



# **Blackburn to Manchester Rail Corridor Improvement Scheme**

## **Outline Business Case Review**

### **Appendix B - Operational Review**

**January 2015**

**Document Control Sheet**

**BPP 04 F8**

Version 17; July 2014

**Project:** Blackburn to Manchester Rail Corridor Improvement Scheme  
**Client:** Transport for Lancashire **Project No:** B2237505  
**Document title:** Appendix C - Operational Review  
**Ref. No:**

Originated by		Checked by	Reviewed by
<b>ORIGINAL</b>	NAME	NAME	NAME
	<b>Andy Thomas</b>	<b>Mark Romanowski</b>	<b>Leighton Cardwell</b>
<b>Approved by</b>	NAME	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I <b>approve them for issue</b>	INITIALS
	<b>Leighton Cardwell</b>		<b>LC</b>
DATE	<b>27.01.15</b>	<b>Document status: Final</b>	

REVISION		Checked by	Reviewed by
	NAME	NAME	NAME
<b>Approved by</b>	NAME	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I <b>approve them for issue</b>	INITIALS
DATE		<b>Document status</b>	

REVISION		Checked by	Reviewed by
	NAME	NAME	NAME
<b>Approved by</b>	NAME	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I <b>approve them for issue</b>	INITIALS
DATE		<b>Document status</b>	

REVISION		Checked by	Reviewed by
	NAME	NAME	NAME
<b>Approved by</b>	NAME	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I <b>approve them for issue</b>	INITIALS
DATE		<b>Document status</b>	

**JACOBS U.K. Limited**

This document has been prepared by a division, subsidiary or affiliate of Jacobs U.K. Limited ("Jacobs") in its professional capacity as consultants in accordance with the terms and conditions of Jacobs' contract with the commissioning party (the "Client"). Regard should be had to those terms and conditions when considering and/or placing any reliance on this document. No part of this document may be copied or reproduced by any means without prior written permission from Jacobs. If you have received this document in error, please destroy all copies in your possession or control and notify Jacobs.

Any advice, opinions, or recommendations within this document (a) should be read and relied upon only in the context of the document as a whole; (b) do not, in any way, purport to include any manner of legal advice or opinion; (c) are based upon the information made available to Jacobs at the date of this document and on current UK standards, codes, technology and construction practices as at the date of this document. It should be noted and it is expressly stated that no independent verification of any of the documents or information supplied to Jacobs has been made. No liability is accepted by Jacobs for any use of this document, other than for the purposes for which it was originally prepared and provided. Following final delivery of this document to the Client, Jacobs will have no further obligations or duty to advise the Client on any matters, including development affecting the information or advice provided in this document.

This document has been prepared for the exclusive use of the Client and unless otherwise agreed in writing by Jacobs, no other party may use, make use of or rely on the contents of this document. Should the Client wish to release this document to a third party, Jacobs may, at its discretion, agree to such release provided that (a) Jacobs' written agreement is obtained prior to such release; and (b) by release of the document to the third party, that third party does not acquire any rights, contractual or otherwise, whatsoever against Jacobs and Jacobs, accordingly, assume no duties, liabilities or obligations to that third party; and (c) Jacobs accepts no responsibility for any loss or damage incurred by the Client or for any conflict of Jacobs' interests arising out of the Client's release of this document to the third party.

## Contents

<b>1</b>	<b>Operational Review</b>	<b>1</b>
1.1	Introduction	1
1.2	Current Infrastructure	1
1.3	Timetable Review	1
1.4	Current Service Reliability	4
1.5	Option Development and Selection	5
1.6	Operating Costs	8
1.7	Station Facility Costs	10
1.8	Scheme Delivery	11
1.9	Management Arrangements	11
1.10	Delivery Programme	14

**1.1 Introduction**

This note reviews the operational aspects of the December 2014 Outline Business Case for the Blackburn to Manchester Rail Scheme. The assessment considers the following:

- *The methodology and rationale used to identify and decide the infrastructure single design option;*
- *The operational costs, supplied by Northern Rail, which include those for mobilisation, Network Rail (e.g. Capacity Charge), additional traincrew resources, light maintenance and diesel fuel;*
- *Station facility enhancement costs; and*
- *Management arrangements which include governance, assurance and communications.*

**1.2 Current Infrastructure**

The track layout between Bolton and Blackburn consists of double and single track, positioned on a previous double track formation. Commencing from Bolton West Junction at 10m 1100y the line ends at Blackburn Bolton Branch Junction at 23m 990y. The Down direction is from Bolton to Blackburn and the Up direction Blackburn to Bolton. From Bolton West Junction the track doubles at Astley Bridge Junction (11m 1434y) and continues to 13m 1650y where it returns to single line operation. The double track passes through Hall I` Th` Wood and Bromley Cross stations. At 20m 110y Darwen Loop commences and returns to single line operation at 20m 990y. Darwen station is located in the double track section. There is a further 3 miles of single line to Blackburn Bolton Branch Junction. Entwistle station is located on the single line between the two sections of double track along with an automatic open crossing locally monitored (AOCL) at Turton and Sough Tunnel.

The line climbs from Bolton to the South end of Sough tunnel to approximately 17m 880y at a gradient of approximately 1 in 75. It then descends at approximately 1 in 80 to 21m 880y and continues to Blackburn.

Signals are two and three aspect operated under track circuit block regulations. Line speed is typically 60 mph with lower speeds at the turnouts to the single to double line sections. Turton level crossing has a permanent speed restriction (PSR) of 10 mph in the Down direction and a differential speed of 10 mph over 25 mph in the Up direction. The PSR is to give train drivers sufficient sighting time of the crossing.

**1.3 Timetable Review**

**1.3.1 Current Timetable**

The present timetable is valid from 14<sup>th</sup> December 2014 to 4<sup>th</sup> April 2015. Services operate between Manchester Victoria, Blackburn and Clitheroe. During the morning and evening peaks, Monday to Saturday, there is an irregular half hourly service between Blackburn and Manchester Victoria. Journey times differ slightly but normally take around 50 minutes.

In the morning peak two trains per hour run from the 06:27 until the 10:08 departure between Blackburn and Manchester Victoria. Three services originate from Blackburn with the remainder commencing from Clitheroe. In the evening peak a half hourly service operates from the 18:07 until the 20:08 departure. One service originates from Blackburn and the remainder start at Clitheroe.

From Manchester Victoria to Blackburn a half hourly services operates in the morning peak from the 07:26 until the 09:03 departure with one service commencing from Buxton. Two services terminate at Blackburn with the remainder extended to Clitheroe. During the evening peak a half hourly service operates from the 16:03 until the 19:03 departure. Two services originate from Todmorden and one from Huddersfield. Two services terminate at Blackburn with the remainder extended to Clitheroe.

During the off peak periods services run hourly between Manchester Victoria and Clitheroe. The first and last services between Blackburn and Manchester Victoria are 06:27 and 23:15 respectively. From Manchester Victoria to Blackburn the first and last trains are 05:55 and 23:04 respectively.

On Saturday mornings a half hourly service operates between Blackburn and Manchester Victoria from 07:29 until the 12:08 departure. Four services originate at Blackburn with the remainder starting at Clitheroe. A half hourly service from Manchester Victoria, (one service commences from Hazel Grove), to Blackburn operates from the 07:00 to the 11:03 departure. Two trains terminate at Blackburn with the remainder extended to Clitheroe. In the evening a half hourly service operates from 16:03 until the 19:03 departure. Three of the services commence from Todmorden, Huddersfield and Stalybridge. Two of the services terminate at Blackburn with the remainder extended to Clitheroe. First and last services are similar to Monday to Friday.

An hourly service operates in both directions on a Sunday. Services from Blackburn to Manchester Victoria operate from 09:08 until 23:15. Services in the opposite direction operate from 08:03 until 22:03.

With the exception of Entwistle, which is a request only stop, services stop at all stations between Blackburn and Bolton which are Darwen, (Entwistle), Bromley Cross and Hall i' th' Wood.

Services are operated by class 142, 150 and 153 rolling stock.

### **1.3.2 Proposed Timetable**

The Monday to Saturday "test timetable" is Appendix N to the December 2014 Outline Business Case entitled Clitheroe Line Business Case Report (November 2014).

A half hourly inter peak service from Manchester Victoria to Blackburn is planned to run, Monday to Saturday from the December 2016 timetable. It is understood no changes to the hourly Sunday service are planned (Reference: 2014 Outline Business Report, page 58 section (b)). The service will integrate with the current Manchester Victoria to Clitheroe service creating a half hourly clock face service from/to Blackburn. The new service will be formed by an extended hourly Manchester to Bolton service which is also scheduled to commence from the December 2016 timetable. It is understood all timetable development and service

evaluation for the inter peak service has been undertaken between Bolton to Blackburn only. Although paths exist between Bolton and Manchester Victoria they are irregular and do not provide for an evenly timed clock face end to end service. It is assumed therefore that the cross industry Events Steering Group will develop and integrate the timetable in association with the North of England infrastructure enhancements and wider December 2016 timetable re-cast.

The new service will provide an additional eight trains between Blackburn and Bolton and seven between Bolton and Blackburn Monday to Friday. On a Saturday six extra services are planned in each direction. Monday to Friday services will not call at Entwistle or Hall I` th` Wood but will on a Saturday with the exception of the 16:29 ex Manchester Victoria which will call at Entwistle.

Table 1-A and Table 1-B describe the arrival and departure times at Manchester Victoria and Blackburn.

<b>Service Code</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>
Blackburn	10:33	11:33	12:33	13:33	14:33	15:33	16:33	17:33
Manchester Victoria	11:21	12:21	13:21	14:21	15:21	16:21	17:21	18:21
<b>Service Code</b>	<b>2231</b>	<b>2231</b>	<b>2231</b>	<b>2231</b>	<b>2231</b>	<b>2231</b>	<b>2231</b>	
Manchester Victoria	09:29	10:29	11:29	12:29	13:29	14:29	15:29	
Blackburn	10:19	11:19	12:19	13:19	14:19	15:19	16:19	

**Table 1-A: Proposed extension to Manchester Victoria to Bolton services - Monday to Friday**

<b>Service Code</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>	<b>2230</b>
Blackburn	12:31	13:31	14:31	15:31	16:31	17:31
Manchester Victoria	13:22	14:22	15:22	15:22	17:22	18:22
<b>Service Code</b>	<b>2231</b>	<b>2231</b>	<b>2231</b>	<b>2231</b>	<b>2231</b>	<b>2231</b>
Manchester Victoria	11:29	12:29	13:29	14:29	15:29	16:29
Blackburn	12:20	13:20	14:20	15:20	16:20	17:20

**Table 1-B: Proposed extension of Manchester Victoria to Bolton services- Saturday only**

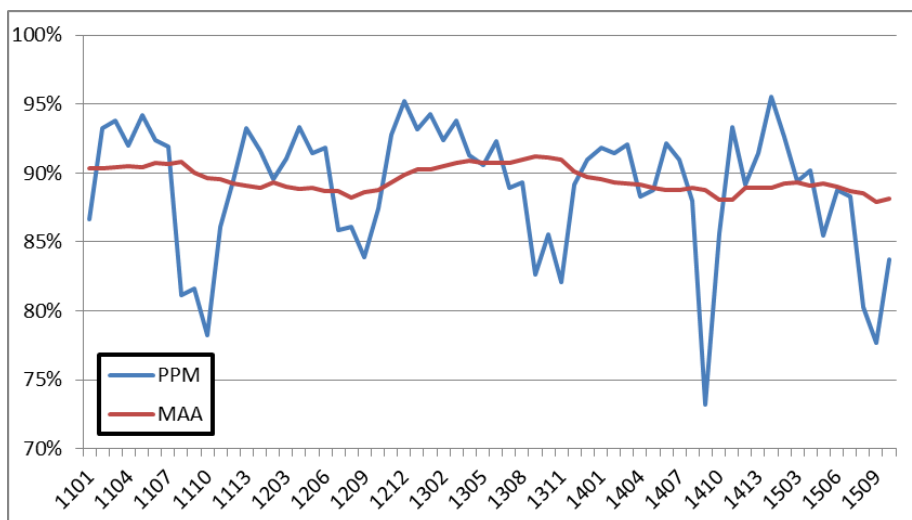
Although there are operating costs associated with the additional services no extra rolling stock has been specified for the new inter peak service. This was discussed with a Northern Rail representative on 8th January 2015. He advised the additional services will utilise current peak strengthening rolling stock. The peak strengthening stock is stabled during inter-peak period. The rolling stock utilisation is based on the specification Northern Rail was provided with for the December 2016 timetable. Any change to the specification therefore requires a review of the rolling stock requirements.

### 1.3.3 Conclusion

Timetable development has not confirmed the route between Bolton and Manchester Victoria as the current available paths are irregular. The December 2016 “test timetable” however must be integrated with the North of England infrastructure changes and December 2016 timetable recast to ensure reliability. No additional rolling stock has been specified by Northern Rail. This is based on the December 2016 timetable specification. If the specification changes in any way a further evaluation of the rolling stock requirements must take place.

## 1.4 Current Service Reliability

Appendix O of the December 2012 Outline Business Case is the Network Rail Governance of Railway Projects Infrastructure Interim Option Selection Report (GRIPOS). The report highlights that the Clitheroe to Manchester Victoria service was in the lower section of Northern Rails performance league table although performance was improving. The Public Performance Measure Moving Annual Average (PPM MAA) for the route was 91.09%. The report comments on the rail industry acknowledgment that the routes single line sections contributed to reactionary delays. This is caused by trains waiting to access the single line sections when trains in the oncoming direction are late. The most recent Northern Rail data taken from industry period 15/10 shows the PPM MAA has actually fallen to 88.16%. Figure 1-A shows the MAA and periodic PPM from period 11/01 to period 15/10.



**Figure 1-A: Periodic and MAA PPM**

Train performance was discussed with a Northern Rail representative on 9th January who confirmed there are a number of factors causing the fall in performance levels which include traincrew, rolling stock and infrastructure delays, particularly at Daisyfield Junction near Blackburn. These factors have increased the level of imported delays to the route between Blackburn and Bolton. The single line constraints however remain the principal cause of reactionary delay.

The reactionary delay in the GRIPOS was estimated to be 1,928 minutes. This was calculated by modelling performance data from a 2011 fourteen week period. The level of reactionary delay was based on a half hourly inter peak service being introduced on the existing infrastructure. It is not clear how typical the 2011 modelling data was of the annual level of delays or what 14 week period was used. It is therefore not clear if the modelling results are fully representative of the annual level of delays. The December 2014 Outline Business Case page 22, section (c), Service Performance advises the present annual reactionary delay attributed to the single line sections is 1,000 minutes. This is less than the GRIPOS estimation when performance was better. On 9th January 2015 Northern Rail provided reactionary delay information for the entire route based on performance between industry periods 14/10 to 15/10. The total reactionary delay relating to arrival times at Blackburn, Bolton and Clitheroe is 24,941 minutes. This is considerably more than the Outline Business Case and the GRIPOS modelling results. The reactionary delays from Northern Rail have been broken down to the primary delay causation.

Northern Rail is unable to clarify how the 1,000 minutes reactionary delay from the December 2014 Outline Business Case has been determined.

#### **1.4.1 Conclusion**

It has not been possible to determine if the 2011 performance data is representative of the annual level of delays. Northern Rail has also confirmed the level of imported delays to the route have increased since 2011. The difference between the Outline Business Case and Northern Rails reactionary delay data is significant and not understood. As performance has deteriorated the benefits of the Darwen loop are likely to have changed. To establish the current benefits of extending Darwen loop updated analysis is required. If reviewed, the scope and data used must be clear to all stakeholders to ensure a common understanding of the results.

### **1.5 Option Development and Selection**

#### **1.5.1 Strategic Overview**

Three distinct stages have been commissioned to consider how to improve connectivity between Pennine Lancashire and Manchester. These phases led to the Blackburn to Manchester Rail Improvement Scheme. Since 2002 a number of feasibility studies have taken place with the intention to improve the route frequency and journey times.

A brief summary of the stages are:

- *Stage 1: A multi-modal solution was considered. The conclusion reached was that improvements to the rail service would be the most appropriate way to increase levels of connectivity;*
- *Stage 2: The objective of this phase was to identify solutions to improve rail connectivity. The initial conclusions reached were that a half hourly inter peak service could be introduced but the single line sections on the route would act as a train service reliability constraint. The solutions identified were to double track the route and improve the line speed over one section for robust operation. A further review was undertaken to evaluate the feasibility of introducing a half hourly service. The analysis was not undertaken using recognised rail industry performance modelling software such as RailSys. The study however determined the following:*
  - *Based on the 2008 timetable and Rules of the Plan (timetable rules) a half hourly inter peak service cannot be operated reliably;*
  - *A compliant solution can be achieved by extending Darwen loop approximately one mile in either direction. It was identified this may introduce a performance risk at Darwen and Astley Bridge caused by the timetabling margins when leaving and entering the single line sections;*
  - *Converting Turton level crossing to a Manually Controlled Barrier with Closed Circuit Television (MCB-CCTV) to save one minute between Blackburn and Bolton which could be used as a performance buffer; and*



➤ *The rolling stock numbers to introduce and sustain a half hourly service would increase from three to five*

- *Stage 3: In 2010 Blackburn with Darwen Borough Council signed an agreement with Network Rail to develop a half hourly inter peak service scheme to Governance for Railway Investment Projects (GRIP) 1 to 3. The aim of GRIP 3 is to assess and select the most appropriate option that delivers the clients requirements and ensure the scheme is economical. Network Rail engaged Mott MacDonald to appraise the options.*

### **1.5.2 GRIP 3 Option Selection**

The GRIPOS is described as interim however it is understood no other GRIP 3 reports have been published. The conclusions and recommendations in section 8 however are those evaluated in the December 2014 Outline Business Case.

The report sets out the methodology and approach taken to select the preferred option. Nine possible solutions were identified at GRIP stage 2 (feasibility stage). The GRIP 2 options were derived from the stage 1 and 2 feasibility work that Blackburn with Darwen Council had previously commissioned. The choices fell into two categories; increasing the length of double track sections to provide additional capacity and to improve line speeds to gain a performance benefit. After discussions at the Pennine Lancashire Rail Projects Board a tenth option was identified. Each of the ten options were evaluated and assessed in relation to their affordability and future benefits. Five options were selected as being worthy of further investigation at GRIP 3. All apart from the extension of Darwen loop were line speed improvement initiatives. Of the additional infrastructure options, the Darwen Loop Approval for Construction (AFC) was the least expensive at £14,246,000. The nearest track extension AFC to the Darwen Loop extension was estimated at £21,504,000. One of the five options was that identified at the Pennine Lancashire Rail projects Board. This was the combination of options 1 and 8 and is described below as intervention 1a.

The options considered at GRIP 3 were:

- *Intervention 1 - Extending the Darwen loop approximately 1 mile in each direction with the retention of the current line speeds;*
- *Intervention 1a - Extend the Darwen loop approximately 1 mile in each direction and increase the line speed to 60 miles per hour (mph);*
- *Intervention 5 - Raise the line speed over Turton level crossing to 60 mph by upgrading the crossing;*
- *Intervention 8 - Raise the Darwen loop line speed to 60 mph; and*
- *Intervention 9 - Raise the line speed to 60 mph between 23m 0c and 24m 08c (single line section north of Darwen to Blackburn Bolton Junction).*

The objective for GRIP 3 was to ensure Blackburn with Darwen Borough Council had suitable and sufficient information to select a preferred option. The decision was therefore made to split GRIP 3 into two distinct phases. The first was to use performance modelling to establish the robustness of a half hourly inter peak service between Blackburn and Bolton and to establish the performance impact. Phase 2 reviewed the most effective interventions from phase 1.

Historical performance data from a fourteen week period in 2011 was used for phase 1. The focus of the performance modelling was to compare the level of reactionary delays between the various infrastructure interventions. Prior to

undertaking the analysis a half hourly inter peak service was modelled on the existing infrastructure to baseline the reactionary delay.

The compared modelling results are shown in Table 1-C.

Infrastructure	Off Peak Reactionary Delay Minutes			Performance Benefit
	Down Services	Up Services	Total	
Historical Actual	957	970	1927	N/A
Intervention 1: Extend Darwen Loop	544	632	1176	751
Intervention 5: Raise Turton AOCL level crossing speed from 10/25 mph to 60 mph (45 second timesaving)	704	933	1637	290
Intervention 8: Raise the linespeed from 30/40 mph to 60 mph through Darwen Up Loop	957	970	1927	0
Intervention 9: Raise linespeed from 30 mph to 60 mph between 23m 40c and 24m 08c ( 35 second timesaving)	957	773	1730	197
Intervention 1a: Combination of Intervention 1 and 5	442	632	1074	853

**Table 1-C: GRIP 3, Phase 1 Modelling Results Comparison**

After reviewing the modelling results interventions 8 and 9 were withdrawn - intervention 8 did not provide any benefit and intervention 9 was the least effective.

Using the results of the performance modelling it was calculated that intervention 1a reduced delays per train by 9.4%. At phase 1 this was recommended as the preferred option.

The modelling highlighted that overall delay increased for all infrastructure scenarios as more trains would be affected. It was assumed however the existing half hourly peak service would benefit as a result of the infrastructure interventions and subsequently negate the increase.

The previous GRIP 2 report had identified the potential for Turton Automatic Open Level Crossing (AOCL) to be downgraded to a User Worked (UWC) at a cost of £550,000. Subsequent investigations suggested that an Automatic Half Barrier Crossing (AHB), although slightly more expensive, may have been a better option. The proposal was rejected by the Office of Rail Regulation (ORR). Other barrier types and a road bridge were explored but the cost was deemed prohibitive. Further investigations also identified additional track works to increase the linespeed proposal. The outcome meant the cost of providing a solution was significantly greater than the GRIP 2 assumption. Further analysis was undertaken and demonstrated intervention 1 on its own would provide a performance benefit of 5.4% per train. It was therefore recommended by Mott MacDonald that intervention 1 provided a realistic and affordable solution. The Darwen loop is planned to be extended by 1,430 yards at its southern end and 1,210 at its northern end.

The GRIP 3 AFC was estimated at £13,815,909 which is £430,091 less than estimated at GRIP 2 and includes:

- *3,200m of new track and formation work;*
- *Two new turnouts;*
- *Signalling works;*
- *Widening of underbridge 42 (Turncroft); and*
- *New decking for underbridge 47 (Cotton Hall Street).*

It is understood in April 2014 Blackburn with Darwen Councils Executive Board approved contractual arrangements with Network Rail. The basis of the approval is on an emerging price basis of £13,354,466 (including Residual Factors, Risk and Contingency) to progress the scheme from GRIP 4 to GRIP 8. This forms the single option development, detailed design; construction, testing and commissioning, scheme hand back and project close out.

To ensure the GRIP process was followed diligently the aim and objectives of GRIP 1, 2 and 3 were compared with the content and conclusions reached in GRIPOS. Table 1-D describes the GRIP stages aims and objectives and whether there is sufficient evidence to demonstrate they have been complied with.

Grip Stage		Aim	Main Output	Comments
1	Output Definition	To define the output for the project. For example increase line capacity or reduce train delays.	Defining the needs and requirements – the problem or opportunity through stakeholder communication.	Use of client pre-GRIP feasibility studies.
2	Feasibility	Define the scope of investment and define constraints Confirm that the outputs can be economically delivered and are aligned with organisational strategy.	Identify viable solutions in response to the requirements.	Nine options selected based on previous studies undertaken by Blackburn and Darwen Council. An additional option was also agreed with the client.
3	Option Selection	Develop options for addressing constraints. Assess and select the most appropriate option that deliver the stakeholder requirements together with confirmation that the outputs can be economically delivered	Single option determined and stakeholder approval to option approved through to Approval in Principle.	Single option selected and approved by the client Costs approved by the client on an emerging basis of £13,354,466

**Table 1-D: Governance for Railway Investment Projects (GRIP) – Policy, dated 7th December 2014, version 3**

**1.5.3 Conclusion**

Network Rail has complied with aims and key outputs of GRIP. The preferred option is based upon the schemes cost, operational requirements and client approval. It should be noted the data used in the GRIP 2 analysis has not been confirmed as reflective of the annual level of delays. Also since 2012 performance has got worse with higher levels of delays being imported on to the route. The approach taken however has resulted in Network Rail being engaged to progress the scheme from GRIP 4 to 8 on an emerging cost basis of £13,354,466.

**1.6 Operating Costs**

Appendix N of the December 2012 Outline Business Case is the Clitheroe Improvement Line Study Business Case Report, dated November 2014. The operating costs for the enhanced service were supplied by Northern Rail in July 2013 and consist of the following:

- *Variable Track Access which has the purpose of recovering maintenance and renewal costs for Network Rail when traffic levels vary. Costs are calculated on a per vehicle mileage basis based on vehicle type;*

- Capacity charge which compensates Network Rail for increased congestion that results in higher than expected performance regime payments. Costs are calculated on a per train mileage basis based on service group;
- A Station Access charge which is applied to the amount of station departures;
- An estimation of additional costs associated with diesel fuel based on per vehicle miles;
- Estimated additional light maintenance costs based on per vehicle miles; and
- Assumed traincrew resources to operate the additional services.

The Northern Rail estimate is for the full service level between Manchester Victoria and Blackburn. The estimate therefore included the already planned Manchester to Bolton service. It has not been possible to source the detailed breakdown that Mott MacDonald was provided with. Northern Rails representative has confirmed however the rates applied to the additional costs are current.

When reviewing the estimates Mott MacDonald has assumed the Bolton to Blackburn inter peak service is effectively an infill service. Northern Rails estimate therefore has been pro-rated to reflect the mileage between Blackburn and Bolton rather than Northern’s original estimate which reflected the Manchester to Blackburn mileage. The revised estimate has been scaled to represent the schemes proportion of the entire Manchester to Blackburn service. An assumption has also been made, based on train mileage, of the level of train crew resources required which has been calculated as three sets of traincrew.

Normally traincrew resources are based on a depot turn average and levels of diagrammed work. The formula generally used is:

**Establishment = (total instances of work per week / days per week) \* spare ratio multiplier.**

The mobilisation costs, which include recruitment and training, have been based on the assumption that recruitment will commence in mid-2016. Normally it takes approximately one year to train a driver which puts their availability beyond the December 2016 timetable date.

The adjusted net costs (excluding any revenue forecast) are shown in Table 1-E.

Reason for Cost	2016/17	2017/18	2018/19	2019/20
Mobilisation	£220,457	N/A	N/A	N/A
On-Going	£153,611	£555,630	£560,193	£565,440
<b>Total</b>	<b>£374,068</b>	<b>£555,630</b>	<b>£560,193</b>	<b>£565,440</b>

**Table 1-E: Adjusted Net Operating Costs**

### 1.6.1 Conclusion

Northern Rails original operating costs have been adjusted in the 2014 Outline Business Case to reflect the Bolton to Blackburn inter peak service was originally overstated. The adjustment assumes the December 2016 Manchester to Bolton service is excluded from the overall costs based on a reduction in train mileage. The various cost elements are what would be expected to be seen on a scheme of this type. Service mobilisation and traincrew numbers and availability should be monitored to ensure the resource levels are reflective of the additional service level and sufficient for service introduction.

## 1.7 Station Facility Costs

It was identified many of the stations on the route are of poor quality. Within the overall scheme six stations have been identified for enhancement work which is scheduled for completion in the Summer/Autumn of 2016. Two of the stations, Langho and Whalley are located between Blackburn and Clitheroe. The stations are:

- *Clitheroe:*
- *Fencing repairs and repainting*
- *New waiting shelters*
- *Whalley*
- *Fencing repairs and repainting*
- *New waiting shelters*
- *Langho*
- *Fencing repaint*
- *Anti-vandal shelter*
- *Shelter repairs*
- *New sign*
- *Customer information screens*
- *Ramsgreave and Wilpshire*
- *Fencing repaint*
- *Anti-vandal shelter*
- *Entwistle*
- *Fencing repairs and repaint*
- *Darwen*
- *Additional shelters*

The total cost of the work has been estimated at £325,000. No risk exposure costs have been included in the evaluation. Section 5.4.4 of the December 2014 Outline Business Case states the cost excludes the price for Customer Information Screens (CIS) as there is an on-going Northern Rail project to fund CIS. There is however an estimate for two CIS at Langho with a unit cost of £20,000 i.e. £40,000 included in the business case estimate.

CIS provision was discussed with a Northern Rail representative on 8th January 2014. He advised Langho CIS will be funded by the Blackburn to Manchester Rail Scheme, Whalley and Ramsgreave and Wilpshire will be funded via Northern's CIS 100 Direct Award. Blackburn, Darwen and Bromley Cross already have CIS fitted. No decision has been made on the remaining two stations which are Hall i` th` Wood and Entwistle.

It was also advised Northern's Estate team have been fully involved in the station specification and cost analysis.

### 1.7.1 Conclusion

There are no plans to install CIS at Entwistle and Hall i` th` Wood. If CIS is to be provided, assuming a nominal two CIS screens per station at £20,000 each, there is a potential funding requirement of £40,000.

## **1.8 Scheme Delivery**

### **1.8.1 Possession Arrangements**

The opportunity is being taken to extend Darwen loop during the 3<sup>rd</sup> May to 4<sup>th</sup> October 2015 engineering possession of Farnmouth Tunnel. This possession forms part of the North West electrification programme. The train plan is currently being developed on the basis that train services will be reduced but strengthened with intermediate stations between Bolton and Salford being serviced by road transport. The Darwen loop works are scheduled between 16<sup>th</sup> July and 14<sup>th</sup> August 2015. It is understood however Northern Rail has formally objected to the combined possession, via industry processes, as they have concerns about the timetable proposals. There are ongoing discussions to resolve the issue. A Network Rail representative on 12<sup>th</sup> January 2015 advised however that it remains the intention to utilise the Farnmouth possession for the full Darwen work bank.

The combining of the possessions forms part of Network Rails London North Westerns route plan strategy, which supports the overall Control Period 5 Strategic Business Plan. The route strategy describes looking toward more innovative ways to balance the need for access to the network. This includes exploring the financial trade-offs and strategies which reduce planned disruption to passengers.

A Northern Rail representative advised on 8<sup>th</sup> January 2015 that they anticipate using the Schedule 4 performance regime mechanism for claiming back all additional possession costs. These are not finalised therefore any financial benefit of combining both possessions is currently unknown. Although the timetable is expected to commence in December 2016 the early delivery of the extended loop is likely to have a positive effect on the present level of reactionary delay.

### **1.8.2 Conclusion**

Northern Rail's objection to the possession arrangements should be monitored to ensure any deviation from the original plan is understood from an operational, financial and passenger impact perspective.

## **1.9 Management Arrangements**

The management arrangements for the Blackburn to Manchester Rail Scheme are described in the Outline Business Case 2014 part 7 and include the following:

- *The project governance arrangements;*
- *Project Assurance;*
- *The Delivery Programme and Risk Management;*
- *Communications and Stakeholder Management; and*
- *Monitoring and Evaluation.*

This section reviews the management arrangements.

### **1.9.1 Governance Structure**

The Blackburn to Manchester Rail Scheme governance structure consists of the following:

- *Project Board;*
- *Project Delivery Team; and*



- *Client and Stakeholder Management sub-group.*

Details of the governance arrangements are described below.

#### **(a) Project Board**

The Project Board will meet quarterly from January 2015. The board consists of executive representation from Blackburn with Darwen Council, the Network Rail Project Director, senior users which include Lancashire Council, Transport for Greater Manchester and Network Rail along with a stakeholder management representative supplied by Blackburn with Darwen Council. The Project Board is responsible for the delivery of the Blackburn to Manchester Monitoring and Evaluation Plans and will receive monitoring reports, provided by the Project Team, on scheme progress, spend risk and stakeholder management. The Project Board is accountable for:

- *Sanctioning and approving any material change to the scope of the project brief;*
- *Approving any change request which could result in an increase in cost or extension of the programme;*
- *Manage all press and public relations matters;*
- *Submission of all reports to LEP and TfL; and*
- *Submission of all requests for payment from LEP.*

#### **(b) Project Delivery Team**

The Project Delivery Team will meet every four weeks to oversee the development of the scheme. The team will initially cover the design aspects but will ultimately become the scheme delivery team. Accountabilities include responsibility for periodic reports and ensuring suitable representation to discuss progress to the Project Board. The Project Delivery Team will consist of representatives from Blackburn with Darwen Council, Network Rail, Northern Rail, Lancashire County Council, Transport for Greater Manchester and the contractor.

Network Rail currently holds fortnightly progress meetings and separate engineering and commercial meetings. Although primarily for Network Rail internal reporting purposes the outputs from these meetings can be adjusted to meet the various project stages to inform the Project Delivery Team.

#### **(c) Client and Stakeholder Management sub-group**

A fortnightly Client and Stakeholder Management sub-group will plan and deliver the communications strategy. Representatives will be from Blackburn with Darwen and Network Rail. The Project Board stakeholder management representative is a member of this group.

When discussing the governance arrangements with Northern Rail's representative on 9<sup>th</sup> January 2015 it was confirmed they only apply to the Blackburn to Manchester Rail Scheme. It is assumed suitable governance arrangements are in place for the Farnmouth project and the two project interdependencies are understood and will be effectively managed. For example if there is a change in one projects programmes scope. It has been confirmed however the Project Manager for both schemes is the same individual which should ensure both projects are managed in an integrated way.

### **1.9.2 Project Assurance**

A detailed Assurance Plan is attached to the Outline Business Case as Appendix M.

As described earlier the Project Board will meet quarterly from January 2015. This means meetings will take place in January 2015, April 2015, July 2015 and September 2015. The Scheme Delivery Plan (attached to the Outline Business Case as appendix J) sets out GRIP stages 4 to 8 along with key dates which are:

- *GRIP 4: Single option development which was scheduled to commence on 19th September 2014 and be completed by 9th April 2015;*
- *GRIP 5: Detailed design which was scheduled to commence on 19th September 2014 and be completed by 24th June 2015;*
- *GRIP 6: Construction, Test and Commissioning. Pre blockade construction to commence on 19th September 2014 and be completed by 16th July 2015. The blockade construction works are scheduled to commence on 16th July 2015 until blockade hand back planned for 14th August 2015;*
- *GRIP 7 and 8: Scheme Hand back and project close out to be completed between 14th August and 15th October*

When comparing the Scheme Delivery Plan key dates and the scheduled meetings of the Project Board meetings are reflective of the GRIP stages. However it has been recognised in the scheme Assurance Plan that ad-hoc meetings may be required.

A traffic light dashboard is to be presented to the Project Board at the inaugural January 2015 meeting which will include the following:

- *The programme timetable;*
- *Cost (including key milestones)*
- *Quality and partnership working*
- *Benefits realisation*
- *Skill and resources to deliver the project*
- *Risk management*
- *Health and Safety*
- *Internal and external communications*
- *Project evaluation*

A quarterly monitoring report, which includes project progress and financial performance updates, will be provided to the LEP. The report will be approved by the Project Board before being submitted to the LEP.

Regular reporting to the Council's Executive Board detailing delivery and financial progress is mandated in the assurance Plan. This is to ensure that the project is held to account by councillors and the general public.

### **1.9.3 Communications and Stakeholder Management**

The 2014 Assurance plan mandates the Project Manager will be the focus for all project communications. A protocol is included for all written and verbal communications which includes requests for information.

All proposed press releases or publicity events are to be coordinated through the Project Director. The Project Director will liaise with the appropriate Client representative.



Approaches from the press are to be referred to the appropriate Press Co-ordinator who will liaise with the Project Director and Project Manager.

The 2014 Outline Business Plan identifies the key stakeholders as:

- *Local communities including rail and non-rail passengers;*
- *Community Rail Lancashire (Clitheroe Line Community Rail Partnership);*
- *Local Councillors;*
- *Local MPs; and*
- *Local businesses.*

For each stakeholder group a number of action plans have been developed for the Communications strategy. The plans include the identification of the stakeholder group, the objective of the communications, the means of communication and the suggested engagement dates.

**1.9.4 Conclusion**

The project governance and assurance arrangement supports a framework where management decisions can be made. The structure defines collective responsibilities and provides a mechanism to ensure the delivery of the project is efficient, remains as per the delivery plan, risks are managed and reliable and timely information is provided to all key stakeholders.

**1.10 Delivery Programme**

A detailed scheme delivery programme, which was developed by Network Rail, is attached as Appendix J to the December 2014 Outline Business Plan. The delivery programme commences from 5<sup>th</sup> September 2014 to completion on 15<sup>th</sup> October 2015.

A number of critical risks to the delivery programme were identified in October 2014 along with measures to mitigate them. The details are described in Table 1-F.

Critical Risk	Mitigations
Signalling design records availability caused by demand from other schemes	The necessary records have been pre-ordered. The design works will be planned to fit the availability of each record.
Signalling testing and commissioning resource availability.	The contractor has confirmed in-house resources. Names, personal competence records will be made available 3 months before commissioning
Retaining wall renovation – access to undertake the works	The initial proposal requires access from gardens abutting the railway. The gardens have been extended on to railway land. Alternative approaches are being identified to avoid potential conflicts.
Drainage – identification of acceptable solutions for culverts	Discussions are on-going with the relevant Asset Managers to confirm that the previously agreed options are still acceptable
Farnworth tunnel blockade	The programme is planned to fit within the Farnworth tunnel blockade. An extension to the blockade may present opportunities to further de-risk the Blackburn-Bolton Programme. A deferral of the Farnworth blockade would necessitate further discussion with Blackburn with Darwin Council and Northern trains to identify a mutually acceptable opportunity to

Critical Risk	Mitigations
	undertake the works.

**Table 1-F: Identified Critical Risks to Delivery Programme**

In the December 2014 Outline Business Case it states that the Delivery Programme will require further work as a signalling record risk issue, described in the first item in Table 1-F above will necessitate changes. The scheme commissioning high level milestones describes the final commissioning in November 2015 while the Delivery Programme is scheduled for project close on 15<sup>th</sup> October 2015. On contacting Network Rail it was advised the November scheme commissioning date applies only to billing arrangements and outstanding paperwork. It was also reconfirmed the Darwen works are expected to be completed prior to the end of the Farnworth blockade.

**1.10.1 Conclusion**

Close liaison between the project and the Farnmouth tunnel project team is essential to ensure no risks develop which may affect the other project.

A Network Rail representative has confirmed the actual Delivery Plan remains valid.