



SKIPTON—EAST LANCASHIRE
RAIL ACTION PARTNERSHIP
Reconnecting your Region

S E L R A P

Re-opening of the Skipton to Colne Railway

Modules 1 and 2

Engineering and Train Operations



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1 Introduction

Scope of paper

- 1.1 The objective of this paper is to provide an up-to-date cost baseline in order to establish an estimate of the implementation cost of re-opening the railway line between Skipton and Colne. It also considers the potential service options that could be operated.
- 1.2 The starting point is provided by a report prepared for Lancashire County Council by consultants in 2003 – *Future of the Skipton-Colne Railway Formation*, August 2003, Steer Davies Gleave.

Description of line

The Skipton to Colne line

- 1.3 The proposed scheme uses the trackbed of the closed railway between Skipton and Colne to restore the rail connection between existing railways at Skipton and Colne.
- 1.4 The passenger service was withdrawn when the line was closed to all traffic in 1970. Intermediate stations at Thornton-in-Craven and Earby were closed on the same date. Other intermediate stations at Elslack and Foulridge had closed in 1952 and 1959 respectively. A short branch line from Earby to the town of Barnoldswick had closed in 1965.
- 1.5 The line was relatively easily graded compared with other trans-Pennine routes. The prevailing gradient was less than 1 in 200 and the maximum was a short length of 1 in 141.

The railway to Colne

- 1.6 Colne is now the terminus of a single track branch from Gannow Junction in Burnley serving intermediate stations. Only one passenger train is permitted on the branch at any one time as there are no passing loops or sidings.
- 1.7 At Gannow Junction the Colne branch joins the double track trans-Pennine line from Preston and Blackburn to Hebden Bridge.

Railways at Skipton

- 1.8 Skipton is the principal intermediate station on the former 'Midland' main line from Leeds to Carlisle...The station at Skipton has four platforms – two serving the double track main line, one on the 'down slow' line and a bay used to terminate trains from Leeds and Bradford. The 'down slow' is a reversible line used to provide access for trains to and from the freight-only branch to the Tilcon quarry at Rylstone (the former 'Grassington' branch).

Rail operations

- 1.9 The local rail passenger services on the lines to Colne and Skipton are operated by Northern Rail under the terms of a franchise that commenced in December 2004 and will run until August 2013 (or 2011 if performance targets are not met).
- 1.10 The Colne branch is served by an hourly service from Blackpool South via Preston and Blackburn. The single track sections of line to Colne and Blackpool South pose a risk to reliability through limiting the ability to recover the timetable in the event of perturbation. The line from Blackburn to Hebden Bridge carries an hourly passenger service between Blackpool North and Leeds together with some freight traffic.
- 1.11 The lines from Leeds and Bradford to Skipton are electrified and carry commuter services every 30 minutes to both destinations with additional trains in peak periods on weekdays. The strong growth of demand for commuter travel to Leeds by rail in recent years has resulted in pressure on line and station capacity at Leeds despite recent investment in

improving capacity at the station and its western approaches. West of Skipton, there is a total of 12 trains in each direction on weekdays and Saturdays on the Carlisle and Lancaster/Morecambe lines. Levels of service are reduced on Sundays.

- 1.12 In addition, there is a GNER inter-city service from Skipton to London Kings Cross via Leeds departing in the morning peak and returning in the evening on weekdays.
- 1.13 The line through Skipton carries a substantial volume of freight traffic – coal trains from the port of Hunterston and the opencast mines of the Ayrshire coalfield, gypsum from Kirby Thore to the power station at Drax and stone from the quarry served by the Rylstone branch.

The Strategic Context

Route Utilisation Strategies

- 1.14 The purpose of the Route Utilisation Strategy (RUS) process is to provide a basis for the development and delivery of timetables, infrastructure maintenance and renewals. The process focuses on issues of line capacity, making best use of the available capacity and identifying capacity enhancement schemes that provide value for money by addressing capacity constraints in an affordable way.
- 1.15 A number of Route Utilisation Strategies could have an impact on the future re-opening and development of the Skipton to Colne railway:
- Freight: The final RUS for freight was published in 2007.
 - North West: The RUS consultation document was published in November 2006 and the final RUS was published in May 2007 covering the period to 2013.
 - Lancashire and Cumbria: The final version of the scoping document for this RUS was published in November 2006. The consultation document for this RUS is programmed for publication in Autumn 2007 followed by the final RUS in March 2008. The time frame is a period of 10 years commencing in 2008.
 - Yorkshire and Humber: The final version of the scoping document for this RUS was published in December 2006. The consultation document for this RUS is also programmed to be published in Autumn 2007 followed by the final RUS in January 2008 covering a period of 10 years from 2007.
- 1.16 The **Freight RUS** indicates that the Skipton-Leeds line carries between 10 and 19 freight trains in each direction (based on data for Thursdays in 2004/5). Utilisation of freight train paths is shown to be in the 50%-59% range. Expansion of freight traffic over the line is expected to be in the range 0-4 additional trains per day in each direction by 2014 possibly rising to 10-14 extra trains per day per direction under a scenario of increased coal traffic from Scotland. The test of line capacity sensitivity to increased coal traffic led to identification of a capacity gap on the line between Carlisle, Skipton and Leeds, and to the identification of a capacity constraint at Whitehall Junction on the western approach to Leeds.
- 1.17 The line from Carlisle to Leeds is not included in the investment priorities for upgrading to W10 gauge to enable the carriage of High Cube containers on standard wagons. The line is not included in the rail freight sector's aspirations for W12 gauge to enable the carriage of wider containers.
- 1.18 The solutions proposed by the RUS are investment in signalling in the period 2007-2009 to increase line capacity between Carlisle and Settle Junction, the lengthening of coal trains and continuation of the process of timetable optimisation. The Freight RUS does not propose any improvement at Whitehall Junction, Leeds – suggesting that timetable optimisation and lengthening of freight trains are sufficient to overcome the constraint.
- 1.19 The only freight issue identified by the Freight RUS for the East Lancashire line from Preston to Gannow Junction is the possibility of diversion of a few West Coast Main Line

(WCML) slower moving Class 6 freight services via the Settle and Carlisle line, Clitheroe, Daisyfield Junction and Blackburn.

- 1.20 The scoping document for the **Lancashire and Cumbria RUS** defines the geographical area to be covered to include the lines from Skipton to Carlisle, Farrington Curve Junction (near Preston) to Hall Royd Junction (near Todmorden), Gannow Junction to Colne, and Hellifield to Blackburn.
- 1.21 The **North West RUS** could affect the proposed re-opening of the Skipton-Colne railway indirectly as it covers the line linking Blackburn with Bolton and Manchester. It indicates that the morning peak hour train to Manchester is loaded to between 100% and 125% of capacity before reaching Bolton. It also indicates that the single track section of route between Lower Darwen and Bromley Cross on the 'Bolton' line is utilised to between 70% and 80% of capacity. Capacity constraints at Salford Crescent Station are identified as another issue affecting services in the 'Bolton' corridor.
- 1.22 The North West RUS includes a test of an option to increase off-peak services between Blackburn and Manchester Victoria to two trains per hour in each direction. Analysis indicated a benefit cost ratio (BCR) of between 0.9 and 1.5 depending on the assumptions made and excluding the capital cost of upgrading infrastructure between Bolton and Blackburn. The conclusion drawn was to exclude this proposal from the strategy **unless the benefits from running such a service beyond Blackburn appear likely to alter the result** and, consequently, the issue was passed on for consideration in the Lancashire and Cumbria RUS.
- 1.23 In contrast, the RUS recommends the inclusion of a scheme in the strategy to overcome the bottleneck at Salford Crescent.
- 1.24 The **Yorkshire and Humber RUS** scoping document defines the area to be covered to include the lines from Leeds and Bradford to Skipton. Key issues identified for consideration include line capacity on lines radiating from Leeds, station passenger capacity at Leeds, and the local impact of coal traffic from Scotland.

The Transport White Paper and High Level Output Statement

- 1.25 In July 2007 the Department for Transport (DfT) published the White Paper *Delivering a sustainable railway* setting out proposals for investment in rail to deliver increased capacity and improvements in safety and reliability. It also provides an instruction to the Office of Rail Regulation (ORR) in the form of the *High Level Output Statement*.
- 1.26 The White Paper identifies proposals for investment totalling more than £10 billion in the period 2009-2014 in the context of maintaining the annual rate of increase in regulated fares to RPI+1% - although recent franchise awards have allowed higher annual increases in unregulated fares.
- 1.27 Investment proposals that may be relevant to this study include the deployment of additional rolling stock on commuter lines radiating from Leeds and Manchester; and spending to improve facilities at medium-sized stations.

Regional context

- 1.28 The Regional Transport Strategy (RTS) for the North West of England is embodied in the Draft Regional Spatial Strategy (RSS). A key component of the RSS is a vision for a Central Lancashire City Region focused on the towns of Blackpool, Preston, Blackburn and Burnley and supported by a high quality public transport network. The objective is that economic growth in the larger towns would be a catalyst for regeneration and growth in smaller towns such as Nelson and Colne.
- 1.29 Improvement of the city region's internal and external transport links in line with the priorities for transport investment and management is seen as one of the main elements of the overall regional strategy. The RSS places emphasis on improving the accessibility of

key employment locations and Preston is identified as the 'gateway' to and strategic public transport interchange for the city region. The RSS also states that plans and strategies should encourage greater use of rail for freight with investment encouraged in rail freight terminals and private sidings.

- 1.30 In 2005 the North West Regional Assembly commissioned consultants to help in determining regional priorities for investment in transport to be included in the Regional Transport Strategy (RTS). A list of regionally significant transport interventions was tested against a set of economic, environmental and social policy criteria including value for money and deliverability.
- 1.31 The improvement of rail links between the Central Lancashire and Leeds City Regions scored well in the prioritisation, falling into the second quartile of potential interventions. This scheme, which could potentially include re-opening of the Skipton-Colne railway, was placed in the list of 'Second Priority Interventions under Investigation or Proposed for Investigation'. Schemes included in the list of 'First Priority Interventions under Investigation or Proposed for Investigation' included rail capacity improvements to the Central Manchester rail network and improved links between East Lancashire and Manchester via the Blackburn-Bolton line. Proposed improvements to the A56 road east of Colne did not perform as well in the prioritisation and were not included in the RTS.
- 1.32 The implications are that:
- a rail link between Central Lancashire and the Leeds City Region has an important role to play in terms of high level regional policy;
 - stronger transport links between Central Lancashire, Bolton and Manchester are also important; and
 - access to the strategic public transport interchange at Preston is essential.
- 1.33 The Northern Way, a collaboration between the three northern Regional Development Agencies, submitted evidence to the Treasury and Department for Transport (DfT) for consideration in advance of the Government's Comprehensive Spending Review 2007. Issues identified included the need for stronger transport links between the northern city regions and a focus on the Trans-Pennine Corridor to support growth in city region economies. It proposed that investment in rail be focused on resolving capacity constraints on the trans-Pennine routes, around Manchester and on routes to the main northern ports.
- 1.34 Reinstatement of the link between Skipton and Colne would contribute to this strategy by providing an increase in overall trans-Pennine rail capacity and improving journey times between main centres in the Leeds City Region and towns in Pennine Lancashire.

Strategic opportunities

- 1.35 Reinstatement of the railway between Skipton and Colne would connect the Central Lancashire and Leeds City Regions. It would also open up other strategic opportunities in conjunction with investment elsewhere on the rail network. Examples include improved links to Manchester via the Blackburn-Bolton line or a reinstated west curve at Todmorden; connections from the Leeds City Region to the WCML, from Pennine Lancashire to the ECML and from Skipton to Liverpool; and potential freight links from Yorkshire and Humber to west coast ports and from North West England to east coast ports.
- 1.36 The case for reinstating the railway between Skipton and Colne would be strengthened by a number of external factors:
- The introduction of a congestion charge in Manchester would trigger a modal shift from car to public transport for commuting to the benefit of all railways within commuting distance. In July 2007 the Association of Greater Manchester Authorities (AGMA) agreed to submit a bid to the Government's Transport Innovation Fund (TIF) for transport funding and the introduction of a road congestion charging system.

- If, at some future date, it is decided to extend free travel for pensioners to rail, the increase in demand for rail travel should strengthen the case for investment in rail provided that adequate financial provision is made for reimbursement of additional costs incurred by the rail industry.
- Increased accessibility to the Yorkshire Dales that would result from introduction of a leisure-oriented rail passenger service on the 'Grassington' branch or extension of the Embsay and Bolton Abbey heritage steam railway to Skipton.

Options for consideration

1.37 Several rail passenger service options were considered in the 2003 report:

- An hourly Skipton to Colne shuttle service calling at Earby and Foulridge.
- Extension of the existing hourly Blackpool South to Colne service onwards to Skipton.
- An hourly service from Skipton to Manchester Victoria achieved by extending the hourly Manchester Victoria – Bolton service to Blackburn, Colne and Skipton.
- An additional Skipton to Blackburn service operating approximately hourly in order to co-ordinate with the Colne – Blackpool South service as well as was possible given the constraint imposed by the then TransPennine Express York – Blackpool North service.
- An hourly service from Leeds or Bradford Forster Square to Manchester via Skipton and Colne – this option addresses the issue of extending an extra train each hour between Manchester Victoria and Blackburn passed from the North West RUS for consideration in the Lancashire and Cumbria RUS.

1.38 The 2003 report clearly assumed that a new station would be provided at Earby. It is included in the capital cost estimates, the annual cost estimates and the demand and revenue forecasting. The report was less clear about Foulridge – it was not included in the capital cost estimates, but was identified as a station stop in the description of the option of a Skipton – Colne passenger shuttle service. We have assumed that a station will be provided at Foulridge and have included it in our forecasts and cost estimates.

1.39 Substantial changes were made to services and timetables following the commencement of the Northern Rail franchise. The five options identified in the 2003 report have all been revisited to review their operational feasibility. The findings are dealt with in Chapter 4 of this document.

2 Engineering context

The route - Blackburn to Colne

2.1 Train operations on the line from Preston to Hebden Bridge and on the Colne branch are controlled by Preston Power Signal Box. The main line is double track from the point at which it diverges from the West Coast Main Line at Farrington Curve Junction to the point where it meets the Manchester to Hebden Bridge line at Hall Royd Junction near Todmorden. The line to Colne was built as a double track railway but was singled throughout in 1986.

2.2 Prevailing line speed between Blackburn and Gannow Junction was 70 mph in 2003 with restrictions to 50 mph between Blackburn and the junction with the Clitheroe/Hellifield line (Daisyfield Junction), 50/60 mph at the short Rishton Tunnel and 10 mph on the sharp curve at Accrington Station. Prevailing line speed on the Colne branch was 50 mph with restrictions to 20 mph at Gannow Junction and Burnley Central Station. Trains are required to stop to enable the train crew to operate the barrier at a level crossing near Nelson by means of a plunger connected to the crossing mechanism by means of a control wire.

- 2.3 There are five stations on the branch at Burnley Barracks, Burnley Central, Brierfield, Nelson and Colne. The station at Nelson is likely to be upgraded as part of the Lancashire County Council's Nelson Interchange scheme. Consequently, it has been assumed that the subway connection to the platform at Nelson will be made accessible as part of that scheme.

The route - Skipton to Leeds/Bradford

- 2.4 Train operations on the line from Leeds to Skipton and Gargrave are controlled from the Integrated Electronic Control Centre (IECC) at York. The line west of Gargrave is controlled from the manually operated signal box at Hellifield.
- 2.5 The entire line between Armley Junction, Leeds and Skipton is double track with overhead electrification at 25kV AC. The prevailing maximum speed between Armley Junction and Skipton is 80-90 mph with local speed restrictions at Keighley Station, on the curve through Shipley Station, and at Apperley Junction where the line from Ilkley joins.
- 2.6 Trains from Skipton to Leeds serve stations at Cononley, Steeton & Silsden, Keighley, Crossflatts, Bingley, Saltaire and Shipley. A new station at Kirkstall Forge is high on the investment priorities for Metro (West Yorkshire PTE).
- 2.7 The line from Shipley to Bradford Forster Square is also double track and electrified, but has a lower line speed of 50 mph with a 20 mph restriction south of Shipley Station. There is one intermediate station at Frizinghall.

The route - Colne to Skipton

- 2.8 The line between Colne and Skipton was double track throughout from opening until closure. Since closure, ownership of the former railway formation has become fragmented. The situation in 2003 was summarised as follows by the consultant's report *Future of the Skipton-Colne Railway Formation*:
- Colne to Lancashire Gill (north of Foulridge): Now understood to be owned by the residuary body of the British Rail Board.
 - Lancashire Gill to the Lancashire County boundary: Owned by the Lancashire County Council Property Group.
 - Track bed in the vicinity of the former station at Thornton-in-Craven: North Yorkshire County Council.
 - Thornton-in-Craven to Skipton: Mainly in private ownership.
- 2.9 In years since closure the former track bed has been affected by development. The resulting constraints are summarised below:
- Sale of sections of the line to private owners, particularly in North Yorkshire.
 - Severance by roads and other development: Vivary Way and an all-weather football pitch in Colne; access to Earby Employment Area; access to residential property at Low Ground Farm in Thornton; A629 Skipton Bypass.
 - Use of the former track bed to accommodate a medium pressure gas main between Foulridge and Earby.
 - Leasing of land in Earby and Sough to neighbouring residential landowners for use as garden extensions.
 - Commercial development at Elslack – using the former track bed as a forecourt.
 - The removal of a number of bridge structures.
- 2.10 In addition, the corridor has been designated as a Biological Heritage Site.
- 2.11 The A56 Village Bypasses is a scheme to build a new single carriageway road with footpath, cycleway and bridleway that makes use of a section of the former railway alignment between Colne and Thornton-in-Craven. The section of line in question begins

at Vivary Way in Colne and extends northwards to Kelbrook on the southern outskirts of Earby.

- 2.12 In the 2003 study, an option was developed in outline for the A56 Village Bypasses and a single track railway to share a common alignment from Vivary Way to Kelbrook and from Earby to Thornton-in Craven.
- 2.13 The report *Future of the Skipton-Colne Railway Formation* provides an assessment of the works needed to enable restoration of the former railway formation in order to allow the laying of railway track. Two options were identified for reinstatement:
- A low cost single line between Skipton and Colne with one passing loop combined with retention of the existing single line between Colne and Gannow Junction.
 - A higher cost option based on the provision of a double track railway for the full distance between Skipton and Gannow Junction.

Single track option

- 2.14 The proposal specified in the 2003 report was for a single line with a passing loop of some 800 metres including the line through a re-opened station at Earby. The design specification was for a line to be used only by passenger services with a prevailing line speed of 75 mph. All civil and structural engineering works were to be to accommodate a single track railway and no provision was to be made to enable subsequent doubling of the line. This proposal did allow for the continued use of the alignment between Foulridge and Earby by the medium pressure gas main – albeit with the probability of a need for expenditure to ensure easy access to the gas infrastructure.

Double track option

- 2.15 The double track option considered in 2003 envisaged the restoration of double track between Gannow Junction and Colne, and the provision of double track over the full length of the re-opened line between Colne and Skipton. The consequences of this option would be disruption during works on the Gannow Junction to Colne line; a need to re-locate the medium pressure gas main away from the railway corridor; and a need to widen the formation to ensure compliance with current standards for line spacing and cess walkway provision.
- 2.16 It was assumed that existing track work at Gannow Junction would remain in place with double track commencing a short distance to the east of the junction.

Skipton

- 2.17 It was assumed that, for both the single and double track options, the connection at Skipton North Junction would be to the 'Down Shipley Slow' which is signalled for bi-directional movement and restricted to a maximum speed of 25 mph, but does provide direct access to Platform 4 at the station.
- 2.18 This may not be an acceptable solution given that this line is occupied on six occasions on each weekday (i.e. three times in each direction) to reverse stone trains from the Rylstone branch. This situation could easily give rise to perturbation of the timetable for the proposed passenger service if a freight train is blocking the only access to a platform at Skipton Station.
- 2.19 The 'Down Shipley Fast' is also signalled for bi-directional operation – necessary to enable locomotives on stone trains from the Rylstone branch to run around their trains in order to continue towards Leeds. The solution suggested for the purposes of this study is the installation of an additional cross-over to provide access to and from Platform 3 at times when a freight train is occupying the 'Down Shipley Slow'. A more detailed review of train operations and track layout at Skipton will be required in order to identify the best solution as part of a GRIP 2 pre-feasibility study.

Civil and structural engineering issues

- 2.20 The 2003 study did not include any detailed investigation of the civil and structural engineering works needed to enable the re-opening of the line between Skipton and Colne. It was instead based on a unit cost approach and a series of assumptions. The assumptions were as follows:
- Single track: The single line would be accommodated within the former double track formation; any replacement bridges would be built to accommodate only a single line; the gas pipe would not need to be relocated.
 - Double track: Some minor widening of the former formation could be necessary to comply with current standards; the gas pipe would need relocation; replacement bridges would need to be built to satisfy current standards and gauge clearances; and existing bridges capable of re-use may need widening for the same reasons.
 - Single or double track: If the line is to carry freight traffic existing rail over-bridges are likely to need strengthening; bridges carrying public highways over the railway will need protection measures to mitigate the risk of road vehicles crashing on to the track; and six level crossings would be needed.
- 2.21 The 2003 study also addressed the issue of integrating the proposed rail reinstatement scheme with the A56 Village Bypasses highway scheme

Signalling

- 2.22 A new signalling system would be needed to control train movements between Gannow Junction and Skipton for both single and double track options. Signalling would have to be controlled from York and Preston with a handover point somewhere between Skipton North Junction and Colne.

Electrification

- 2.23 Electrification was not addressed in the 2003 study. The objective of 25kV AC overhead electrification would be to enable the operation of through passenger services from Leeds to Manchester and/or Preston via Skipton and Colne. It could also allow the use of electric haulage on rail freight routed via Skipton and Colne.
- 2.24 For electrification to be of any value, it would need to extend from Skipton to Manchester or Farrington Curve Junction south of Preston or both. As estimation of the full cost of such an electrification scheme is beyond the scope of this study, it is only possible to give an order of magnitude indication. An alternative approach may be to utilise bi-mode rolling stock.

Stations

- 2.25 The 2003 study assumed that all of the stations on the Colne branch (i.e. Burney Barracks to Colne) would need the reinstatement of a second platform as part of the double track option. The 2003 report appears to include provision for only one new intermediate station at Earby although there is a comment that provision of a new station at Foulridge should be feasible.

3 Scheme implementation costs

Cost Estimates - 2003

- 3.1 The 2003 report *Future of the Skipton-Colne Railway Formation* provided implementation cost estimates as follows:
- Low cost single track railway with one passing loop - £32.88 million.

- Double track railway between Gannow Junction and Skipton North Junction - £61.05 million.
- The additional cost to the A56 Village Bypasses scheme incurred as a result of sharing the former railway alignment with a reinstated single track railway was £4.48 million.
- Additional provision of approximately £6.0 million was referred to in the report in connection with diversion of the A56 to the motorway roundabout to accommodate the railway. This is understood not to be an essential requirement of the scheme as the figures of £32.88 million and £61.05 million for the single and double track schemes include provision for overbridge and highway works at Vivary Way, Colne.

Updated Cost Estimates

Requirements

3.2 The requirements of this study for providing implementation cost estimates are given below:

- An updated implementation cost estimate for a reinstated single track railway between Skipton and Colne with one passing loop and intermediate stations at Earby and Foulridge.
- An updated implementation cost estimate for a reinstated double track railway between Skipton and Colne with intermediate stations at Earby and Foulridge, and restoration of double track and provision of second platforms at stations between Colne and Gannow Junction.
- An updated implementation cost estimate for the additional costs imposed on the A56 Village Bypasses scheme as a result of railway reconstruction.
- A new estimate of the additional cost of 25kV AC overhead electrification of the double track railway option between Skipton North Junction, Gannow Junction, Blackburn and Manchester or the WCML at Farrington Curve Junction.

Network Rail GRIP process

3.3 Network Rail uses the GRIP (Guide to Railway Investment Projects) process to define the stage that rail projects have reached in the investment life cycle. There are eight stages starting with GRIP 1 Output Definition and concluding with GRIP 8 Project Close-Out. In addition GRIP stage 0 is used for projects that are at an initial 'conceptual' stage.

3.4 Initial investigations to assess the feasibility of a rail scheme include the first two stages of the process - GRIP 1 Output Definition and GRIP 2 Pre-Feasibility. The assessment undertaken in this study is intended to satisfy the requirements of GRIP 1. Key requirements for GRIP 1 are given below:

- The level of costing confidence required for GRIP 1 is $\pm 40\%$.
- A non-quantified list of likely risks and potential mitigation measures is required.

Updating requirements

3.5 It is assumed that the cost estimates provided in the 2003 report were at a Quarter 2 (Q2), 2003 price base. The estimates for the single track railway, the double track railway and the add-on cost to the A56 Village Bypasses scheme need to be re-based to a Q2, 2007 price base.

3.6 A new estimate is needed of the cost of electrification of three sections of line – Skipton North Junction to Blackburn, Blackburn to Manchester, and Blackburn to Farrington Curve Junction – at the 2007 price base.

- 3.7 The following factors have been used to update the previous cost estimates to 2007 prices:
- Civil, structural and permanent way works: +25%
 - Signalling: + 23%
 - Stations, buildings: +24%
 - Project management: +17%
- 3.8 A review of the three cost estimates provided in the 2003 report reveals a need for only minor changes in addition to taking account of inflation:
- The permanent way and signalling estimates for the single and double track options have been increased to take account of the need to provide access to Platforms 3 and 4 at Skipton Station to provide ease of interchange. Provision has been added to the cost estimates for two additional turnouts and the associated additional signalling.
 - The reinstatement of Platform 5 at Skipton Station appears to be relevant only in the context of a 'Colne' line service terminating at Skipton or the provision of a passenger service on the Rylstone branch – it does not provide access to the lines to and from Shipley and Leeds. Four platforms ought to be adequate to deal with existing services to Skipton and additional trains on the 'Colne' line. This item has therefore been removed from the cost schedule.
 - The cost estimate for a new station at Earby appears to be low. A revised estimate has been prepared based on recent outturn costs for new stations updated to the Q2, 2007 base. The cost estimate remains relatively low compared with new stations on the existing rail network because there is no need to provide a footbridge and because no allowance needs to be included for possessions.
 - An element has been added to the single and double track options to provide for the cost of possessions on existing operational railway.
 - It is assumed that upgrading of the subway at Nelson Station to provide full compliance with accessibility guidance will form part of the Lancashire County Council Nelson Interchange scheme.
 - The 2003 report states that implementation of the double track railway option would require provision of a replacement bus service on the assumption that the line between Gannow Junction and Colne would be closed during construction works. The provision of £500,000 for *TOC disruption and compensation during construction* would not be adequate to provide compensation to the TOC and fund a replacement bus service. A higher figure is included under this heading.
- 3.9 A revised set of capital cost estimates for reinstating the railway between Skipton and Colne is provided at Appendix A. The figures from the tables in Appendix A are rounded for the summaries of the cost estimates for the single track option, the double track option and the additional costs added to the A56 Village Bypasses scheme provided in **Table T3.1**. The cost of the Village Bypasses scheme is not included in the appraisal contained in a later module of this study as it is only relevant in circumstances where both the rail reinstatement and highway schemes go ahead.
- 3.10 **Table T3.2** provides estimates of the costs of 25kV AC overhead electrification determined by the application of a rate of £3.25 million per route mile. This is derived from a recent report prepared for the Office of Rail Regulation (*Advice on assessing enhancement projects proposed in Network Rail's Initial Strategic Business Plan (ISBP), Final Report*, Scott Wilson Railways, January 2007). The figure of £3.25 million is based on the consultant's high level estimate in the range £1.5-£2.0 million per track mile and is higher than the average of £2.75 million per track mile figure quoted for a series of 25kV AC overhead electrification projects.

T 3.1 Capital cost estimates – reinstatement options

Cost categories	Single track option (£ million)	Double track option (£ million)	Additional costs to A56 Village Bypasses scheme (£ million)
Structures	9.47	12.17	3.89
Track bed and drainage	1.25	9.04	0.47
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	---
Sub-total	32.96	64.29	4.35
Contingency	6.59	12.86	0.87
Land CPO, compensation, relocation	2.00	2.50	0.20
Possessions	1.00	1.00	---
Feasibility study	---	---	0.10
Total	42.55	80.65	5.52

T 3.2 Electrification cost estimates – reinstatement options

Section of route	Route miles	Cost (£ million)
Skipton North Junction to Blackburn Bolton Junction	28.11	91.36
Blackburn Bolton Junction to Farrington Curve Junction	10.88	35.36
Blackburn Bolton Junction to Manchester Victoria	24.10	78.33
Skipton North Junction to Farrington Curve Junction	38.99	126.72
Skipton North Junction to Manchester Victoria	52.21	169.69
Skipton North Junction to both Farrington Curve Junction and Manchester Victoria	63.09	205.05

4 Rail passenger and freight services

- 4.1 Each of the five train service options identified in the 2003 report has been reassessed to take account of changes to service patterns and timetables since franchise renewal. They have been reassessed in terms of timetable feasibility, the number of train sets required to operate the proposed service and the infrastructure requirements.

Skipton to Colne shuttle service

- 4.2 There is no change to this option. A single train can operate an hourly service on a single line between Skipton and Colne calling at intermediate stations at Earby and Foulridge. Journey time in each direction is still considered to be 14 minutes. Reasonable connections could be achieved at either Colne or Skipton, but not at both.
- 4.3 The minimum infrastructure requirements are a loop and second platform at Colne and connections at Skipton North Junction to provide access to Platforms 3 and 4 at Skipton Station.

Extension of the Blackpool South service to Skipton

- 4.4 Examination of the current Northern Rail timetable for the Blackpool South to Colne service suggests that it is operated by four trains. Turn-round times are reasonable at Colne (19 minutes) but are tight at Blackpool South (usually four minutes but sometimes only two or three minutes).
- 4.5 The lines from Gannow Junction to Colne (6.4 miles) and from Kirkham North Junction to Blackpool South (11.6 miles) are both single track without passing loops and are potential sources of perturbation to service and timekeeping. Under the present timetable the single line from Kirkham North Junction to Blackpool South is occupied for around 58 minutes in the hour. This represents a considerable constraint on timetable flexibility that could only be ameliorated to a limited extent by investment in better performing rolling stock – the current timetable is tailored for ‘Pacer’ units.
- 4.6 An extension of this service from Colne to Skipton would increase the number of trains needed to operate the service from four to five. Utilisation of the additional train would be relatively low with a long layover at Skipton. The constraint on timetable flexibility imposed by the single line to Blackpool South will make it difficult to achieve good connections at Skipton with the half-hourly services to and from Leeds and Bradford.
- 4.7 If only a single track is reinstated between Skipton and Colne, trains could be timetabled to pass at Earby Station. This would be another constraint on operations that could increase the risk of perturbation to service and reduce the ability to restore timekeeping in the event of a late-running train. The provision of double track between Skipton and Colne would avoid this extra constraint on operations.
- 4.8 The benefit of this scheme compared with the Skipton-Colne shuttle option is that it offers much greater connectivity for all of the communities between Earby/Barnoldswick and Blackburn by providing new or improved links to the key interchange points at Skipton and Preston.

Skipton to Manchester Victoria service

- 4.9 The 2003 report included an option based on the extension of an hourly Manchester Victoria – Bolton service to Blackburn, Colne and Skipton. This option is no longer available. Northern Rail changed service patterns after re-franchising. Services between Manchester Victoria and Bolton now all continue to either Wigan Wallgate or Clitheroe. There are no longer any services terminating at Bolton that could be extended northwards to Blackburn, Colne and Skipton.
- 4.10 A desktop timetable development exercise suggests that an hourly service between Manchester Victoria and Skipton could be integrated with the Manchester Victoria – Clitheroe service on the section of line between Bolton and Blackburn to provide an approximately half-hourly service.
- 4.11 In the current timetable, trains to and from Clitheroe cross on the section of double track between Bromley Cross, Hall I’th’Wood and Astley Junction. The addition of an hourly ‘Skipton’ service on the ‘opposite half hour’ would have the following implications:
- Northbound and southbound ‘Skipton’ trains would cross on the double track between Bromley Cross, Hall I’th’Wood and Astley Junction.
 - ‘Clitheroe’ and ‘Skipton’ trains would cross in the vicinity of Darwen Station where there is already a passing loop – lengthening of this loop would be desirable to reduce the risk of timetable perturbation and make recovery of scheduled timings easier.
 - ‘Skipton’ trains would also cross on the line between Gannow Junction and Colne – a single track would suffice between Colne and Skipton.

- Four additional trains would be needed to operate this service with layovers of 10 minutes at Manchester Victoria and 22 minutes at Skipton.

4.12 There are constraints on the practicality of this option:

- Capacity constraints at Salford Central – the North West RUS supports the implementation of a scheme to increase capacity at this location.
- Platform capacity at Manchester Victoria Station may be a problem.

4.13 It might be possible to provide a more attractive service from Skipton, Colne and Nelson to Manchester Victoria by reversing trains at Rose Grove and utilising a reinstated West (Stansfield) Curve at Todmorden. This would both avoid some of the constraints on the route via Bolton and potentially deliver much shorter journey times of 50 minutes or less.

Skipton to Blackburn service

4.14 The option of an hourly Skipton – Blackburn service co-ordinated with the Colne – Blackpool South service is still feasible. Conflict with the York – Blackpool North service is reduced and allows the achievement of an even interval ‘clockface’ timetable between Colne and Blackburn using three trains. However, the timetable and rolling stock utilisation are inefficient. A more efficient timetable with a ‘clockface’ westbound timetable and an uneven eastbound headway with alternate intervals of 20 and 40 minutes could be operated using only two trains.

4.15 Neither of these timetable options provides connections at Blackburn with trains to and from Manchester Victoria. The timetables would provide reasonable connections at Skipton with trains from Leeds, but would give less satisfactory connections in the opposite direction.

4.16 The ‘clockface’ timetable could function using a single line from Colne to Skipton with a passing loop at Earby, but provision of double track would make the timetable more robust. The line between Gannow Junction and Colne would need to be made double track.

4.17 This option does not improve linkage to the Central Lancashire City Region key interchange station at Preston on the WCML.

Leeds to Manchester Victoria service

4.18 A through service from Leeds to Manchester Victoria via Skipton, Colne and Blackburn would need to be operated by at least five trains. The 2003 report described this option as *challenging*. There is a considerable number of constraints to be overcome:

- Platform capacity constraints at Manchester Victoria.
- Capacity constraints at Salford Crescent Station – should be overcome if and when North West RUS recommended scheme is introduced.
- The constraint imposed by the single line sections north and south of Darwen – under the present timetable, an extension of the passing loop at Darwen would cater for the additional train in each direction each hour.
- The requirements for Gannow Junction to Skipton are the same as for the previous option.
- Line capacity between Skipton and Leeds.
- Platform capacity at Leeds station in peak periods.

4.19 The line between Skipton and Leeds handles 5-6 passenger trains in each direction each hour plus a substantial volume of freight traffic. The Class 333 electric multiple units operating on Airedale and Wharfedale Line services have a greater acceleration rate than the ‘Sprinter’ and ‘Pacer’ units on the ‘Carlisle’ and ‘Morecambe’ services. Freight trains are slower and take longer to travel between Skipton and Leeds, but they can be held at

Skipton or in the loops at Kirkstall. The lack of spare capacity in some hours means that there is little opportunity to accommodate an additional hourly service operated by diesel multiple units or offer a 'clockface' service to and from the 'Colne' line.

- 4.20 Blackburn is already linked to Leeds by the York – Blackpool North service routed via Bradford Interchange, Halifax and the Calder Valley route. There is likely to be little difference in rail journey times via the Skipton – Colne and Calder Valley routes. The probable result is a higher level of demand resulting from the provision of two trains each hour instead of one, but split between the two routes. This may deliver strategic benefits such as releasing capacity to cater for continued growth in demand on the Calder Valley route.

Electrification

- 4.21 Re-opening of the Skipton to Colne railway and extension of electrification to Colne would bring communities in the area between Colne and Skipton within commuting range of Leeds with the associated spin-off economic benefits. It would also be practical in operational terms – the deployment of one additional train is all that is needed to allow a half-hourly service (i.e. extension of either all 'Leeds' or all 'Bradford' trains to and from Colne). Three particular factors need to be considered:
- It would avoid the need to find paths for an additional hourly service on the busy line between Skipton and Leeds.
 - It would impose additional demand on an already busy service – train strengthening is already needed in peak periods.
 - The fleet of Class 333 multiple units is efficiently deployed – a non-standard multiple unit would need to be added to the local fleet to cater for an extension to Colne.
- 4.22 The extension of a half-hourly electric service to Blackburn would require three additional trains, but would bring the eastern parts of Burnley, Brierfield, Nelson, Colne, Earby and Barnoldswick within commuting range of Leeds. It would risk some abstraction from the 'Calder Valley' service to Leeds. If electrification is extended beyond Colne, it would improve access to strategic destinations such as Manchester, Manchester Airport and the key interchange at Preston, thereby opening up a new range of travel opportunities.
- 4.23 The further that electrification is extended, the higher the cost and the wider the range of benefits that need to be delivered to give value for money. Passenger services using the Manchester to Bolton line serve a range of destinations. Hence, unless extensive electrification of Manchester suburban lines takes place, the case for electrification from Skipton to Manchester via Colne and Burnley would have to be based solely on a Leeds – Skipton – Colne – Blackburn – Manchester service.
- 4.24 A case for electrification of the line to Preston would have to be based only on the benefits delivered by a Leeds – Skipton – Preston passenger service and any freight traffic that could make use of the route.

Rail freight

- 4.25 The main developments since completion of the 2003 report have been the production of the Freight RUS by Network Rail and the July 2007 publication of the Rail White Paper and HLOS.
- 4.26 The Freight RUS indicated that the Leeds – Skipton line is used by 10-19 freight trains in each direction daily with the likelihood of an additional 0-4 trains in each direction by 2014. The RUS implies that this does not exceed the freight carrying capacity of the route. Capacity could become a problem if there is a significant increase in coal traffic from Scottish ports and the Ayrshire coalfield.

- 4.27 The great majority of freight traffic using the Skipton – Leeds line is bound for destinations in Yorkshire and Humberside. The line from Skipton to Colne and Blackburn does not offer an alternative route for any of this traffic.
- 4.28 The Hellifield – Blackburn line already offers an alternative route for any freight traffic from the WCML or the Settle and Carlisle line with destinations in Lancashire.
- 4.29 The only possible freight roles for a Skipton – Colne – Blackburn – Preston route are as an alternative route for freight traffic using the Calder Valley (Manchester – Hebden Bridge) or North TransPennine (Stalybridge – Huddersfield) lines or to serve freight terminals in East Lancashire.
- 4.30 There has been little change to the pattern of freight movements on the Calder Valley and North TransPennine routes described in the 2003 report. Little of the traffic identified is likely to be amenable to transfer to the ‘Colne’ line as diversion would involve a longer route via either the WCML or the Bolton – Blackburn route where, in both cases, line capacity is likely to be an issue.
- 4.31 There is currently very little freight on the rail network east of Preston that has a local origin or destination, the only substantial source of rail traffic being the Castle Cement Works at Clitheroe. Hence, there is, at present, little scope for developing freight traffic to serve local origins or destinations.
- 4.32 Government aspirations to transfer freight from road to rail as part of the increasingly important sustainability and climate change agendas could change the context in the longer term.
- 4.33 *For the purposes of this study, the assessment is focused on the ability of rail passenger services to justify investment in reinstating the Skipton to Colne railway. Any freight traffic that may materialise would further improve the position.***

5 Estimation of annual costs

The options

- 5.1 Additional annual costs have been estimated for the following rail passenger service options – all operated by diesel multiple units and serving reopened stations at Earby and Foulridge:
- Option 1: An hourly Skipton to Colne shuttle service.
 - Option 2: An hourly Skipton to Blackpool South service based on an extension of the existing service from Colne.
 - Option 3: An hourly Skipton to Blackburn service:
 - (a) operated by only two additional trains resulting in a 20/40 minutes headway eastbound and a ‘clockface’ headway westbound.
 - (b) timed to integrate as well as is possible with the existing Colne to Blackpool South service by deploying three additional trains.
 - Option 4: An hourly Skipton to Manchester Victoria service superimposed on existing services.

Additional station operating costs

- 5.2 Re-opening of the Skipton to Colne line involves the reopening of stations at Earby and Foulridge. The annual operating costs of these two stations are based on the following assumptions:
- Both stations are not staffed and the only buildings are passenger waiting shelters.
 - The annual maintenance cost for each station is £15,000.
 - The station access charge is assumed to be £2.00 per train stop.

- 5.3 Station operating costs will be increased at Colne when a second platform is brought into use. An annual figure of £7,500 has been used to reflect the increased cost of cleaning, maintenance and lighting. It is assumed that there will be no increase in station maintenance costs at Skipton as no additional platforms will be brought into use.

Train operating costs

- 5.4 Estimates of train operating costs are based on the following assumptions:

- Unit costs have been developed from the JMP train operating cost model which contains a database of recent costs developed in conjunction with a number of regional train operators. All costs are in 2006 prices.
- The following assumptions are made on the costs of additional rolling stock: The lease cost per car is £135,000 per annum, hence £270,000 per annum for a two car unit. Stabling and cleaning costs are assumed to be £2,000 per car per annum.
- Heavy maintenance costs are assumed to be £4,826 per car per month. Light maintenance and fuel costs are based upon the number of car miles travelled per annum. Light maintenance costs of £0.45 per car mile and fuel costs of £0.230 per car mile have been used.
- The number of drivers and on board staff required to operate the service has been determined by the number of train hours per year. It has been assumed that staff are required to work an additional hour per day over and above the hours of operation in order to prepare the rolling stock for service at the beginning of the day and to close down operations at the end of the day.
- Assuming that staff work 1,600 hours per year, an additional 2.9 drivers and on-board staff are required to operate each of the required trains. The average wage for a driver of £34,000 per annum has been taken from the Office for National Statistics.
- The variable access charge is assumed to be £0.107 per car mile which is based upon ORR track usage price list 2001/02 for a Class 165 escalated by RPI.
- For each option, a number of other costs are added covering commission, insurance, administration, British Transport Police, National Train Enquiries, ATOC, and Performance and Compensation, totalling 13.5% of revenues. We have assumed an annual figure of £10,000 for the purposes of analysis.
- In the year before opening there are a number of operating costs which are incurred covering project management, staff recruitment, route learning, marketing/promotion, legal/setup costs and safety case. A total of £115,000 is assumed, incurred in the year prior to opening. For some items a proportion of the initial setup cost recurs in subsequent years, assumed to total £10,000 per annum.
- It has been assumed that services operate on 362 days of the year (i.e. not on Christmas Day, Boxing Day and New Year's Day).

- 5.5 It is assumed that the modern diesel multiple unit rolling stock capable of running at a maximum speed of 100 miles/hour (e.g. Classes 170/175) would be deployed to operate each of the service options. The existing Blackpool South to Colne service is operated by 'Pacer' units. It has been assumed that they will be replaced by 'Sprinters' in the near future. Operating costs for Class 150 Sprinter units and more recent 100 miles/hour rolling stock are similar. For the purposes of this study, it has been assumed that upgrading of all existing rolling stock used on the Blackpool South – Colne service to Class 170/175 standard or similar would not have a significant impact on option annual costs.

5.6 Annual operating cost estimates for each option are shown in **Table T5.1**.

T 5.1 Annual operating costs

Item	Annual cost (£ million)				
	Option 1	Option 2	Option 3a	Option 3b	Option 4
Train leasing	0.270	0.270	0.540	0.810	1.080
Train stabling and cleaning	0.004	0.004	0.008	0.012	0.016
Heavy maintenance	0.114	0.114	0.229	0.343	0.458
Light maintenance	0.123	0.123	0.620	0.930	2.315
Fuel	0.063	0.063	0.317	0.475	1.183
Train staff	0.099	0.099	0.197	0.296	0.394
Variable access charges	0.029	0.029	0.074	0.074	0.138
Annual variable costs	0.010	0.010	0.010	0.010	0.010
Annual fixed costs	0.010	0.010	0.010	0.010	0.010
Station access charges	0.098	0.073	0.366	0.366	0.610
Additional station maintenance costs	0.038	0.038	0.038	0.038	0.038
Total	0.858	0.833	2.408	3.364	6.251

Appendix A

Capital cost estimates

Cost estimate – low cost single track with passing loop

Item	Costs from 2003 study		Updated cost (2007)	
	Rate used	Cost	Inflation factor used	Revised cost (£'000)
Structures				
Vivary Way overbridge and highway works	Sum	2,500,000	+25%	3,125,000
Skipton Bypass overbridge	Sum	3,000,000	+25%	3,750,000
Renovate or reinstate 18 no. underbridges (single track)	Sum	1,675,000	+25%	2,093,750
Repairing culverts	Sum	150,000	+25%	187,500
Bridge protection (to avoid vehicles crashing on to railway)	£50k/bridge	250,000	+25%	312,500
Track bed and drainage				
Clearance – general	£1.00/metre ²	168,650	+25%	210,813
Fencing, gates, repairs to stone walls	Sum	100,000	+25%	125,000
Excavate 150 mm	£3.00/metre	20,870	+25%	26,086
Dispose 150 mm	£11.00/metre	91,830	+25%	114,788
Earthworks (allowance for repairs)	Sum	250,000	+25%	312,500
Cutting drainage	£80.00/metre	332,400	+25%	415,500
Prepare formation for track laying	£0.60/metre ²	33,393	+25%	41,741
Permanent way				
Single CWR track	£300/metre	5,130,000	+25%	6,412,500
Passing loop	£300/metre	240,000	+25%	300,000
Medium speed turnout and trap points	£220,000/unit	880,000	+25% (a)	1,650,000
Signalling				
Bidirectional single, solid state interlocking	Sum	3,500,000	+23% (a)	4,551,000
Level crossings				
Full barrier crossing with CCTV	£400,000/unit	1,200,000	+23%	1,476,000
Automatic half barrier	£200,000/unit	400,000	+23%	492,000
User worked gates	£50,000/unit	400,000	+23%	492,000
Footpath MSL	£30,000/unit	150,000	+23%	184,500
Cabling	£10,000/km	170,000	+23%	209,100
Cable trough	£20,000/km	340,000	+23%	418,200
Stations				
Earby (new) – two platforms, no footbridge	Sum	1,000,000	New estimate	960,000
Foulridge (new) – one platform, no footbridge	---	---	New estimate	630,000
Skipton (upgrade)	Sum	300,000	+24%	372,000
Accommodation works				
Access to Low Ground Farm	Sum	50,000	+25%	62,500
Making good gardens	Sum	50,000	+25%	62,500
Procurement				
Feasibility study and outline design	Sum	100,000	+17%	117,000
TWA application and public inquiry	Sum	750,000	+17%	877,500
Design (civils, permanent way, signalling)	Sum	250,000	+17%	292,500
Design (stations)	Sum	---	---	50,000
Railtrack / Network Rail Form A Form B (Network Change)	Sum	750,000	+17%	877,500
Construction project management, supervision, on-costs	Sum	1,500,000	+17%	1,755,000
Sub-total		25,492,143	---	32,956,978
Contingency (20%)	+20%	5,098,429	---	6,591,395
Land CPO, compensation, relocation	Sum	2,000,000	---	2,000,000
Possessions	Sum	---	---	1,000,000
Total		32,590,572	---	42,548,373

(a) Base figure increased before applying inflation factor to reflect additional changes to track and signalling at Skipton.

A1

Cost estimate – double track

Item	Costs from 2003 study		Updated cost (2007)	
	Rate used	Cost	Inflation factor used	Revised cost (£'000)
Structures				
Vivary Way overbridge and highway works	Sum	2,500,000	+25%	3,125,000
Skipton Bypass overbridge	Sum	3,000,000	+25%	3,750,000
Renovate or reinstate 18 no. underbridges (double track)	Sum	2,385,000	+25%	2,981,250
Works relating to double tracking (Colne-Gannow Junction)	Sum	100,000	+25%	125,000
Repairing culverts	Sum	150,000	+25%	1,875,000
Bridge protection (to avoid vehicles crashing on to railway)	£50k/bridge	250,000	+25%	312,500
Track bed and drainage				
Clearance – general	£1.00/metre ²	339,650	+25%	424,563
Fencing, gates, repairs to stone walls	Sum	100,000	+25%	125,000
Excavate 150 mm	£2.50/metre	101,895	+25%	127,369
Dispose 150 mm	£11/metre	448,338	+25%	560,423
Earthworks (embankment widening Skipton-Colne)	£300/metre	4,500,000	+25%	5,625,000
Earthworks (cutting widening Skipton-Colne)	£100/metre	1,000,000	+25%	1,250,000
Earthworks (allowance for repairs)	Sum	250,000	+25%	312,500
Cutting drainage	£80.00/metre	332,400	+25%	415,500
Prepare formation for track laying	£0.60/metre ²	163,032	+25%	203,790
Permanent way				
CWR on new ballast (Skipton-Colne)	£300/metre	10,260,000	+25%	12,825,000
Removal of old track (Colne-Gannow Junction)	£6.50/metre	66,950	+25%	83,688
CWR on new ballast (Colne-Gannow Junction)	£300/metre	3,090,000	+25%	3,862,500
CWR on existing ballast (Colne-Gannow Junction)	£250/metre	2,575,000	+25%	3,218,750
Low speed turnout and trap points	£100,000/unit	400,000	+25%	500,000
Medium speed turnout and trap points	£220,000/unit	440,000	+25% (a)	1,100,000
Signalling				
Bidirectional single, solid state interlocking	Sum	4,000,000	+23% (a)	5,166,000
Level crossings				
New full barrier crossing with CCTV	£400k/unit	1,200,000	+23%	1,476,000
Upgrade to full barrier crossing with CCTV	£400k/unit	800,000	+23%	984,000
New automatic half barrier	£200,000/unit	400,000	+23%	492,000
New user worked gates	£50,000/unit	400,000	+23%	492,000
Footpath MSL	£30,000/unit	150,000	+23%	184,500
Cabling	£10,000/km	170,000	+23%	209,100
Cable trough	£20,000/km	340,000	+23%	418,200
Stations				
Burnley Barracks, Burnley Central, Brierfield, Nelson, Colne	Sum	1,700,000	+24% (b)	2,108,000
Earby (new) – two platforms, no footbridge	Sum	1,000,000	New estimate	960,000
Foulridge (new) – two platforms, with footbridge	---	---	New estimate	1,510,000
Skipton (upgrade)	Sum	300,000	+24%	372,000
Accommodation works				
Access to Low Ground Farm	Sum	50,000	+25%	62,500
Making good gardens	Sum	50,000	+25%	62,500
Utilities (divert medium pressure gas main)	£100/metre	500,000	+25%	625,000
Procurement				
Feasibility study and outline design	Sum	150,000	+17%	175,500
TWA application and public inquiry	Sum	1,000,000	+17%	1,170,000

Design (civils, permanent way, signalling)	Sum	300,000	+17%	351,000
Design (stations)	Sum	---	---	100,000
Railtrack / Network Rail Form A Form B (Network Change)	Sum	750,000	+17%	877,500
Construction project management, supervision, on-costs	Sum	2,500,000	+17%	2,925,000
TOC disruption, compenation during construction	Sum	500,000	+17%	585,000
Rail replacement bus service during construction	Sum	---	New estimate	180,000
Sub-total		48,792,265		64,288,633
Contingency	+20%	9,758,453	---	12,857,727
Land CPO, compensation, relocation	Sum	2,500,000	---	2,500,000
Possessions	Sum	---	---	1,000,000
Total		61,050,718		80,646,360

(a) Base figure increased before applying inflation factor to reflect additional changes to track and signalling at Skipton. (b) Costs Nelson station subway excluded - assumed to be part of Lancashire County Council Nelson Interchange project.

Cost estimate – additional costs to A56 Village Bypasses scheme

Item	Costs from 2003 study		Updated cost (2007)	
	Rate used	Cost	Inflation factor used	Revised cost (£'000)
Earthworks				
Colne Edge – extra cut	£2.50/metre ³	31,875	+25%	39,844
Colne Edge – extra fill	£2.50/metre ³	31,875	+25%	39,844
Whitemoor Road Cutting – extra cut	£2.50/metre ³	49,000	+25%	61,250
Foulridge-Kelbrook embankment – extra fill	£2.50/metre ³	240,000	+25%	300,000
Boothbridge Farm cutting – extra cut	£2.50/metre ³	21,000	+25%	26,250
Drainage				
Uplift to A56 estimate	+15%	450,000	+25%	562,500
Structures				
Retaining walls (3 locations)	£250/metre ²	1,868,750	+25%	2,335,938
Bridges (extra over)	£1,200/metre ²	691,200	+25%	864,000
Culverts (extra over)	Sum	100,000	+25%	125,000
Sub-total		3,483,700		4,354,626
Contingency	+20%	696,740	---	870,925
Additional land	Sum	200,000	---	200,000
Rail feasibility study	Sum	100,000	---	100,000
Total		4,480,440		5,525,551

Cost estimate – new stations at Earby and Foulridge

Item	Cost (£)		
	Earby (double track)	Foulridge (double track)	Foulridge (single track)
Site clearance, regrading, landscaping	20,000	20,000	15,000
Perimeter fence	90,000	90,000	60,000
Platforms (2 x 112 metres), shelter bases	120,000	120,000	60,000
Civil works, ramps and steps to platform	50,000	50,000	25,000
Fully accessible footbridge with steps and ramps	---	550,000	---
Platform furniture	350,000	350,000	175,000
Electricity supply	30,000	30,000	15,000
Car park (50 spaces) including road access, site preparation, lighting	250,000	250,000	250,000
Miscellaneous works	50,000	50,000	30,000
Total	960,000	1,510,000	630,000

Station figures derived from outturn costs for Glasshoughton Station (West Yorkshire) factored by 1.1 to take account of inflation. Costs for car parks and road and pedestrian access are JMP estimates. Any costs of gradient mitigation measures, land acquisition, CCTV coverage of car parks are excluded. It is assumed that both platforms at Earby will be accessible from the level crossing and that land costs are included in the main estimate for the Skipton – Colne line. Allowances for project management, design, supervision of construction and contingencies are added as part of the overall line re-opening estimates.

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