRODUCTION – STRUCTURE OF WORKSCOPE

The Workslope is made up of the Contract Specific Requirements (Section 3) and Standard Technical Requirements (Section 6).

Sections 3 and 6, together with any Annexes and all documents referenced by them, form the **Technical Workslope**.

3. CONTRACT SPECIFIC REQUIREMENTS

A GRIP 2 study for MetroWest Phase 1 to re-open the Portishead line completed in July 2014. This proposal is to develop MetroWest Phase 2 GRIP 2 options building on the development work already undertaken for Phase 1.

A capacity modelling study is currently being undertaken by Network Rail to identify a timetable specification which delivers the requirements of MetroWest Phase 2. The results are due at the end of September 2014 and will be summarised in a Capacity Modelling Report. The outcome of the modelling work may identify a requirement for additional infrastructure which would be subject to the change control process.

The GRIP 2 study is based on the following assumptions:

- Filton Bank 4-tracking enhancement is delivered
- An enhanced capability of Bristol East Junction
- Bristol Temple Meads IEP Platform 1 extension completed
- Bristol Parkway Platform 1 completed

The GRIP 2 Report to be produced under this commission will be written by the Consultant in conjunction with Network Rail. Network Rail will own the Report.

A Draft Route Requirements Document (RRD) has been produced for this project, see Appendix C.

The Consultant is required to undertake the following:

- Review the 'Bristol New Stations High Level Assessment Study – locations on Filton Bank' GRIP 1 report v5 dated May 2014 prepared for Bristol City Council by CH2M Hill (Appendix D) and:
 - In conjunction with the proposed Filton 4-track design provide engineering comments
 - Identify any parts within the CH2M Hill report that need further consideration and/or development.
 - Stations are to be 4 car length with passive provision for 5 car lengths

- Explore two options to enable passenger services to operate to Henbury and provide concept design for:
 - A bi-directional circular route comprising of Narrowways Hill Junction, Avonmouth, Hallen Marsh Junction, Filton West Junction No.2, Filton Abbey Wood and an assessment of the impact on the Seven Beach Line.
 - A spur line to Henbury, utilising the existing freight lines from the Filton West Junction direction, comprising of a turn-back facility at a to be determined Henbury Station.
 - Identify and address any infrastructure work associated with upgrading the existing freight line to passenger status.



- Provide concept design for stations and associated infrastructure at:
 - Refer to 'Bristol North Fringe Stations' Report dated March 2014 prepared for South Gloucestershire Council by CH2M Hill (Appendix E).
 - Filton North
 - Henbury - look at the old Station site and a site east of the A4018
 - Stations are to be 4 car length with passive provision for 5 car lengths
- Assess the impact on road vehicles at St. Andrews Road level crossing and Avonmouth Dock Crossing and propose options to mitigate the effect.
- Provide design to allow trains to turn-back at Yate (4 car length provision for 5 car lengths); consideration to be given to the detraining of passengers on Platform 1, passing services and the provision of facilities for passengers travelling in the Down direction.
- Consider the location of existing pathways and cycle ways and determine whether they are appropriately located.
- Provide an Environmental Appraisal

- Consideration to be given to the future construction strategy and access (possession) requirements; recommendations to be provided.
- Identify any 3rd party land requirements including maintenance access points
- Establish and identify any Consents and/or Planning requirements
- Investigate and identify any infrastructure issues associated with bringing the commissioning forward to 2019.
- Consideration to be given to and interface with other key rail projects being undertaken in the Bristol area for example but not limited to, GWEp, IEP, BASRe, Portway Station Park and Ride & the new freight link for SITA.
- Provide a Risk and Opportunities Register
- Provide passive provision to enable future electrification works
- Information is to be provided to the Network Rail Estimator in a timely manner to enable the estimate to be included within the Final Options Report

Note: Signal design will be undertaken by Network Rail Signalling Design Group (SDG)

4. METHOD OF WORKING

The GRIP 2 study will provide a Feasibility report articulating the options to address that outlined in section 2. The report is to contain engineering/technical solutions (supported by drawings/sketches), project schedule, cost estimates, risks and assumptions for each option or options within options. The Report format will use a Network Rail standard GRIP template.

Designs will be reviewed and accepted by Network Rail via the Standard Design Process. Engagement with Network Rail Engineers, Operations, Maintenance and other key personnel is expected.

Stakeholders are to be consulted to ensure appropriate options have been derived; this can be undertaken by Network Rail and/or the Consultant as long as both parties are informed. The Feasibility Report is to provide a basis for future stakeholder consultation to agree the next steps.

4.1 Summary of Outputs at GRIP Stage 2

The Consultant is to provide the following key outputs:

- **Feasibility Report**
 - Produced in conjunction with Network Rail
- **Concept Design**
 - Designs produced are to be accompanied with a commentary within the Feasibility Report. Wording is to give due consideration to the non-technical audience who will read the report.

On completion of the Final Report, the Consultant is to provide 5 x hard copies of the Report and any drawings together with soft copies in both .pdf and their original formats.

5. GENERAL REQUIREMENTS

5.1 Passenger Capacity

The required passenger capacities after project completion will be determined by South Gloucestershire Council as the lead Council for this Project.

5.2 Station Capacity

Passenger demand for individual stations, in terms of numbers entering, leaving and interchange usage will be determined by South Gloucestershire Councils as the lead Council for this Project.

5.3 Capacity Modelling

Network Rail are developing a timetable for the new proposed Henbury Line services and the proposed extension of the Weston-super-Mare - Bristol Parkway services to Yate. With two trains per hour between Weston-super-Mare and Yate stopping at intermediate stations (e.g. Weston Milton). The outputs from the timetable analysis will consist of:

- Henbury circular loop line and Spur options
- Sensitivity test to extend the Bristol Parkway-Yate service to Gloucester

See Appendix A for a map showing the geographic scope for analysis and Appendix B for the Passenger Train Services Specification map.

5.4 Rolling Stock

The train units to be procured for operation of MetroWest Phase 2 shall either be Class 15X (75mph capable) or Classes 158 or 16X (90mph capable) two car train sets. However electrification of the Thames Valley may enable Class 16X DMUs to be cascaded, subject to decision making by the Department for Transport (Dft) and franchisee. The aspiration shall be for 4 and 5 car formations to operate in the future. Platform lengths and or Selective Door Opening options shall be considered.

5.5 Route Clearance

Any infrastructure additions or alterations must not compromise the route clearance of vehicles currently permitted to use the routes covered by this specification, and as specified in the relevant Sectional Appendices. The clearance of vehicles as defined by the Gauging Engineer shall also not be compromised.

5.6 Axle Loads and Route Availability

To be advised

5.7 Freight Loading Gauges

The gauge clearance of any existing structure is not to be reduced by these works. Allowance shall be made for engineering trains which can reasonably be foreseen to need access, for example, typical existing engineering trains and rail mounted plant.

5.8 Freight Services

The existing level of freight train paths to and from Avonmouth Docks shall be maintained as is access to existing freight sidings in Avonmouth / Severnside.

Regulation and operational requirements of the existing freight train paths on the Henbury line are being reviewed as part of the timetable modelling work. This work may identify a requirement for infrastructure enhancement which would be subject to the change control process.

5.9 Depots

There will be no Depot facilities provided by this Project

5.10 Footbridge

The minimum soffit height for new station footbridges shall be such that it provides adequate clearance for future electrification of the route. The Western Electrification and Buildings Route Asset Managers shall be consulted to form an agreed required soffit height during the design process.

5.11 Property Development

The Project shall meet the requirements for actual or passive provision of new facilities.

5.12 Stations (including Buildings, Platforms, Canopies & Facilities)

All new Stations delivered by MetroWest Phase 2 shall be 4 car platform lengths (4x23m) with passive provision for 5 car lengths (5x23m).

New and/or re-opened Stations delivered by MetroWest Phase 2 shall be North Filton and Henbury, with either one Station or two located on Filton Bank, yet to be determined.

An indicative Station location and Station footprint shall be identified. Conceptual design for the new and/or reopened stations shall be provided including planning requirements and consents.

Stations are to be provided with facilities as outlined within either the 'Bristol North Fringe Stations' Report or the 'Bristol New Stations High Level Assessment Study' as applicable to the location of the Station.

5.13 Level Crossings

There are a number of level crossings in the Avonmouth area. A Level Crossing Risk Assessment shall be undertaken for each location to determine the level of protection required for the proposed new passenger train service.

The forecast usage will impact on the road vehicles using the crossings particularly St. Andrews Road Level Crossing. Impact to road users to be assessed and mitigation measures proposed.

5.14 Signalling & Control Operational Requirements

The Project shall meet the specific operations and performance requirements associated with signalling.

5.15 Track

To achieve the required levels of route reliability and sustainability, Track shall be constructed and maintained to the specified track categories.

5.16 Route Crime

Route Crime mitigation measures shall be taken into consideration.

5.17 Land Ownership

Identify any land that may need to be purchased. Any such purchases will be progressed as required through the Development Consent Order process.

5.18 Interoperability

As this scheme intends to change the route strategy of existing lines the interoperability regulations are deemed to apply. Compliance shall be achieved, where reasonably practicable, to accommodate any interoperability requirements. The consultant is to highlight any foreseeable issues in achieving compliance. If required Derogation applications to the Dft (or European Rail Agency when applicable) are to be addressed in GRIP 3.

6. STANDARD TECHNICAL REQUIREMENTS

This section describes the Standard Technical Requirements of the Employer. Such requirements have been written to apply to the standard elements of requirements, which are intended to apply to a number of contracts which the Employer may let with Contractors. Not all modules within this section may apply to the Contract. Those modules, or parts thereof, which apply to the Contract, are those that govern the Services within the scope of the Contract.

MODULE 2-1: General Requirements

Section 3

Network Rail Standards will apply to this work. Any deviations from Standards need to be clearly identified.

Section 8

Passive provision shall be provided for future electrification works.

MODULE: 2-4: Design

Section 6: Standard Design Catalogue – External User Access Request

Access to the Standard Design Catalogue for external users is provided through SDC Admin group in conjunction with Network Rail's IT department.

Company generic logon ID's are generated from the organisation's name and associated with a key contact. SDC logons are for use by all staff at a company and it is suggested these are made available via the company intranet site.

To create a new company logon the following details should be submitted to SDCAdmin@networkrail.co.uk

- Organisation / Company Name:
- Main primary contact Name:
- Main contact email address:
- Estimated number of SDC users:

Upon submission of company details to SDC Admin, access information will be sent to the primary contact within 1-3 days. Once this is received the **Standard Design Catalogue** can be accessed at <https://sdc.hiav.networkrail.co.uk>

Section 11: Combined IDC/R to be held at appropriate times during the development of the works. Any requirement to IDC with outside parties will be coordinated by the DPE as necessary.

Section 12: Where the designer foresees a potential non-compliance to be encountered at a later GRIP stage then this shall be highlighted and included on the risk register. This shall also consider TSI's where interoperability regulations are deemed to apply.

Section 13: Hazard Workshops will be co-ordinated by the Network Rail Project Manager

MODULE 2-5: SUBMISSIONS FOR ACCEPTANCE

MODULE 2-6: TRACK

Section 5.2.2: Network Rail to supply a forecasted EMGTPA value to enable an assessment to be made on suitability for intended use.

Section 6.3.2: Consultant shall consider any existing drainage and outfalls and comment on suitability for use in the future.

Section 6.4.1: Network Rail will provide Track Category information when calculated and if relevant to this phase of work.

MODULE 2-7: STRUCTURES AND CIVIL ENGINEERING

MODULE 2-8: BUILDINGS, BUILDING SERVICES AND STATION WORKS

MODULE 2-13: E&P DISTRIBUTION SYSTEMS

MODULE 2-19: TELECOMMUNICATION WORKS

MODULE 2-23 MAINTENANCE

7. HEALTH & SAFETY

7.1 Legislation and Standards

The Supplier shall comply with all applicable:

- European Union (EU) Directives
- Legislation
- Railway Group Standards
- Railway Safety and Standards Board (RSSB) Guidance Notes
- Network Rail Standards
- Approved Codes of Practice

7.2 CDM

For this stage of the project under Construction; Design Management Regulations (CDM) 2007, it is deemed as not being notifiable to the HSE, therefore a Pre-Construction Information Pack is not required. However, CDM still applies and a CDM-c will be appointed.

It is the responsibility of the Client to provide information relevant to the project. The information is to be taken into account by the Consultant when developing their Construction Phase Plan, Work Package Plans and Task Briefing Sheets.

For non-notifiable works: include where an existing H&S Plan or H&SMS is not in place that adequately addresses the arrangements for the specific site activity.

The Consultant shall provide full and free access to the Employer's Representative for the purpose of carrying out audits and/or Site inspections to monitor compliance

The following are appointed under the CDM Regulations:

Client:	Network Rail Infrastructure Limited Kings Place, 90 York Way, LONDON N1 9AG
Client's representative:	Andrew Haynes – Route Delivery Director, Infrastructure Projects West of England
CDM Co-ordinator:	Network Rail Infrastructure
CDM Co-ordinator Representative:	TBA
Person Acting on Behalf of the Consultant	TBA
Designer (where applicable):	TBA
Person Acting on Behalf of the Designer:	TBA

7.3 Project Hazard Log

The Designer shall identify any significant hazards associated with the Project and record them in a Project Hazard Log. This log must be made available on completion of GRIP Stage 2. A copy of Hazard Management Procedure for IP Western & Wales Projects ref: WW IMS 1056 v1.0 dated 1st December 2012 is attached, see Appendix F.

8. KEY PROJECT PERSONNEL

The Network Rail main contact will be:

Rachel Leighfield Finch
1st Floor Milford House, 1 Milford Street,
SWINDON SN1 1DW
Telephone: 07917578529
Email: Rachel.Leighfield@networkrail.co.uk

Other key Network Rail personnel are:

Name	Role	Contact Number
Andrew Holley	Senior Development Manager	07515627296
Andrew Haynes	Route Delivery Director	07799718285
Jamie Davies	Senior Project Manager	07771830584
Robin Emmons	Designated Project Engineer (DPE)	07919307725
Simon McClune	Procurement Manager	07454271091
Darren Campbell	Commercial Manager	07711600792
Alastair Mair	Assistant Commercial Manager	01793 389783

9. COMPLETION DATES AND TIMESCALES

Stage	Item	Completion by Date
GRIP 2	Contract Award	05/09/14
GRIP 2	Draft Feasibility Report	10/10/14
GRIP 2	Capacity Analysis (Network Rail)	28/09/14
GRIP 2	Estimate (Network Rail) – 5 x weeks	14/11/14
GRIP 2	Final Feasibility Report	21/11/14

10. PROJECT REPORTING

Once the Project has been awarded Network Rail will hold a Start-up Meeting.

Weekly Progress meetings will be arranged to discuss engineering issues and risks. Allow an hours duration for each meeting. Dates and Agenda items are to be discussed and agreed at the Start-up meeting.

The Progress meeting which falls within Week 2 each Period will also include the formal Project Progress items such as schedule update, costs, risks etc. An additional hour should be allowed for the meeting in Week 2 on top of that allowed for the engineering progress meeting.

There will potentially be:

- 1 x Project Start Up Meeting and
- 12 x Weekly meeting for engineering issues
- 4 x Periodic Progress Meetings (Week 2)
- 1 x Engineering Review Meeting

Wherever possible meetings will be held in Swindon however provision should be made for 4 of the above meetings to be held in either Bristol or Yate.

11. COMMERCIAL

The Consultant is to provide their costs for undertaking the feasibility work identified within this document in line with the not to be exceeded unit rates within the Multi-Functional Design (MFD) framework

12. COST AND PROGRESS REPORTING

At Progress meetings the Consultant is expected to provide the following:

A schedule showing:

- Key activities & dates
- Percentage of work complete
- Remaining duration
- Critical path

A one page Summary Report showing:

- Progress to date
- Key issues
- Change Control

Cost Summary

- A table by period showing forecast to go and cost of work done to date

13. CHANGE CONTROL

The Consultant is required to submit early warning change requests, accompanied by detailed substantiation and cost breakdowns as soon as it becomes apparent there is a change to cost, time or specification.

14. SAFETY KPI's

The Consultant is to complete the Network Rail HSE online reporting system each period for the duration of the Project.

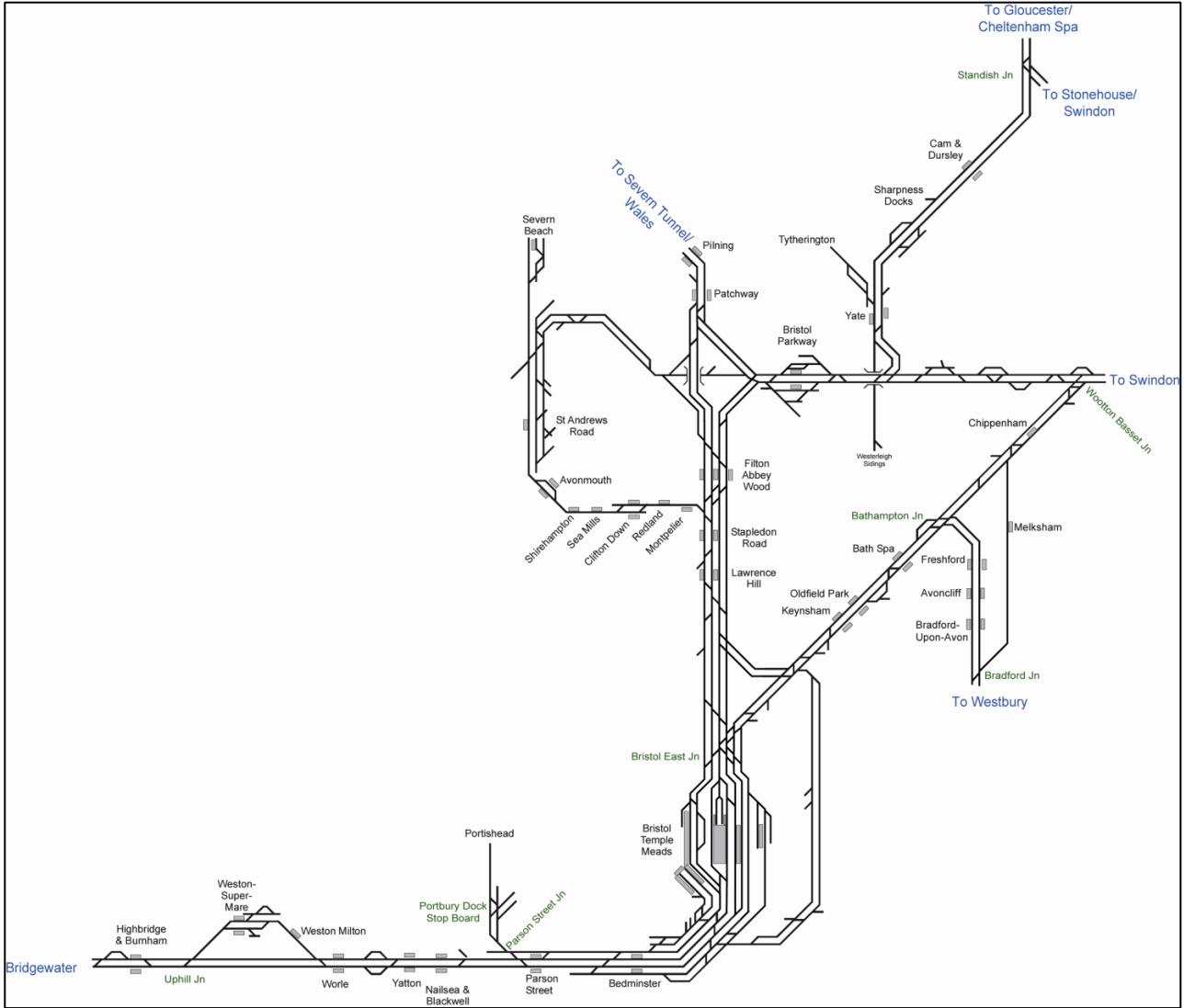
15. PROJECT DOCUMENTATION

Supporting information is provided on CD – 139797 MetroWest Phase 2 with a table of contents.

16. ABBREVIATIONS

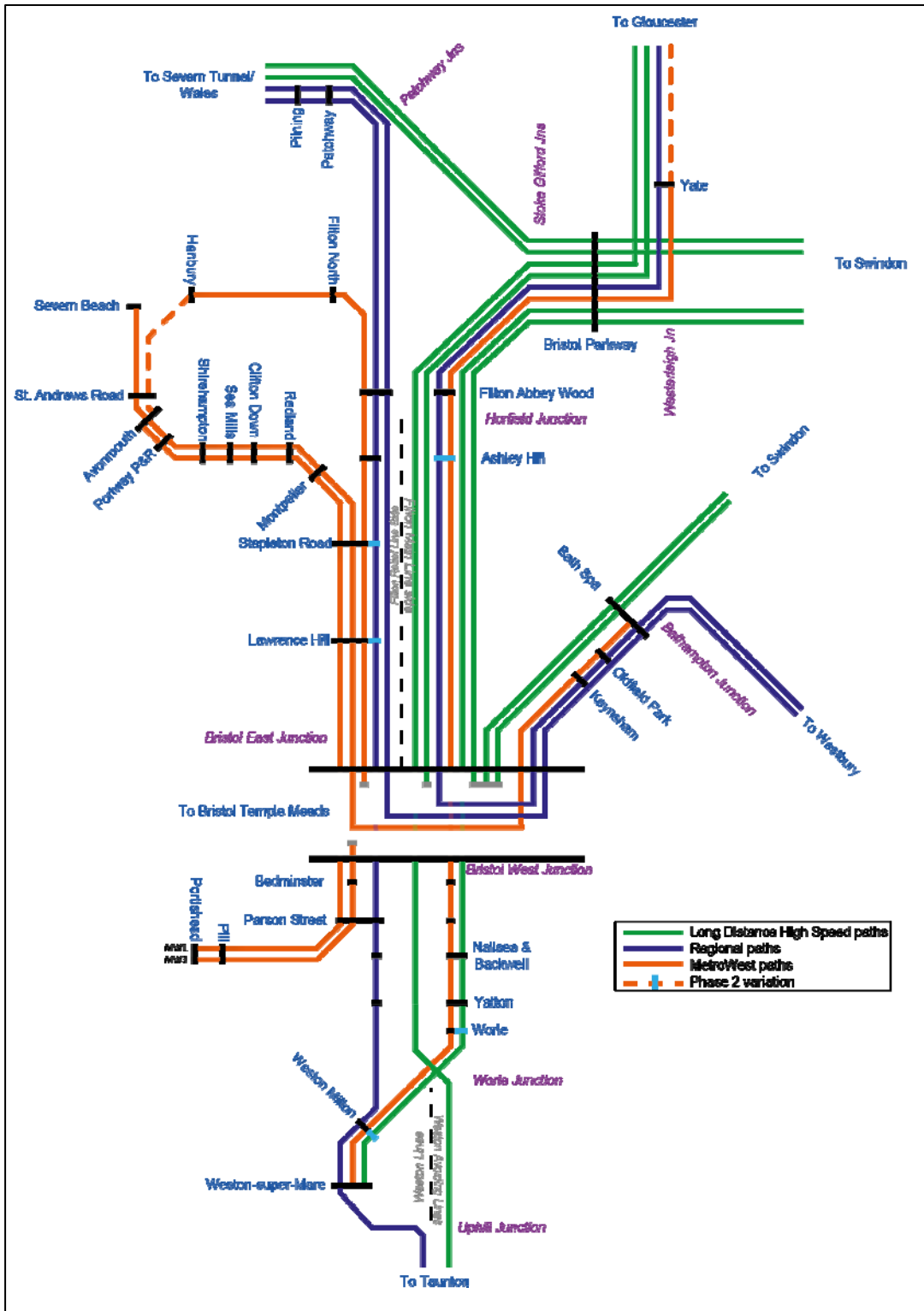
BASRe	Bristol Area Signalling Renewal & Enhancement
CDM	Construction (Design and Management) Regulations 2007
CDM-c	Construction, Design & Management Co-ordinator
Dft	Department for Transport
DPE	Designated Project Engineer
E&P	Electrification & Plant
EMGTPA	Equivalent Million Gross Tonnes Per Annum
GRIP	Governance of Railway Investment Projects
GWEP	Great Western Electrification Project
H&SMS	Health & Safety Management Systems
HSE	Health & Safety Executive
IDC/IDR	Integrated Design Check / Review
IP	Infrastructure Projects
IT	Information Technology
IEP	Intercity Express Programme
KPI	Key Performance Indicator
MFD	Multi-Functional Design framework
RRD	Route Requirements Document
SDC	Standard Design Catalogue
SDG	Signal Design Group
TSI	Technical Specification for Interoperability
WW IMS	Western & Wales Information Management System
WoEP	West of England Partnership

Appendix A: Geographic Scope Map



This diagram represents the timetable geographic scope and does not fully reflect current or future infrastructure layouts. It should be used for general reference only

Appendix B: Passenger Train Service Specification Map



Appendix C: Route Requirements Document (Draft)

**Appendix D: Bristol New Stations High Level Assessment Study
– locations on Filton Bank' GRIP 1 Report v5**

Appendix E: Bristol North Fringe Stations Report

Appendix F: Hazard Management Procedure for IP Western & Wales Projects

Route Requirements Document MetroWest Phase 2

Route Requirements Document Template ref: NR/PSE/FRM/0240, Issue 02, 10th December 2013

**Prepared by : Andrew Holley, Programme
Development Manger**

A.H. Holley Date: *24/02/2015*
(Print Name)

**Approved by: Steve Pearson , Track Route Asset
Manager (Lead)**

Steve Pearson Date: *25/2/15*
(Print Name)

**Accepted by: Rachel Leighfield Finch,
Development Manager**

R. Leighfield Finch Date: *25/02/15*
(Print Name)

**Endorsed by : Martin Worsfold, Programme
Manager**

M. Worsfold Date: *25/02/15*
(Print Name)

**Approved by: Peter Martell, Signalling Route
Asset Manager**

..... Date:
(Print Name)

**Approved by: Jeff Davies, E&P Route Asset
Manager**

J. Davies Date: *24/02/2015*
(Print Name)

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Approved by: Mike Smith, Structures Route Asset Manager

M. Smith Date: 24/2/15
(Print Name)

Approved by: Simon Gyde, Buildings Route Asset Manager

S. Gyde Date: 24/2/15
(Print Name)

Approved by: Nicholas John, Earthworks Route Asset Manager

N. John Date:
(Print Name)



Document History

Issue	Date	Originator	Modification
1.0	19-Feb-15	Andrew Holley	Final

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1 Purpose

The purpose of this document is to define the scope of works and deliverables required to support the development of the MetroWest Phase 2 options to GRIP Stage 2.

The West of England Partnership (WoEP) has requested that Network Rail undertake a GRIP 2 study to develop the options for the MetroWest project Phase 2:

- Phase 2 – half hourly train services to Weston Milton, Yate and hourly services on a re-opened Henbury line (capacity for two new stations) with additional station(s) on Filton Bank, services starting operation in 2021 (or sooner if viable).

A capacity modelling study is being undertaken by Network Rail to identify a timetable specification which delivers the requirements of the MetroWest Phase 2 building on the modelling completed for Phase 1. The results of this work will be summarised in a Capacity Modelling Report.

Further iterations may be needed pending the outcome of this modelling in terms of fit with project objectives and train unit requirements.

The Network Rail Economic Analysis Team is undertaking a business case economic analysis and appraisal to support a wider socio-economic appraisal (value for money assessment and Benefit Cost Ratio) for the GRIP 2 Phase 2 scheme being undertaken by the WoEP.

The GRIP 2 study will be delivered through a Development Services Agreement (DSA) with South Gloucestershire Council, the Lead Authority for Phase 2.

The study is based on the following infrastructure assumptions:

- Filton Bank 4 tracking enhancement is delivered
- Enhanced capability of Bristol East Junction
- Bristol Temple Meads IEP Platform 0 and 1 extension completed

The Phase 2 infrastructure requirements to be taken forward at GRIP 2 are summarised as:

- a. The reintroduction of passenger services to the Henbury Line as either a Loop or a Spur including the provision of two new stations
- b. The provision of a turnback facility at Yate.
- c. The provision of a new station on the Filton Bank

A GRIP 2 study for MetroWest Phase 1 to re-open the Portishead line was undertaken in 2014. And the proposal is to develop a MetroWest Phase 2 GRIP 2 Options report building on the development work already undertaken for Phase 1.

1.1 Background Information

The MetroWest project forms an important part of the West of England's economic growth agenda. Four west of England councils (Bath & North East Somerset, Bristol City, North Somerset and South Gloucestershire) have entered into an Initial Promotion Agreement setting out how the councils are working together to deliver the project. The councils have nominated South Gloucestershire Council as the lead council for taking the detailed technical work for this phase forward, supported by the other councils.

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The development strategy is being driven by the Councils Strategic Economic Plan (SEP), submitted to the Government in March 2014. The SEP and the City Region Deal (CRD) provide the framework for unlocking growth across the West of England Council areas. The city region is set for further population growth which is expected to exceed 1.1million by 2026.

MetroWest Phase 2 will support economic growth within the greater Bristol area, particularly at

- Temple Meads (employment)
- Filton Airfield (mixed)
- North Yate (residential)
- Weston Villages (mixed)
- Avonmouth/Sevenside (employment)

Planning for this growth the region needs to make sure its transport infrastructure is fit for purpose and has the ability to respond to increasing demand, to maximise continued growth. The priorities for the West of England Councils are the following:

- Support economic growth, by enhancing the transport links into and across Bristol City Centre, from Portishead, Bath, Avonmouth / Severn Beach
- Provide a reliable public transport service and more attractive journey times for commuters, businesses and residents through better utilisation of the strategic heavy rail routes.
- Improve accessibility to the rail network with new and re-opened rail stations.
- Reduce the traffic congestion on the Portishead, Bath & Avonmouth / Seven Beach road network.
- Contribute to reducing the overall environmental impact of the transport network.
- To make a positive contribution to the social well being, life opportunities and improved quality of life across the three arterial corridors.
- Provide a rail link between Portishead, Bath and Severn Beach

The GRIP 2 study will review MetroWest Phase 1 GRIP 2 report produced in 2014 against the current project requirements.

The capacity modelling work being undertaken by Network Rail to identify the infrastructure requirements to support the introduction of the proposed Phase 2 service was issued in a draft report in September 2014

The primary focus to date for the development of the timetable and associated business case has been to minimise the number of rolling stock units required. This could result in a service pattern which may introduce a significant level of performance risk, both for MetroWest services and other services in the area. Options to mitigate these risks, such as the introduction of a turnback facility at Yate or an extension of the service to Gloucester are to be considered.

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1.2 Stakeholders

The following stakeholders have been identified:

Name	Role	Contact
Claire Mahoney	Strategic Planner, NS&P	
Simon Maple	Route Sponsor	
Amanda Hoyland	REM	
Jonathan Curnow	BTM Station Manager	
Andy Coston	Area General Manager (Operations), Western Route.	
Roy Evans	Maintenance Delivery Unit, Bristol	
Peter Martell	Route Asset Management (Signalling)	
Steve Pearson	Route Asset Management (Track) Lead	
Jeff Davies	Route Asset Management (E&P)	
Mike Smith	Route Asset Management (Structures)	
Simon Gyde	Route Asset Management (Buildings)	
Nicholas John	Route Asset Management (Earthworks)	
Jacqueline Day	Government & Corporate Affairs	
Sarah Jansons	Commercial and Operational Property	
Andrew Haynes	IP West of England Programme Director	
Jill Poyton	Bristol Area Electrification Sponsor	
John Czyrko	First Great Western	
Nick Gibbons	Freight Operating Companies	
tba	British Transport Police	
John Cherrington	CrossCountry	
Gabrielle Ormandy	South West Trains	
James White	West of England Partnership	
Alistair Rice	South Gloucestershire Council	
Richard Cole	IEP	
Richard Evans	ETCS	
Todd Graham	Bristol City Council	

2 General Description of the Route

2.1 Route Objectives (Problem Statement)

A GRIP 2 study is required to develop the options for the MetroWest project Phase 2 which is defined as:

- Half hourly train services to Weston Milton, Yate and hourly services on a re-opened Henbury line (capacity for two new stations) with additional station(s) on the Filton Bank, services starting operation in May 2021 (or sooner if viable).

The Phase 2 infrastructure requirements to be taken forward at GRIP 2 are summarised as:

- The reintroduction of passenger services to the Henbury Line as either a Loop or a Spur including the provision of two new stations
- The provision of a turnback facility at Yate but with a timetable service option to extend to Gloucester.

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c. The provision of a new station(s) on the Filton Bank

2.2 Route Definition

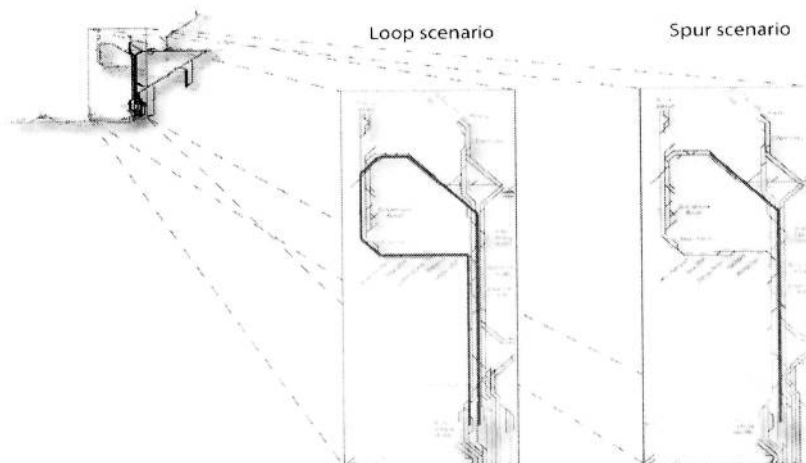
The feasibility option study is required to undertake the following:

- Provide concept design for new stations on Filton Bank (4 car with passive provision for 5) including an assessment of any risks, subject to Bristol City Council GRIP 1 report.
- Provide concept design for stations and associated infrastructure at Filton North and Henbury (4 car with passive provision for 5) including an assessment of any risks. For the location of Henbury Station look at the old Station site and a site east of A4018.
- Explore two options to enable passenger services to operate to Henbury and provide concept design for:
 - A loop line via Avonmouth and Filton Bank and the impact on the Seven Beach Line
 - A spur line via Filton Bank terminating at Henbury
- Address any infrastructure work associated with upgrading the existing freight line to passenger status.
- Assess the impact on road vehicles at level crossings and propose track and signalling options to mitigate the effect.
- Design to allow trains to turn-back at Yate (4 car provision for 5) clear of the main lines; consideration to be given to the detraining of passengers on Platform 1, passing services and the provision of facilities for passengers travelling in the Down direction.
- Consider the location of existing pathways and cycle ways and determine whether they are appropriately located.
- Provide an Environmental Appraisal
- Consideration to be given to the future construction strategy and access (possession) requirements; recommendations to be provided.
- Identify any 3rd party land requirements including maintenance access points
- Establish and identify any Consents and/or Planning requirements
- Address any infrastructure work if required following the outcome of the Railsys Capacity modelling exercise
- Investigate and identify any infrastructure issues associated with bringing the commissioning forward to 2019.
- Interface with and consideration to be given to other key rail projects being undertaken in the Bristol area for example but not limited to, GWEp, IEP, BASRe, Portway Station Park and Ride, Dr Days to Filton Abbey Wood Capacity Enhancement, Filton West Chord re-alignment and impact on timetable and capacity & the new freight link for SITA.
- Provide a Risk and Opportunities Register
- Review of design standards and considerations to enable passive provision for future electrification of the line.

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2.3 Boundaries and Relationships

Strategic Route:	K
Route Number:	15
Operating Route:	Western
ELR and Mileage:	YAT – 119M 50C to 120M 03C AFR – 112M 05C to 118M 61C AMB – 14M 38C to 16m 0c CNX – 2M 06C to 9M 30C FWC – 4M 66C to 5M 41C BSW - 0M 31C to 4M 66C SWB – 107M 14C to 111M 79C BGL2 – 119M14C to 120M 03C
OS Ref:	Various
Asset Type:	Track, Signalling, E&P, Telecoms, Structures, Station Buildings
Asset Address (if applicable):	Various



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2.4 Assumptions, Dependencies, Constraints & Risks

2.4.1 Assumptions

Reference	Details
A-MW2-1	The project shall use equipment compatible with the signalling provided by the Bristol Area Signalling Renewals and Enhancements project and the existing equipment within the St Andrews Road Signal Box Area.
A-MW2-2	It is assumed that electrification of the Thames Valley will enable cascading of DMUs class 16x, subject to decision making by DfT and franchisee. These arrangements will be progressed further through a Rolling Stock Strategy post GRIP 1-2. Also it is assumed that the cost of any works (e.g. platform gauge works etc) to enable the operation of class 16x will be met by others, since their introduction would be before MW Phase 2 opens in 2021.
A-MW2 -3	The location of the new rail stations will be proposed by South Gloucestershire and Bristol City Councils within the GRIP 1-2 contract time scales. Both Councils have recently consulted on the possible locations for the stations however; further consultation will be needed before the station locations can be finalised. It is recognized that the station locations will need to be finalised before completion of GRIP 3.
A-MW2-4	Freight paths presently held by Bristol Port Company for Avonmouth freight line will not increase beyond that currently
A-MW2-5	Maintenance access points where required will be granted.

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A-MW2-6	<p>The timetable work will be based on the Crossrail Iteration 5 timetable for 2019, or its successor at the time of commissioning; this assumes the existing pattern of services, plus the additional Paddington – Parkway – Temple Meads IEP and MetroWest Phase 1 plus:</p> <ul style="list-style-type: none"> • GW electrification • IEP trains and depot at Filton; • Parkway 4th platform; • Temple Meads renewal and improvement projects (including IEP platform 0); • That any remodelling or renewal of Bristol East Junction does not reduce the capability and flexibility beyond what is possible at present • Area re-signalling (excludes St Andrew’s Road Signal Box, which remains as now); • Bristol-Birmingham journey time enhancements; • Bristol-Bridgwater journey time enhancements; • Miscellaneous renewals; • Freight gauge improvements; • Potential electrification of the West of England suburban rail network; • Provision of existing and forecast freight paths to/from Avonmouth/Sevenside in discussion with the Port of Bristol and SITA for both loop and spur operation of the Henbury Line; • No additional X-Country service paths required; • The Cribbs Patchway New Neighbourhood proceeds as planned in the Adopted South Gloucestershire Core Strategy and SPD; <p>Use of either class 15X (75mph capable) or Classes 158 or 16X (90mph capable) two car train sets.</p>
A-MW2-7	Any power upgrades will have been completed as part of BASR works
A-MW2-8	No listed building constraints
A-MW2-9	The existing underline structures are capable of supporting any planned increase in track and ballast loading resulting from the new track works
A-MW2-10	Rights for land purchases will be granted as required through the Development Consent Order process
A-MW2-11	The West of England Partnership will fund the maintenance of the new assets until they have been included within the Regulated Asset Base.
A-MW2-12	The new proposed station at Portway Park and Ride is operational
A-MW2-13	The works undertaken as part of the project will not preclude future electrification of the lines affected
A-MW2-14	If required a suitable location can be identified to regulate freight trains to Avonmouth

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A-MW2-15	The timetable modelling work will be undertaken by the Network Rail Capability Modelling Team
A-MW2-16	The proposed new station(s) on the Filton Bank will only require passive provision for a 5-car platform length.
A-MW2-17	The proposed alterations to the Filton North Chord will not impact the service proposals

2.4.2 Dependencies

Reference	Details
D-MW2-1	This Project is linked with and dependent on the planned resignalling of the Bristol Area due for commissioning December 2015 and should seek to optimise the benefits this alignment could bring.
D-MW2-2	The output from the next stage of the timetable capacity modelling is required to confirm infrastructure requirements
D-MW2-3	The project will be delivered at part of the Integrated programme of all CP5/6 works in the Bristol area
D-MW2-4	Railway industry approval of the project through the IPG, RSPG and Network and Station Change processes.
D-MW2-5	Completion of the Bristol East Junction, MetroWest Phase 1, Dr Days to Filton Abbey Wood Capacity Enhancements project and Bristol Temple Meads Additional Platform Capacity.

2.4.3 Constraints

Reference	Details
C-MW2-1	The project is constrained by the topographical features including Charlton Tunnel, limits of the land available, and the existing railway infrastructure including sidings and depots.
C-MW2-2	The delivery programme is potentially constrained by the interfacing projects identified and the available industry resources.
C-MW2-3	Construction access is constrained by the availability of suitable lay-down areas.
C-MW2-4	The construction programme will be constrained by the need to provide freight train services into Avonmouth Docks
C-MW2-5	The project will be required to take direction from the Planning Integration Team which may constrain the programme durations and resources
C-MW2-6	Extensive re-gauging of the Bristol Temple Mead platforms to accommodate a higher speed Through Alignment on the approach to the station.

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2.4.4 Risks

Reference	Details
R-MW2-1	Delayed delivery of the planned CP 5 signalling and track renewals
R-MW2-2	Failure to obtain Planning Consents
R-MW2-3	Environmental constraints
R-MW2-4	Underground obstructions
R-MW2-5	Archaeological remains
R-MW2-6	Failure to agree land access
R-MW2-7	Contaminated ground
R-MW2-8	Substantial strengthening works required to the existing infrastructure
R-MW2-9	Additional infrastructure requirements resulting from further capacity modelling / Client requirements / asset condition.
R-MW2-10	Design Interfaces with other Control Period 5 projects and programme (BASR commissioning)
R-MW2-11	Possession access time and rail industry resource constraints
R-MW2-12	Lack of Signalling Testers to commission staged work.
R-MW2-13	Introduction of signalling infrastructure alterations in the St Andrews Road signal box due to current age and complexity
R-MW2-14	Extensive additional Infrastructure requirements to maintain current freight services levels / paths into Avonmouth docks
R-MW2-15	Insufficient physical room for proposed new layout as design develops
R-MW2-16	Availability of 3 rd Party land for new stations
R-MW2-17	The availability of railway industry resources to deliver the project within the required timescales
R-MW2-18	3 rd Party developments require alternative design proposals.
R-MW2-19	Delay in the delivery of other associated enhancements projects
R-MW2-20	Increased Level Crossing closure times leads to an increase in vehicular and pedestrian mis-use
R-MW2-21	Additional infrastructure interventions required to deliver selected train service specification option.

2.5 Whole Life Cost Analysis

A Whole Life Cost analysis will be undertaken as part of the GRIP 3 study.

2.6 Route Key Milestones and Configuration States

Milestone/ GRIP stage	Plan Milestone	Comments
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(end)		
1	-	n/a
2	31 st March 2015	Stage Gate 2 passed
3 /4	tba	
5	tba	
6(Commissioning)	May 2021	New timetable introduced
7	October 2021	
8	May 2022	

The project sits within the Bristol Area Configuration Landscape and key dates are subject to change control via the Bristol Area Programme Integrating Meeting.

2.7 Route Acceptance Strategy

- AIP approval at GRIP stage 3.
- CSM verification approvals
- Handback Certification and completion of the Health and Safety file
- Evidence that CDM duties have been discharged
- Entry into Service certification
- Maintenance Plan / AMP
- Interoperability Technical Files
- Completion of Stage Gate reviews

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Req. ID	Source Reference	Requirement and Heading	Priority	Acceptance Criteria	Supporting Information	Assumption
RR-MW2-1104		3 Route Requirements				
RR-MW2-1105		3.1 Deliverables				
RR-MW2-1106	Client	<p>The Phase 2 infrastructure requirements to be taken forward for development shall be:</p> <ul style="list-style-type: none"> a. The reintroduction of passenger services to the Henbury freight line as either a Loop or a Spur including the provision of two new stations b. The provision of a turnback facility at Yate clear of the main lines. c. The provision of a new station(s) on the Filton Bank 	High	Validation with the Timetable Capacity modelling report	Timetable Modelling Capacity report	Infrastructure requirements may change as a result of timetable capacity modelling
RR-MW2-1107	Client	The deliverables listed in Appendix A shall be produced and delivered at the required GRIP stage.	High	Deliverables listed in Appendix A are produced to the satisfaction of the RAM / Sponsors at the identified GRIP stages.	None Identified	None Identified
RR-MW2-1108	Client	The layout design and delivery shall be integrated with the planned Bristol Area Programme	High	Integrated within the Bristol Area Configuration Landscape produced to the satisfaction of the Sponsor	Current controlled version of the Bristol Area Programme Project List and Configuration Landscape	None Identified

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Req# ID	Source Reference	Requirement and Heading	Priority	Acceptance Criteria	Supporting Information	Assumption
RR-MW2-1109	Client	The proposal developed shall seek to deliver the lowest Whole Life Cost and a BCR greater than 2	High	WLC considered to the satisfaction of the Sponsor and the IP Delivery Director	Whole Life Cost guide line followed	Project compliant with current asset policy
RR-MW2-1110	Client	The identified infrastructure interventions shall be available for the introduction of the new timetable service in May 2021	High	All required entry into service documentation completed	None Identified	None Identified
RR-MW2-1111	Sponsor	All options shall be validated with key Stakeholders for each GRIP stage.	High	Workshop record notes accepted by Stakeholders	VM 1 Workshop notes	None Identified
RR-MW2-1112	Client	Interventions proposed shall be capable of interfacing with existing infrastructure and other projects being delivered within the Control Period.	Medium	Completion of IDC/IDR and inclusion within and integrated delivery programme	None Identified	None Identified
RR-MW2-1113	Sponsor	MetroWest Phase 2 shall not constrain the delivery of MetroWest Phase 1, and other committed projects.	High	Agreed integrated delivery programme	None Identified	None Identified
RR-MW2-1114	Sponsor	All the consents required to deliver the project shall be obtained	High	Agreed delivery timescales	Agreed list of required consents	None Identified
RR-MW2-1146		3.2 Safety Requirements				

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Req ID	Source Reference	Requirement and Heading	Priority	Acceptance Criteria	Supporting Information	Assumption
RR-MW2-1147	Client	The project shall comply with the requirements of all relevant legislation, company policies and standards, whether or not reference is made to them in this document.	High	Provision of Project Safety Strategy produced to the satisfaction of the Sponsor	NRAP, CSM Interoperability (TSI) documentation	Notifiable Project
RR-MW2-1148	Client	The Construction (Design and Management) Regulations shall apply to this project.	High	Confirmation that CDMc has been appointed	Appointment letter to CDMc issued	None Identified
RR-MW2-1149	Client	This project is a notifiable project and the arrangements shall also comply with company standard NR/L2/INI/CP0047.	High	The Project is notified to the ORR, confirmation received and provided to the Sponsor	Notification form completed	Notifiable Project
RR-MW2-1150	Client	This Project shall comply with the requirements of Standard NR/L2/RSE/0001 "Safety Verification".	High	The project category is provided by NRAP	None Identified	None Identified
RR-MW2-1151	Client	The works shall demonstrate and deliver a level of safety risk for the project is As Low As Reasonable Practicable	High	Approved and accepted Safety Case	None Identified	None Identified
RR-MW2-1152	Client	The design shall seek to identify Safe by Design opportunities. These shall include the provision of safe walking routes and the location of line side equipment within Green Zones	High	Agreed with RAM / Sponsor and identified within the Maintenance Strategy Plan	None Identified	None Identified

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Reqd ID	Source Reference	Requirement and Heading	Priority	Acceptance Criteria	Supporting Information	Assumption
RR-MW2-1153	Level crossings: A guide for managers, designers and operators. Railway Safety Publication 7, December 2011.	A level crossing safety risk assessment shall be undertaken for each level crossing to determine the level of protection required for the proposed new passenger train service.	High	Approved Safety Risk Assessment	None Identified	For both signalled and passive crossings
RR-MW2-1154	Network Rail Work safe policy	All new equipment and equipment housings shall be provided with safe access and working conditions	High	Equipment and equipment housing verified by RAM(S) representative as compliant to standards.	Asset Management Strategy	None Identified
RR-MW2-1155	Network Rail safety and environment plan	All work shall be carried out in a green zone.	High	Construction phase plan and associated work package plans to detail the proposed working procedures to the satisfaction of Network Rail. Planned general inspections to be undertaken by Network Rail at appropriate times.	Project Safety Strategy	None Identified
RR-MW2-1156	RAM(S) requirement	A community relations plan shall be developed to make sure that the design solution and construction activities are communicated to those affected.	Medium	Community relations plan.	Stakeholder Management Plan	None Identified
RR-MW2-1207		3.3 Asset Requirements				

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Req ID	Source Reference	Requirement and Heading	Priority	Acceptance Criteria	Supporting Information	Assumption
RR-MW2-1208	Client	An assessment of closure times and durations shall be at St. Andrews Road level crossing as a result of extended closure times and new timetable	High	Level Crossing assessment agreed	None Identified	None Identified
RR-MW2-1209	Client	MetroWest shall not constrain future electrification of the local rail network and shall provide passive provision where appropriate.	Medium	Sig AIP signed off by RAM	None Identified	None Identified
RR-MW2-1210	Client	New stations delivered by MetroWest Phase 2 shall be at North Filton and Henbury.	High	Location confirmed by timetable modelling and subject to HAZID review	Location proposal from South Gloucestershire and	None Identified
RR-MW2-1211	Client	New stations delivered by MetroWest Phase 2 shall be at Ashley Down and Constable Road on the Filton Bank.	High	Location confirmed by timetable modelling and subject to HAZID review	Location proposal from Bristol City Councils	None Identified
RR-MW2-1212	Network Rail strategic business plan for England and Wales January 2013 (CP5)	The design shall identify the required changes to the existing signalling assets to deliver the required service provision	High	AIP signed off by RAM (S)	None Identified	None Identified
RR-MW2-1213	Client	The design shall identify the required changes to the existing E&P assets to deliver the required service provision	High	AIP signed off by RAM (E&P)	None Identified	None Identified

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Reqd ID	Source Reference	Requirement and Heading	Priority	Acceptance Criteria	Supporting Information	Assumption
RR-MW2-1214	Client	The design shall identify the required changes to the existing Structures assets to deliver the required service provision	High	AIP signed off by RAM	None Identified	None Identified
RR-MW2-1215	Client	The design shall identify the required changes to the existing track and drainage assets to deliver the required service provision	High	Track and Drainage design approved	None Identified	None Identified
RR-MW2-1216	Client	The new layout shall use a CEN 56 rail section	Medium	AIP signed off by RAM	GRIP 2 report	None Identified
RR-MW2-1217	Client	Points operating equipment shall be in-bearer clamp lock	Medium	AIP signed off by RAM	GRIP 2 report	None Identified
RR-MW2-1218	Client	The provision of track drainage shall will be reviewed with the Bristol Maintenance Unit	Medium	Drainage requirement referenced in AIP and Maintenance Plan	GRIP 2 report	Suitable outfall to be identified
RR-MW2-1219	RAM	Establish the capability of the existing structures to support the permanent and temporary loadings from the new track loadings	Medium	AIP signed off and existing structures capability agreed with Western Structures RAM.	GRIP 2 report	None Identified
RR-MW2-1220	RAM/Sponsor	The project shall seek to eliminate the need for climbing equipment to be used when accessing signalling structure.	Medium	AIP signed off by RAM	None Identified	None Identified

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Req ID	Source Reference	Requirement and Heading	Priority	Acceptance Criteria	Supporting Information	Assumption
RR-MW2-1221	RAM/Sponsor	Where climbing risk cannot be totally eliminated, the project shall provide fixed fall arrest devices as part of the signal structure.	Medium	AIP signed off by RAM	None Identified	None Identified
RR-MW2-1222	RAM (E&P)	Signal power 650 Volt distribution cables shall be configured as double end fed. Automatic reconfiguration equipment shall be installed at each FSP and include transient over voltage protection. Radial spurs are not permitted.	High	AIP signed off by RAM (E&P)	None Identified	None Identified
RR-MW2-1223	RAM (E&P)	Point heating installations shall be fitted with Intelligent Infrastructure remote monitoring.	Medium	AIP signed off by RAM (E&P)	None Identified	None Identified
RR-MW2-1224	RAM (E&P)	Passive provision for overhead line equipment shall be in accordance with the Project Requirements Specification for Great Western Electrification	High	AIP signed off by RAM (E&P)	None Identified	None Identified
RR-MW2-1225	RAM (E&P)	The track layout design shall be compatible with the required locations for overhead line equipment structures.	High	IDC/IDR carried out and certificates signed off.	None Identified	None Identified

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Req't ID	Source Reference	Requirement and Heading	Priority	Acceptance Criteria	Supporting Information	Assumption
RR-MW2-1226	RAM (E&P)	Where junction lighting is proposed, luminaires shall be LED type and mounted on either base hinged type columns or fixed low level posts accessible from ground level.	Medium	AIP signed off by RAM (E&P)	None Identified	None Identified
RR-MW2-1226	RAM	Assess the safety and design capability of existing asset	High	Assessment agreed by RAM	Asset condition information	None identified

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RR-MW2-1249		3.4 Operational Requirements					
RR-MW2-1250	Client	Access to existing freight sidings in Avonmouth/Severnside shall be maintained.	High	GRIP 2 report approved	None Identified	None Identified	
RR-MW2-1251	Client	The infrastructure interventions shall be suitable for use by either class 15X (75mph capable) or Classes 158 or 16X (90mph capable) train sets.	High	AIP signed off by RAM	None Identified	None Identified	
RR-MW2-1252	Client	All new stations delivered by MetroWest Phase 2 shall be 4 car platform lengths (4x23m), with passive provision for 5-car lengths (5x23m). A comparative cost to provide 5 car platform lengths shall be provided as part of the GRIP 2 estimate.	High	AIP signed off by RAM	None Identified	None Identified	
RR-MW2-1253	Level Crossings Act 1983	Level crossing orders shall be updated and re-issued.		New level crossing orders received by the Western Route.	Level crossings: A guide for managers, designers and operators Dec 2011.	None identified.	
RR-MW2-1311		3.5 Performance Requirements					

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RR-MW2-1312	Client	<p>The new infrastructure shall provide the capacity to deliver the following time table specification –</p> <ul style="list-style-type: none"> Phase 2 – half hourly train services to Weston Milton, Yate and hourly services on a re-opened Henbury line (capacity for two new stations) with additional station(s) on Filton Bank, services starting operation in 2021 	High	This new layout design is validated against the new timetable developed by the Network Rail Capability Modelling team	Capability Modelling and Timetabling rules	A timetable can be developed which delivers the required specification
RR-MW2-1313	Client	The existing level of freight train paths to and from Avonmouth docks shall be maintained	High	This new layout design is validated against the new timetable developed by the Network Rail Capability Modelling team	Capability Modelling and Timetabling rules	A timetable can be developed which delivers the required specification
RR-MW2-1314	Client	The operation performance of freight train paths to and from Avonmouth docks within the existing timetable shall not be reduced	High	This new layout design is validated against the new timetable developed by the Network Rail Capability Modelling team	Capability Modelling and Timetabling rules	A timetable can be developed which delivers the required specification
RR-MW2-1313		3.6 Capacity Requirements				

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RR-MW2-1314	Client	The project shall deliver the following capability- a. The reintroduction of passenger services to the Henbury Line as either a Loop or a Spur including the provision of two new stations b. The provision of a turnback facility at Yate clear of the main lines. c. The provision of a new station on the Filton Bank	High	Acceptance of the timetable modelling report by the West Of England councils and other stakeholders	Capacity modelling report	An alternative to the Yate turnback is to run the planned service through to Gloucester
RR-MW2-1355		3.7 Reliability, Availability, Maintainability Requirements				
RR-MW2-1356	RAM	The new layout shall comply with the requirements of the current Asset Policy(s)	High	AIP signed off	Current Asset Policy	AIP signed off
RR-MW2-1357	PRAMS model	For level crossings MTBSAF shall be 25years per backboard/wigwag assembly, 25years for the level crossing controller, 2.5million operations for the operating devices and 30years for the barrier integrity switch. The signalling system shall have an availability of greater than 99% per year.		Detailed Route Requirements will confirm details. Product acceptance process will confirm compliance.	None Identified	None Identified
RR-MW2-1358	PRAMS model			Availability of greater than 99% per year.	None Identified	None Identified

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RR-MW2-1359	NRL/3/MT/CMG0176	Ellipse EGIs and MSTs shall be available and attached to new Signalling assets prior to commissioning as per the "Ellipse work management handbook", NRL/3/MT/CMG0176.		Update of Ellipse data confirmed.	None Identified	None Identified
RR-MW2-1407		3.8 Maintenance Requirements				
RR-MW2-1408	Client	An assessment of the future maintenance and renewal costs shall be provided to support the inclusion of new infrastructure assets onto the regulated asset base and the development of the business case.	Medium	Validated cost assessment	None Identified	None Identified
RR-MW2-1409	MW2 Maintenance Strategy	Maintenance shall be given training and support for any novel equipment installed by the MW2 project before it is commissioned.	Medium	MW2 Maintenance Strategy adhered to.	None Identified	None Identified
RR-MW2-1410	MW2 Maintenance Strategy	The project shall identify the number and type of spares with agreement from the RAM and Maintenance.	Medium	MW2 Maintenance Strategy adhered to.	None Identified	GRIP 4

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Appendix A – Deliverables List – See Project Management Plan

Appendix B – References – See Supporting Information in Requirements sheets

Appendix C - Glossary

Appendix D - Whole Life Cost Analysis – To be developed at GRIP 3.

Appendix E - Additional Information – West of England Area System Safety Plan

Appendix C – Glossary

AMP – Asset Management Plan
 AIP – Approval in Principle
 BASRE – Bristol Area Signalling Renewal and Enhancement
 BCR – Benefit Cost Ratio
 BIM - Building Information Model
 BTM – Bristol Temple Meads
 CDM – Construction Design and Management
 CP5 – Control Period 5
 CSM - Common Safety Method
 ECAM – Enhancement Cost Approval Mechanism
 EMU – Electric Motive Unit
 ETCS – European Train Control System
 FGW – First Great Western
 GRIP – Governance for Railway Enhancement Projects
 GWEP – Great Western Electrification Project
 IDC/IDR – Integrated Design Check / Review
 IEP – Intercity Express Programme
 NRAP – Network Rail Approval Panel
 NS&P – Network Strategy and Planning
 OLE – Overhead Line Electrification
 ORR – Office of the Rail Regulator
 RAM – Route Asset Manager
 REM – Route Enhancement Manager
 VHF – Very High Frequency

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