SELRAP

Skipton to Colne Rail Link

Phase 1a Review of Previous Work

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Contents

Executive Summary

SELRAP commissioned Arup to review several studies into the possible reinstatement of the Skipton-Colne rail line.

These previous studies indicated there is demand for travel along the corridor and that a highway scheme, a rail scheme, or a shared-use scheme would all be feasible. The reports did not suggest which mode of transport would make best use of the corridor.

The 2003 study estimated the cost of providing a 'base-option' single-track railway at £33m. The 2007 JMP study updated this to £42.55m. To provide a high-level 2013 base cost, the 2007 figure was updated using the BCIS All-in TPI index to produce a high-level initial base cost estimate for a single track option of **£38.21m**. With a GRIP 3 optimism bias estimate the total outturn cost is £53.49m.

The studies showed that a reinstated rail line could provide local or regional services but that further work would be required to find paths for regional services which did not present a reliability risk due to perturbed running. The modelling work undertaken estimates annual passenger figures of approximately 350,000 for a local service. The studies indicated that use of the corridor for freight is possible.

The benefit to cost ratios provided in the 2003 study indicated that the scheme did not, at that time, offer value for money. This was heavily based on the revenue benefits of the scheme rather than inclusion of the full wider benefits. The 2007 study is more optimistic and gave positive values at central case for the single-line-single-unit options (i.e. base case), pointing to the wider economic and environmental advantages.

The wider economic benefits can be substantial, especially for schemes which provide new journey opportunities. There has been significant updating of appraisal guidance since 2007. Further work is needed to update the business case to reflect these changes, and to reflect the wider economic benefits of the scheme, which we are now in a better position to quantify.

1 Introduction

Skipton East Lancashire Rail Action Partnership commissioned Arup to provide an independent review of several existing studies into the possible reinstatement of the Skipton-Colne rail line.

1.1 Aims

The aims of the current study as detailed in this report are as follows:

- Review the work done to date;
- Summarise the economic, environmental and transport issues affecting the study area, and;
- Set out the evidence base for the scheme, including how the scheme will meet the wider objectives, such as economic regeneration.

1.2 Sources

The following sources have been referred to in producing this report:

- Future of the Skipton-Colne Railway Formation, Steer Davies Gleave, August 2003
- Re-opening of the Skipton to Colne Railway, JMP Consulting, 2007
- Next steps for SELRAP: creating a Project Development Group, JRC, 22nd May 2010
- Pennine Lancashire and Yorkshire Railway – Funding Development Plan 2011, SELRAP, 06/11

1.3 Introduction to GRIP process

"Governance for Railway Investment Projects" (GRIP) describes how Network Rail manages and controls projects that enhance or renew the national rail network.[1] The process is a product-based lifecycle management tool, developed to minimise and mitigate project risk in the operational rail industry.

A summary of the eight GRIP stages is provided in the table below.[1]

[1] Network Rail standard *NR/L1/INI/PM/GRIP/100*, available publicly at *http://www.wymetro.com/NR/rdonlyres/C22E134B-7E18-4389-98DB-77FE91BF01D9/0/LSSED25GovernanceforRailwayInvestmentProjectsGRIP.pdf*

Table 1.1 Summary of Network Rail GRIP Process

GRIP Stage	Aim	Main output
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 consultation.
2. Feasibility	Define the scope of investment and identify constraints. Confirm that the outputs can be economically delivered, and are aligned with organisational strategy.	Identifying solutions in response to the requirements.
3. Option Selection	Develops options for addressing constraints. Assesses and selects the most appropriate option that delivers the stakeholders requirements, together with confirmation that the outputs can be economically delivered.	Single option determined and stakeholder approval to option approved through Approval in Principle (AIP).
4. Single Option Development	Initiation of the development of the chosen single option.	Reference/Outline Design.
5. Detailed Design	Produces a complete, robust engineering design that underpins definitive cost/time/resource and risk estimates.	Full design to which the project will be built.
6. Construction, Test and Commission	Delivery to the specification and testing to confirm operation in accordance with design.	Project built, tested and commissioned into use.
7. Scheme Hand-back	Transfer asset responsibility from the project team to the operator and maintainer.	Project handed over to maintainer or operator.
8. Project Closeout	Closeout in an orderly manner. Contractual accounts are settled, and any contingencies and warranties are put into place. Assessment of benefits carried out.	Project formally closed out and project support systems formally closed.

2 Summary of the Main Issues

2.1 Is there demand to use the corridor?

The SDG report dealt briefly with the market profile of the Aire Valley and East Lancashire areas, including a brief discussion on the settlement populations and make up. It did not quantify the current or future travel demand of these populations nor their likely rail modal share. [SDG para 6.8]

The option appraisal section of the SDG report mentions a 'local service modelling exercise' but did not give details of the method or input data, nor did it quantify the output except for very high level totals. [SDG paras 7.1 and 7.11]

JMP dealt extensively with the demand and market matrices but did not generate forecasts. Instead the SDG forecasts were updated.

2.2 What mode is best use for the corridor?

This is not clearly dealt with in any of the reports.

The corridor is protected for 'transport' use, so is not prescriptive of a highway scheme [Joint Lancashire County Council Structure Plan 2010-2016].

SDG was clearly based on whether or not to protect the rail corridor (from a road scheme) but does not give a conclusive opinion. It is clear that the base case for Lancashire County Council was at that time to align the road scheme (A56 Villages bypass) on the rail alignment [SDG para 1.4].

The report is clear that shared use with twin-track railway is fraught with difficulties, additional expense and risk [SDG para 4.121 4.127 4.141]; for example:

- Longer spans for bridges over the corridor and wider decks for bridges carrying the corridor. Additional structures required to cross the railway where the road relies on at-grade minor junctions to cater for the crossing need.
- Additional costs for crash barrier and anti-dazzle screening.
- Additional earthworks (or retaining structures) costs from larger cuttings and embankments e.g. the 1400m-long cutting at Colne Edge.
- Increased drainage costs - to sensibly provide future provision for the railway at the time of road building and to drain the increased areas of cutting bed etc.
- Additional land costs from the widened corridor and additional design costs to ensure that the proposals are compatible.
- Complications in the design and procurement process, with a risk that the road scheme Public Inquiry may dwell on issues associated with the railway; this will be particularly relevant to objections to compulsory land purchase over and above that required for the road scheme alone.

SDG suggested that the A56 Village Bypasses scheme was estimated at £37m with additional cost for maintaining a single-track railway alignment of £8-9m [SDG para 8.15].

The SDG report looked at this question from a slightly different perspective, in that it assumed the highway scheme would be built and then questions how best to accommodate a future railway scheme [SDG para 8.12].

SDG suggested that the highway could, with some expense, be built to accommodate a future single-track railway. However, this highway and single line option would limit service possibilities. SDG noted that the cheapest way to preserve the option of rail would be to take the highway scheme off the corridor [SDG para 8.20 vi]. Not providing a highway would allow for future double tracking, thereby maintaining the best rail value [SDG para 8.19].

2.3 What is the cost of the rail option?

This issue is dealt with in detail by all reports. Breakdowns are available and headline estimates are given in £m. Running costs are based on assumed service provision and staffing rates (and other service running costs). Estimates of infrastructure cost and cost inflation are given.

SDG gave a cost of £33m assuming single track railway with no A56 co-location and assuming the A629 under bridge option is adopted [SDG para 4.147; detailed breakdown in Appendix A]. This costing is dated May 2003.

JMP updated and revised the 2003 estimates and gave a single-track option cost of £42.55m and double-track cost of £80.65m. These costs are dated 2007 and excluded optimism bias[2].

To provide a high-level 2013 base cost, the total costs given in the JMP report have been updated using the BCIS All-in TPI index. The levels of optimism bias have been amended as a result of the fact that Network Rail has indicated that it believes the JMP study approximates to between [NR] GRIP levels 1 & 2. The results are shown below.

[2] For more information about optimism bias please see section 3.1

Table 2.1 Costs Provided in JMP Report

Capital Cost (£m)	Single Track	Double Track
Structures	9.47	12.17
Track bed and drainage	1.25	9.04
Permanent Way	8.36	21.59
Signalling	4.55	5.17
Level Crossings	3.27	4.26
Stations	1.96	4.95
Accommodation Works	0.13	0.75
Procurement	3.97	6.36
Subtotal	32.96	64.29
Contingency, Land, Possessions	9.59	16.36
2007 Base Cost	42.55	80.65
2007 Cost with Optimism Bias (GRIP 1)	**70.63**	**133.87**
2013 Base Cost	38.21	72.42
2013 Base Cost with Optimism Bias (GRIP 1)	63.42	120.21
2014 Base Cost with Optimism Bias (GRIP 2)	57.31	108.63
2015 Base Cost with Optimism Bias (GRIP 3)	**53.49**	**101.38**

2.4 Detail of patronage, service patterns, timetabling constraints

This is dealt with in SDG and JMP; especially the JMP report, which goes into some detail and focuses on local services for timetabling and seems to concentrate on East Lancashire and not the Aire valley (except one option which runs to Leeds, although this option is difficult due to capacity constraints between Skipton and Leeds). Manchester links are clearly not convenient, needing reversal at Burnley or Blackburn-Bolton service, which is slow.

SDG was not positive about local and regional patronage and highlighted the timetabling issues of threading longer services through the congested areas of the network [SDG para 6.63]. The service options reviewed were:

- Skipton-Colne shuttle; 1 unit, hourly service, no constraint [SDG para 6]
- Extending Blackpool-Colne to Skipton; 1 unit, hourly service, no external constraint [SDG para 6]
- Creating new Manchester Victoria - Blackburn - Skipton; hourly, high operating cost, uneven 20/40 service to Colne, intensive use of single track, slow journey times [SDG para 6]
- Blackburn – Skipton; approx. half hourly with the Colne service, needs passing facilities at Nelson, 48 minute dead time at Skipton, could extend to provide service to Grassington. [SDG para 6]
- Extending local services beyond Skipton to Leeds or Bradford Foster Square; however, line between Skipton and Leeds/ Bradford Forster Square; heavily used capacity with four trains per hour south of Skipton, additional coal and

freight, flat junctions at Skipton and Shipley, and difficulty keeping up with / out of way of electrics.

- Inter-regional services; current service provision is based on frequent, reliable core routes between relatively few locations. Adding direct links between stations is not priority in this respect. Threading new routes increases risk to reliability because of large number of conflicts.
- Leeds or Bradford to Manchester Airport; could provide Bradford, Aire Valley, and East Lancashire with a direct service where none is available at present. Going to Leeds would allow direct journeys from East Lancashire with Bradford-airport passengers changing at Shipley.
- Leeds or Bradford to Manchester Victoria; would benefit Aire and East Lancashire with direct link where none currently. Leeds and Bradford already have directs which are quicker.
- West Yorkshire to Lancashire / Cumbria; would complement the existing hourly York -Blackpool service. Additionally a service between West Yorkshire and the Lake District would potentially provide relief to the A65.

The service options reviewed in the JMP study include:

- A Skipton to Colne shuttle service – this would involve a single train operating hourly between Skipton and Colne, with reasonable connections being achieved at one of the stations but not both. This option requires a loop and second platform at Colne and connections at Skipton North Junction to provide access to Platforms 3 and 4 at Skipton Station.
- Extending the current Blackpool South to Colne service – this would need an additional train and there is a risk of timetable perturbation due to single track sections on the route. This option offers better connectivity but convenient connections at Skipton may be difficult to achieve.
- Skipton to Manchester Victoria service – this option could be integrated with the Manchester Victoria to Clitheroe service between Bolton and Blackburn to provide an approximately half-hourly service. The service would require four additional trains.
- Skipton to Blackburn service – this could be operated with uneven headways using two trains. This would offer good connections at Skipton but not with services to Manchester at Blackburn.
- Leeds to Manchester Victoria service – this would need at least five trains and is challenging due to capacity constraints at a number of places along the route.

2.5 Benefit to Cost Ratio

The benefit to cost ratio provided by SDG showed that, at that time, the scheme did not offer value for money. This BCR was heavily based on the revenue benefits of the scheme rather than inclusion of the full wider benefits.

JMP was more optimistic and gave positive values at central case for the single-line-single-unit options (i.e. base case). This and SELRAP report point to the wider economic and environmental advantages including accident reduction etc., which helps to deliver the stronger BCR.

A summary of the benefit to cost ratios given in the SDG and JMP reports is given in the table below.

Table 2.2 Summary of Benefit Cost Ratios Provided by SDG and JMP

Benefit to cost ratio	SDG 2003	JMP 2007		
		Low	Central	Positive
Single track option (Skipton-Colne)	0.7	0.52	1.30	2.43
Double track option (Skipton-Colne)	-	0.33	0.81	1.53

2.6 Planning Context

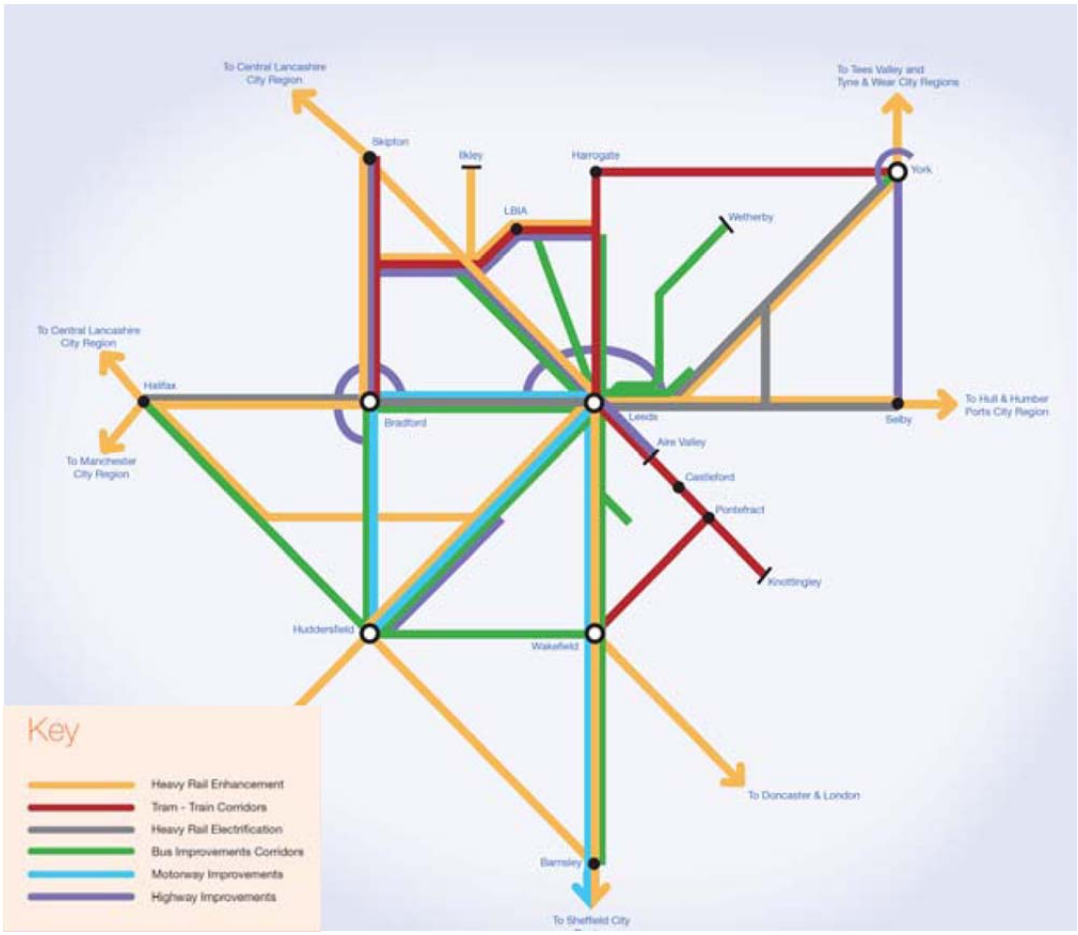
The scheme was included in two reports which fed into the North West Regional Spatial Strategy (RSS)[3]. The JMP report suggested that the options for 'reducing journey times between Central Lancashire and Leeds City Regions by rail could include re-opening of the Colne-Skipton railway line to allow additional through services between the two city regions'. The Atkins report showed that the rail link scored more points than the A56 bypass scheme under the multi-criteria assessment method used to develop regional transport priorities.

All RSS documents were revoked in 2010, however, following a successful High Court challenge this revocation was cancelled and the Government announced that the RSS documents would be revoked individually following environmental assessment and public consultation. On 27th March 2013 the Secretary of State announced that the remaining RSS documents, including the North West RSS, would be revoked. That means that following revocation these references to the scheme no longer have any legal standing in planning or transport policy.

The Leeds City Region Transport Vision includes a diagram showing an intended heavy rail upgrade between Leeds and Central Lancashire city regions via Skipton and Halifax. This diagram, shown as Figure 2.1 below, was not included in the subsequent Leeds City Region Transport Strategy which was based largely on the Vision work.

3 A Methodology for Determining Regional Transport Priorities in the North West, Final Report, JMP Consulting, January 2006 (Ref 91 in the RSS) and Regional Prioritisation of Major Transport Schemes Study Report, Atkins, January 2006 (Ref 92 in the RSS).

Figure 2.1 Key Connections in the Leeds City Region Transport Vision



Source: Leeds City Region Transport Vision (Figure 7)

3 Review of Previous Economic Appraisal

There has been significant updating of appraisal guidance since the JMP study (2007). This includes:

- Updating the appraisal base year from 2002 to 2010;
- Updated values of time, and;
- Changes to the guidance for assessing highway decongestion benefits.

3.1 Costs

The SDG report gave a cost for a single track option of £33m this was updated to £42.55m for a single track option and £80.65m for a double track option in the 2007 report (these costs exclude optimism bias). Over the last few years construction costs have fallen whilst general prices have continued to rise with a 10% decrease in construction prices seen between 2007 and 2013. Construction prices are forecast to grow at between 3% and 4% per annum over the next few years. There has also been a trend of value engineering which will reduce costs (especially for elements such as stations buildings).

HM Treasury guidance, also reflected in DfT guidance, suggests that optimism bias should be included in appraisals. The HM Treasury Green Book suggests there is a demonstrated, systematic, tendency for project appraisers to be overly optimistic. To redress this tendency appraisers should make explicit, empirically based adjustments to the estimates of a project's costs, benefits, and duration.

This is reflected in appraisals by the use empirically derived uplift factors. For rail projects Network Rail guidance suggests that optimism bias should be included at 66% for GRIP 1 projects, 50% for GRIP 2 projects and 40% for GRIP 3 projects. This will further reduce costs as the scheme progresses.

3.2 Demand Case

There has been significant growth in rail demand over recent years, especially on TransPennine routes. The TransPennine Express franchise has seen a doubling of demand over the past 8 years. This is higher than earlier forecasts suggest. Although much of this demand is between the key cities of Liverpool, Manchester, Leeds and York, there has also been growth on other cross Pennine routes.

The previous revenue forecasts were developed using data from the 2001 census, updated by the information from the National Trip End Model (TEMPRO). Since 2001 there has been an increase in the pull of key cities such as Manchester and Leeds and the influence these have on the surrounding areas. This is shown by the growth on the Airedale Line from places such as Skipton and Keighley to Leeds.

It is hoped that 2011 census data will be available by the time stage 1b of the current study is completed which will allow a more detailed picture of journey patterns to be included in the analysis.

The pricing policy on the rail network over recent years has been to implement above inflation fare rises. This will have pushed up yields from those included in

the 2007 work. This will; however, have also had an impact on demand. The Passenger Demand Forecasting Handbook (PDFH) suggests and elasticity of -0.9 this means that for every 10% increase in fares demand drops by 9%, meaning that revenue after fare increases is still positive.

3.3 Other Benefits

SDG assumed highway decongestion benefits would be double the revenue benefits with JMP assuming a higher value of 2.5 times the revenue benefits. Values to assume for decongestion are included in WebTAG based on the amount of passenger miles removed from the network. These values should be included in any updated appraisal.

There appears to be no account of wider economic benefits in the assessment. These benefits can be substantial especially for schemes which provide a new journey opportunities connecting employees to businesses and bringing businesses closer together (in terms of travel time).

4 Summary of Review

The table below shows a summary of the findings of this review.

X = not detailed

	SDG 2003	JMP 2007	JRC 2010
Is there demand for using the corridor?	Aire Valley has stronger rail market than Calder Valley. Blackburn is strong in size and make-up.	2000 in-scope journeys to work @2001 Rail usage and journey times likely to be positive	X
What mode is best use of corridor?	X	X	X
What is cost of base option (rail)?	£33m @2003 £790k annual operating cost	£42.6m @2007 £860k annual operating cost	X
Details of timetabling constraints, service pattern, patronage	Highlights pathing difficulties and reliability concerns of long-distance links. Local service patronage 365k pa	Update of SDG philosophy Local service patronage upper estimate 565k pa best estimate 341k pa @2014	X
Benefit:Cost Ratio	Single line 0.7:1	Single line upper ~2.43:1 best estimate ~1.30:1 lower ~0.52:1	X

5 Conclusions and Next Steps

- JMP considered a number of wider benefits in addition to SDG's and produced a positive benefit to cost ratio for the scheme.
- Further work is needed to update the business case (e.g. stage 1b) to reflect recent changes to guidance and reflect the wider economic benefits of the scheme, which we are now in a better position to quantify.
- The analysis presented in this note shows only the work done to date. Future updating of the business case will help to refine the scheme cost and benefits. A large number of changes have taken place since the previous business cases were developed and these could have a significant impact on the current business case. These changes include the announcement of the Northern Hub which will deliver a step change in rail connectivity across the north of England, especially the North West and the confirmation of the Todmorden Curve scheme which will dramatically improve connectivity from Burnley to Manchester.