



Rail Connectivity Study

Stage 2: Conditional Outputs - Benefits Appraisal Report



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1



Introduction

1.1 Background

The principal objective of the Rail Connectivity Study is to develop a Conditional Output Statement setting out what East Lancashire requires of the rail industry in support of growing its economy.

Rail demand in East Lancashire has grown significantly in recent years. The East Lancashire line has experienced a 42% increase in station usage over the past 8 years and the Clitheroe Line a 45% increase over the same period. Using a medium and high growth scenario contained within Network Rail's Regional Urban Market Study would result in further rail demand growth of between +24% to +43% over the next 10 years.

If rail demand in East Lancashire continues to grow in line with the forecast growth, the current network will be unable to cater for the additional demand. A tipping point is likely to be reached where rail passengers begin looking to alternative modes of transport in order to undertake their journeys. Consequently, the forecast demand may not be realised.

1.2 Report Purpose

The purpose of this report is to present the Conditional Outputs that have been adopted as part of the Rail Connectivity Study and outline the potential transport benefits associated with each Conditional Output.

Consideration has also been given to what the impact on East Lancashire's rail network would be if no investment occurred.

The key steps associated with Stage 2 of the Rail Connectivity Study are summarised in Figure 1-A.









1.3 Report Structure

The remainder of this report is structured as follows:

- Chapter 2: Conditional Outputs;
- Chapter 3: Appraisal Assumptions;
- Chapter 4: Connectivity Conditional Outputs;
- Chapter 5: Capacity Conditional Outputs;
- Chapter 6: Performance Conditional Outputs;
- Chapter 7: Journey Quality Conditional Outputs;
- Chapter 8: Journey Times Conditional Outputs;
- Chapter 9: Passenger Facilities Conditional Outputs;
- Chapter 10: Conclusions; and
- Chapter 11: Next Steps.





2 Conditional Outputs

As part of the Rail Connectivity Study, a number of Conditional Outputs have been identified based upon the findings of the data collection exercise (see *Stage 1: Data Collection and Problem Identification Report*) and through discussions with the study's project management group.

The agreed Conditional Outputs for the East Lancashire Rail Connectivity Study are presented in Table 2-A.

Objective	Ref	Conditional Outputs
	1	Improve the frequency of the Blackpool South to Colne service.
Connectivity	2	Improve the frequency of the Clitheroe to Manchester service.
Connectivity	3	Improve the frequency of the Blackpool North to York service.
	4	Improve the frequency of the Blackburn to Manchester (via Burnley) service.
	5	Relieve overcrowding in peak hours between Clitheroe and Manchester.
Capacity	6	Ensure sufficient capacity to meet forecast rail passenger growth between Clitheroe and Manchester in the next 10 years.
	7	Improve the Blackpool South to Colne service PPM to an overall level of at least 92.5% moving annual average by the end of CP5.
Performance	8	Improve the Clitheroe to Manchester Victoria service PPM to an overall level of at least 92.5% moving annual average by the end of CP5.
	9	Improve the Blackpool North to York service PPM to an overall level of at least 92.5% moving annual average by the end of CP5.
	10	Improve the quality of rolling stock on the Blackpool South to Colne service.
Journey Quality	11	Improve the quality of rolling stock on the Clitheroe to Manchester Victoria service.
	12	Improve the quality of rolling stock on the Blackpool North to York service.
	13	Reduce rail journey times between Preston and Colne to under an hour (currently 71 minutes).
	14	Reduce rail journey times between Clitheroe and Manchester to under an hour (currently 74 minutes).
	15	Reduce rail journey times between key core study area stations and Central Manchester to the equivalent or better than the average off peak period car journey time.
Journey Times	16	Reduce rail journey times between key core study area stations and Manchester Airport to the equivalent or better than the average off peak period car journey time.
	17	Reduce rail journey times between key core study area stations and West Yorkshire (Halifax and Bradford) to the equivalent or better than the average off peak period car journey time.
	18	Reduce rail journey times between key core study area stations and Leeds to the equivalent or better than the average off peak period car journey time.
	19	Reduce rail journey times between key core study area stations and National Economic Centres to the equivalent or better than the average off peak period car journey time.
Passenger Facilities	20	Improve station facilities within the core study area.

Table 2-A: Summary of Conditional Outputs.





3 Appraisal Assumptions

3.1 Introduction

The appraisal methodology has followed Department for Transport (DfT) Transport Analysis Guidance (WebTAG) and the rail Passenger Demand Forecasting Handbook (PDFH) guidance as appropriate. In order to appraise the potential transport benefits associated with each of the Conditional Outputs, a number of assumptions were required which have been detailed within this chapter.

3.2 Assumptions

Unless otherwise stated, the following assumptions were adopted for the calculation of potential transport benefits associated with all of the Conditional Outputs:

- In accordance with Department for Transport (DfT) Transport Analysis Guidance (TAG), the benefits associated with each Conditional Output have been calculated, annualised and appraised over a standard 60 year period, discounted to 2010 prices and values;
- The base year for the appraisal is 2014, with an assumed opening year of 2019 and a design year of 2034;
- In order to account for the expected growth in fares, value of time and passenger numbers the following criteria have been applied:
 - Fare increases of 1% above RPI for 10 years from opening year;
 - Passenger growth for 20 years (in line with DfT guidance on Rail Appraisal) at a rate of 2.42% per year until 2023 and 1.38% per year until 2034. These growth rates are consistent with the forecasts contained within Network Rail's Regional Urban Market Study (RUMS) of 27% growth by 2023 and 67% growth by 2043;
 - Growth in the Value of Time is in line with DfT guidelines and has been sourced from the WebTAG data book, May 2014;
- In order to calculate the Non-Rail User Benefits, a diversion factor of 26% (TAG Unit A5.4 Marginal External Costs, DfT, January 2014) from Car Driver journeys to Rail Passenger journeys has been used. This has enabled the reduction in car kilometres to be calculated based on an increase in rail kilometres;
- To calculate the number of additional rail kilometres generated as a result of increased demand, average rail trip lengths have been calculated at a service level. The MOIRA rail passenger demand and trip distances have been used to calculate the total rail passenger kilometres at a service level, the total rail passenger kilometres have then been divided by the total rail passenger demand to produce an average trip length by service;
- To calculate the Train Operating Company (TOC) Benefits as a result of increased demand, an average fare has been calculated at a service level by extracting passenger demand and revenue figures from MOIRA; and
- Due to the commercial sensitivity of passenger demand figures sourced from MOIRA these figures have not been included in the report at the request of Northern Rail.

Additional assumptions that are specific to the derivation of potential transport benefits associated with an individual Conditional Output are detailed in the respective chapters of this report.



4



Connectivity Conditional Outputs

4.1 Introduction

This chapter summarises the appraisal methodology used to estimate the benefits associated with the connectivity Conditional Outputs, as well as the key assumptions and an interpretation of the results of the appraisal.

Table 4-A shows the Conditional Outputs associated with the connectivity objective.

Objective	Ref	Conditional Outputs
Connectivity	1	Improve the frequency of the Blackpool South to Colne service.
	2	Improve the frequency of the Clitheroe to Manchester service.
	3	Improve the frequency of the Blackpool North to York service.
	4	Improve the frequency of the Blackburn to Manchester (via Burnley) service.

Table 4-A: Connectivity Conditional Outputs.

4.2 Methodology

Since waiting at a station is not typically considered useful time, travellers perceive a disbenefit with reduced service frequencies. In order to measure the benefits associated with improved connectivity, the railway industry standard software MOIRA has been used to forecast the impact of service frequency improvements.

Two scenarios have been considered for each Conditional Output, these are:

- Scenario 1 forecast the effect of an additional one train per hour; and
- Scenario 2 forecast the effect of an additional two trains per hour.

The additional services will assume similar stopping patterns and journey times as per the current situation.

The MOIRA outputs provided the Rail User Benefits (i.e. value of time savings associated with increased service frequency) and the TOC Benefits (changes in revenue) and the change in total rail passenger journeys.

It is recognised that MOIRA underestimates the total number of existing trips due to some passengers choosing to travel without purchasing a ticket and some passengers travelling using season tickets or weekly passes. The TOC Benefits have therefore been adjusted accordingly (see assumption in section 4.3).

To calculate the Non-Rail User Benefits associated with a change in rail demand (i.e. the change in the total rail passenger journeys), the marginal external costs associated with a reduction in car vehicle kilometres have been calculated.





4.3 Assumptions

To reflect the proposed interventions in the study area rail network which are scheduled for completion prior to the start of Control Period 6 (2019-2024), the May 2014 timetable in MOIRA has been updated to incorporate the following schemes:

- Blackburn Manchester (via Burnley) hourly service due to be operational from December 2014 and will utilise the recently reinstated Todmorden Curve; and
- Blackburn Bolton Rail Corridor Improvements Scheme will enable an all-day half hourly service to operate between Blackburn and Manchester Victoria.

This updated timetable is referred to in this report as the 'Baseline Timetable'. Service frequency changes as part of the connectivity Conditional Outputs have been compared to the Baseline Timetable in order to provide a more accurate appraisal of the potential transport benefits.

	Number of trains per hour					
Rail Service	Baseline Timetable	Scenario 1	Scenario 2			
Blackpool South - Colne	1	2	3			
Clitheroe – Manchester (between Blackburn and Manchester)	1 (2)	2 (3)	3 (4)			
Blackpool North - York	1	2	3			
Blackburn - Manchester (via Burnley)	1	2	3			

The service frequencies that have been appraised are presented in Table 4-B.

Table 4-B: Baseline Timetable Service Frequency.

- For scenario 1, an additional service has been timetabled 30 minutes after the current service an repeated at an hourly interval throughout the day;
- For scenario 2, an additional service has been timetabled 20 minutes after the current service with a second additional service timetabled at 40 minutes after the current service. Both new services will be repeated at an hourly interval throughout the day.

To convert MOIRA outputs from weekday values (Monday - Friday) to full week values (Monday - Sunday), an uplift of 21% has been applied to the revenue and passenger values. This factor is estimated based upon the assumption that weekend rail demand is lower at than weekday rail demand.

To account for the impact of missed ticket sales, an uplift of 7.9% has been applied to the revenue and passenger values extracted from MOIRA. This figure has been obtained from the *"Business Case for Including Station Quality Standard in the Northern Franchise ITT"* (SYSTRA, August 2014).





4.4 Results

The results from the connectivity Conditional Output benefits appraisal are shown in Table 4-C.

	Potential Transport Benefits (£m) (60 year appraisal period)							
Conditional Outputs		Rail User Benefits	TOC Benefits	Non-Rail User Benefits (MEC's)	Total Benefits			
Improve the rail service frequency on the	+ 1tph	£118.9	£34.4	£11.6	£164.9			
Blackpool South - Colne line.	+ 2tph	£187.8	£56.3	£22.2	£266.2			
Improve the rail service frequency on the	+ 1tph	£40.5	£10.0	£6.0	£56.5			
Clitheroe to Manchester line.	+ 2tph	£113.4	£32.5	£19.9	£165.8			
Improve the rail service frequency on the	+ 1tph	£185.8	£53.9	£33.2	£272.9			
Blackpool North to York line.	+ 2tph	£400.0	£115.4	£92.8	£608.3			
Improve the rail service frequency on the	+ 1tph	£12.3	£4.3	£2.4	£19.1			
line.	+ 2tph	£73.8	£27.5	£16.5	£117.8			
N.B. All benefits quoted are for a 60 year a	N.B. All benefits quoted are for a 60 year appraisal period in 2010 prices, discounted to 2010.							

Table 4-C: Connectivity Benefits Appraisal Results.

Each appraisal has been undertaken independently in order to measure the individual effect of each scenario. It is therefore not appropriate to combine the benefits of different scenarios.

4.5 Interpretation of Results

There is a significant variation in the results shown in Table 4-C. As expected there are potential transport benefits from improved service frequencies on all lines for both scenarios. The largest potential transport benefit is on the Blackpool North to York line, due to it being the longest of the four lines analysed and it also experiences the highest demand at a service level.

The results in Table 4-C show the benefits to the UK rail network as a whole. In order to understand the location of the potential transport benefits and the likely impact upon East Lancashire, further analysis has been undertaken in MOIRA. This analysis investigated the change in rail passenger journeys as a result of improving service frequency on each service. Due to the commercial sensitivity of passenger demand figures these have not been included in the report at the request of Northern Rail, however a commentary is provided below.

Analysis of the change in rail passenger journeys in MOIRA showed the greatest increase in rail passenger journeys is observed on the Blackpool North - York service, a trend which is in line with the benefits reported in Table 4-C. However a low proportion of the additional rail passenger journeys generated on this service have an origin or destination in the core study area (17% for one additional train per hour and 23% for two additional trains per hour).

The analysis showed that the greatest increase in rail passenger journeys with an origin or destination in the core study area is observed on the Blackpool South - Colne service.





4.6 The Impact of Doing Nothing

There is a strong perception locally that East Lancashire is poorly connected, with both road and rail networks hindering the efficient movement of people and goods, and that this relative isolation is having a negative impact on economic development and impeding regeneration.

If no service frequency improvements were to be made it is likely that the perception of East Lancashire being poorly connected will grow stronger. This perception is likely to be further exacerbated by recent announcements proposing rail network improvements in the North of England which have the potential to increase the connectivity gap between East Lancashire and economic centres in the North, in particular Manchester and Leeds.

Consequently, if the rail service frequency in East Lancashire remains the same and the connectivity gap with major settlements in the North of England widens, the economy of East Lancashire could suffer as a result of people and businesses being less likely to locate there.





5 Capacity Conditional Outputs

5.1 Introduction

This chapter summarises the appraisal methodology used to estimate the benefits associated with the capacity Conditional Outputs, as well as the key assumptions and an interpretation of the results of the appraisal.

Table 5-A shows the Conditional Outputs associated with the capacity objective.

Objective	Ref	Conditional Outputs		
	5	elieve overcrowding in peak hours between Clitheroe and Manchester.		
Capacity	6	Ensure sufficient capacity to meet forecast rail passenger growth between Clitheroe and Manchester in the next 10 years.		

Table 5-A: Capacity Conditional Outputs.

5.2 Methodology

Passengers value being able to get a seat on a train. This analysis has therefore examined the load factor of trains in the study area.

 $Load \ Factor = \frac{Number \ of \ passengers \ on \ the \ train}{Number \ of \ seats \ on \ the \ train}$

5.2.1 Benefits from Relieving Current Overcrowding (Conditional Output 5)

(a) Rail User Benefits

The analysis has focused on the Clitheroe to Manchester Line as discussions with stakeholders (in Stage 1) identified that this line currently suffers from capacity issues in the peak hours.

To calculate rail capacity benefits associated with a reduction in overcrowding, the following methodology has been followed:

- 1. Obtain on train passenger counts produced by EDEN Business Analysis.
- 2. Estimate the growth in passengers since the surveys were undertaken, using the station usage figures (contained in the Stage 1 Report) as a proxy.
- 3. Apply growth factor (2) to passenger counts (1) in order to estimate the current load factors.
- 4. Based on the current load factors, apply a Recommended Value of Time Multiplier (obtained from the PDFH) to the existing Generalised Journey Time (GJT).
- 5. Calculate the monetary values associated with the increase in GJT using WebTAG Values of Time.





(b) Train Operating Company Benefits

To calculate the benefits to the TOC the change in GJT, calculated above, will be used to calculate the potential impact on demand.

 $Impact on Demand = \left(\frac{GJT (new)}{GJT (old)}\right)^{Elasticity}$

The impact on demand will be applied to an average fare in order to calculate the change in revenue generated by the TOC.

(c) Non-Rail User Benefits

To calculate the Non-Rail User Benefits associated with a change in rail demand, the marginal external costs associated with a reduction in car vehicle km will be calculated.

5.2.2 Benefits from Relieving Future Overcrowding (Conditional Output 6)

Using the same methodology outlined above in section 5.2.1, but with a growth factor applied to the passenger counts for 10 years, based upon forecasts contained within Network Rail's Regional Urban Market Study.

5.3 Assumptions

The current rail service between Blackburn and Manchester Victoria is hourly, with additional services during peak periods. The Blackburn to Bolton Rail Corridor Improvements Scheme will enable an all-day half hourly service to operate between Blackburn and Manchester Victoria. Subject to funding approval, it is expected the service changes will be introduced in December 2016.

As this scheme will only provide additional services in the off peak period, the scheme is not expected to have a significant impact on relieving overcrowding on peak services. Consequently, the benefits appraisal of the capacity Conditional Output (which relates to relieving overcrowding in the peak hours only) does not consider the effect of the Blackburn to Bolton Rail Corridor Improvements Scheme

Key assumptions specific to the appraisal of the capacity Conditional Outputs are:

- In order to calculate the potential transport benefits realised in the PM peak as a result of relieving overcrowding a factor of 77% has been applied to the AM peak benefits (Source: Rail passenger numbers and crowding on weekdays in major cities in England and Wales (DfT Statistical Release, September 2014);
- Conditional Output 5 In order to assess the value of current overcrowding over a 60 year appraisal, passenger growth has not been included; and
- Conditional Output 6 Passenger growth has been applied for 10 years only. To
 ensure a robust estimation of the potential future year benefits, the growth
 factor has only been applied to the number of people who would benefit from
 relieving overcrowding on trains, the actual number of people on the train (and
 therefore the load factors) have not been adjusted.





5.4 Results

The results from the capacity Conditional Output benefits appraisal are shown in Table 5-B.

	Potential Transport Benefits (£m) (60 year appraisal period)				
Conditional Outputs	Rail User Benefits	TOC Benefits	Non-Rail User Benefits (MEC's)	Total Benefits	
Relieve overcrowding in peak hours between Clitheroe and Manchester	£60.9	£3.7	£2.5	£67.1	
Ensure sufficient capacity to meet forecast rail passenger growth across the core study area in the next 10 years.	£76.1	£4.6	£3.1	£83.8	

N.B. All benefits quoted are for a 60 year appraisal period in 2010 prices, discounted to 2010

Table 5-B: Capacity Benefits Appraisal Results.

Each appraisal has been undertaken independently in order to measure the individual effect of each Conditional Output. It is therefore not appropriate to combine the benefits of different Conditional Outputs.

5.5 Interpretation of Results

In line with evidence sourced at stakeholder meetings the passenger counts supported the notion that morning peak services are overcrowded on the Clitheroe to Manchester line.

The resultant load factors on the 07:00, 07:30 and 08:00 services from Blackburn to Manchester all exceeded 138%. The impact of overcrowding on this line results in an increase in total GJT of approximately 171,000 passenger hours in 2014. The potential transport benefits associated with relieving this overcrowding equates to approximately £1.8 million in 2014.

5.6 The Impact of Doing Nothing

Evidence gathered as part of the Data Collection and Problem Identification Stage of this study (Stage 1) identified overcrowding as an issue on peak hour services between Blackburn and Manchester. The Stage 1 Report also evidenced the upward trend in rail usage over recent years. Should this trend continue and if no additional capacity were to be provided on the Clitheroe to Manchester line, the existing overcrowding issues will worsen.

As a result of increased overcrowding it is likely that rail passengers will begin to look to alternative modes of transport in order to complete their journeys, placing additional pressure on the highway network.



6



Performance Conditional Outputs

6.1 Introduction

This chapter summarises the appraisal methodology used to estimate the benefits associated with the performance Conditional Outputs, as well as the key assumptions and an interpretation of the results of the appraisal.

Table 6-A shows the Conditional Outputs associated with the performance objective.

Objective	Ref	Conditional Outputs
Performance	7	Improve the Blackpool South to Colne service PPM to an overall level of at least 92.5% moving annual average by the end of CP5.
	8	Improve the Clitheroe to Manchester Victoria service PPM to an overall level of at least 92.5% moving annual average by the end of CP5.
	9	Improve the Blackpool North to York service PPM to an overall level of at least 92.5% moving annual average by the end of CP5.

Table 6-A: Performance Conditional Outputs.

6.2 Methodology

The reliability of services arriving at a destination according to a specified timetable is valued highly by passengers. The reliability of rail services is measured by Network Rail's Public Performance Measure (PPM) which shows the percentage of trains which arrive at their terminating station on time (on time is defined as arrival at the terminating station within 4 minutes and 59 seconds of the scheduled arrival time).

(a) Rail User Benefits

The Rail User Benefits associated with an improvement in the reliability of rail services have been calculated by examining the impact of a reduction in the standard deviation of train arrival times.

The methodology adopted was as follows:

- 1. Obtain a dataset of arrival times for services operating between Blackpool North and York, Clitheroe and Manchester and Blackpool South and Colne.
- 2. Calculate the number of trains arriving 'on-time' and the total number of trains that ran.
- 3. Derive current PPM:

 $Current PPM = \frac{Number of trains arriving on time}{Total number of trains}$

- 4. Calculate the number of trains required to arrive 'on-time' to meet the Conditional Output PPM target of 92.5%.
- 5. Create a new dataset with adjusted arrival times in order to meet the Conditional Output PPM target of 92.5%.





- 6. Calculate the reduction in Standard Deviation between the current arrival times (1) and the adjusted arrival times (5).
- 7. Calculate the monetary value associated with the improved PPM using WebTAG Values of Time, and relevant late time multipliers as noted in PDFH 5.1.
- 8. Use MOIRA to extract the number of people travelling between each O-D pair (i.e. the number of people who would benefit from improved PPM).
- 9. Multiply the number of passengers (8) by the monetary value associated with the improved PPM (7).

(b) Train Operating Company Benefits

To calculate the benefits to the TOC, the change in GJT will be used to calculate the potential impact on demand. The standard deviation of the original and adjusted datasets has been incorporated into the GJT.

Impact on Demand =
$$\left(\frac{GJT (new)}{GJT (old)}\right)^{Elasticity}$$

The impact on demand has been applied to an average fare in order to calculate the change in revenue generated by the TOC.

(c) Non-Rail User Benefits

To calculate the Non-Rail User Benefits associated with a change in rail demand, the marginal external costs associated with a reduction in car vehicle km will be calculated.

6.3 Assumptions

Key assumptions specific to the appraisal of the performance Conditional Outputs are:

- The PPM calculation is based on the deviation from the scheduled timetable at the terminating station only;
- A cancelled service has been treated as the equivalent of a late arrival of 1.5 times the service interval, in accordance with the Passenger Demand Forecasting Handbook (PDFH);
- Only a proportion of cancelled trains were incorporated into the adjusted dataset so as not to effect the standard deviation of the dataset significantly;
- A percentage distribution of late services was calculated in order to determine which services were to be retimed; and
- A percentage distribution of on time services was calculated in order to distribute the retimed services evenly.





6.4 Results

The results from the performance Conditional Output benefits appraisal are shown in Table 6-B.

Potential Transport Benefits (£m) (60 year apprai period)					
Conditional Outputs	Rail User Benefits	TOC Benefits	Non-Rail User Benefits (MEC's)	Total Benefits	
Improve Blackpool South to Colne service PPM to an overall level of at least 92.5% moving annual average by the end of CP5. (Current PPM = 82.9%)	£52.5	£2.5	£1.4	£56.5	
Improve Clitheroe to Manchester Victoria service PPM to an overall level of at least 92.5% moving annual average by the end of CP5. (Current PPM = 89.4%)	£48.5	£2.6	£1.8	£52.9	
Improve Blackpool North to York service PPM to an overall level of at least 92.5% moving annual average by the end of CP5. (Current PPM = 85.3%)	£148.8	£5.2	£4.3	£158.3	
N.B. All benefits quoted are for a 60 year a	ppraisal period	in 2010 prices, dis	counted to 201	0.	

Table 6-B: Performance Benefits Appraisal Results.

Each appraisal has been undertaken independently in order to measure the individual effect of each Conditional Output.

6.5 Interpretation of Results

The highest level of benefits associated with improving the performance of the three services is experienced on the Blackpool North to York service. This is due to a number of factors. Based upon the demand figures extracted from MOIRA the demand on the Blackpool North to York service is the highest of the three services investigated. In addition, the current service PPM is 85.3%. Achieving the PPM target on this service would result in a GJT saving per user of 4.7 minutes. The combination of these factors results in this service providing the highest level of potential transport benefits (£158.3 million).

The reason for demand on the Blackpool North to York service being significantly higher than the Clitheroe to Manchester service or Blackpool South to Colne service is due to a large proportion of passengers using this service outside of the core study area between stations in West Yorkshire, for example Bradford, Halifax, Leeds and York. The length of the Blackpool North to York service (171km) also contributes to the higher demand. By comparison, the Blackpool South to Colne service is 79km and the Clitheroe to Manchester Victoria service is just 58km.

The demand on the Blackpool South to Colne service is the lowest; however the GJT saving per user on this service was the greatest (5.6 minutes) due to the service currently experiencing the lowest PPM, at 82.9%. Improvements to the performance of this service consequently produced the second highest level of potential transport benefits (£56.5 million).

The demand on the Clitheroe to Manchester service is the second highest of the three services investigated. The GJT saving per user on this service was the lowest at 2.3 minutes, due to the service currently experiencing the highest PPM, at 89.4%.





Although the demand on the Clitheroe to Manchester service was significantly higher than the Blackpool South to Colne service, the level of benefits was lower (£52.9 million) due to the current PPM being higher.

6.6 The Impact of Doing Nothing

Evidence gathered as part of the Data Collection and Problem Identification Stage of the study (Stage 1) identified that one of the primary causes of poor rail performance in the study area is the reliability of the current rolling stock. If the existing ageing rolling stock remains in service it is expected that its condition and reliability will continue to deteriorate, which will result in the performance of the rail network declining further.

If the current rolling stock is not replaced, the associated reduction in performance of the ageing rolling stock will lead to an increase in the perceived GJT of rail journeys. A tipping point will be reached where the perceived GJT becomes too long and passengers will begin to look to alternative modes of transport in order to complete their journeys.

Even if performance were to be maintained at the current levels it is likely that passenger's perception of their GJT will still increase due to expectations increasing over time.



7



Journey Quality Conditional Outputs

7.1 Introduction

This chapter summarises the appraisal methodology used to estimate the benefits associated with the journey quality Conditional Outputs, as well as the key assumptions and an interpretation of the results of the appraisal.

Table 7-A shows the Conditional Outputs associated with the journey quality objective.

Objective	Ref	Conditional Outputs
Journey Quality	10	Improve the quality of rolling stock on the Blackpool South to Colne service.
	11	Improve the quality of rolling stock on the Clitheroe to Manchester Victoria service.
	12	Improve the quality of rolling stock on the Blackpool North to York service.

Table 7-A: Journey Quality Conditional Outputs.

7.2 Methodology

It is recognised that passenger's value being able to travel on better quality trains. In order to measure the benefits associated with journey quality, PDFH values along with information from previous studies has been utilised.

(a) Rail User Benefits

To calculate Rail User Benefits, the following process will be undertaken:

- 1. Determine current levels of passenger satisfaction / journey quality using the National Rail Passenger Survey (NRPS) and relevant Incremental VOT Multiplier.
- 2. Calculate the GJT between each O-D pair at current level of satisfaction.
- 3. Calculate the GJT between each O-D pair with improvements to the journey quality applied:



- 4. Calculate the monetary values associated with the reduction in GJT using WebTAG Values of Time.
- 5. Use MOIRA to extract the number of people travelling between each O-D pair (i.e. the number of people who would benefit from improved journey quality).
- 6. Multiply the number of passengers (5) by the monetary value associated with the improved journey quality (4).





(b) Train Operating Company Benefits

To calculate the benefits to the TOC the change in GJT, calculated above, has been used to calculate the potential impact on demand.

 $Impact on Demand = \left(\frac{GJT (new)}{GJT (old)}\right)^{Elasticity}$

The impact on demand has been applied to an average fare in order to calculate the change in revenue generated by the TOC.

(c) Non-Rail User Benefits

To calculate the Non-Rail User Benefits associated with a change in rail demand, the marginal external costs associated with a reduction in car vehicle km have been calculated.

7.3 Assumptions

The key assumption specific to the appraisal of the journey quality Conditional Outputs are:

 In line with PDFH guidance, the benefits of improved security are only applicable to a proportion of demand. Using the results of the National Rail Passenger Survey (NRPS), only 3% of respondents cited security as an issue on the rail network, therefore the security benefits have only been applied to 3% of the demand of each service.

7.4 Results

The results from the journey quality Conditional Output benefits appraisal are shown in Table 7-B.

	Potential Transport Benefits (£m) (60 year appraisal period)				
Conditional Outputs	Rail User Benefits	TOC Benefits	Non-Rail User Benefits (MEC's)	Total Benefits	
Improve the quality of rolling stock on the Blackpool South to Colne service.	£10.5	£1.5	£0.9	£12.8	
Improve the quality of rolling stock on the Clitheroe to Manchester Victoria service.	£24.7	£2.9	£2.0	£29.6	
Improve the quality of rolling stock on the Blackpool North to York service.	£52.0	£5.1	£4.2	£61.3	
N.B. All benefits quoted are for a 60 year appraisal period in 2010 prices, discounted to 2010.					

Table 7-B: Journey Quality Benefits Appraisal Results.

Each appraisal has been undertaken independently in order to measure the individual effect of each Conditional Output.





7.5 Interpretation of Results

The highest level of benefits associated with improving the journey quality of the three services is experienced on the Blackpool North to York service. This is due to a number of factors.

Based upon demand figures extracted from MOIRA the demand on the Blackpool North to York service is the highest of the three services investigated. In addition, this service has the longest average trip length, at approximately 29km. These factors combined produced the highest level of potential transport benefits (£61.3 million).

As stated previously, the reason for demand on the Blackpool North to York service being significantly higher than the Clitheroe to Manchester service or Blackpool South to Colne service is due to a large proportion of passengers using this service outside of the core study area between stations in West Yorkshire, for example Bradford, Halifax, Leeds and York. The length of the Blackpool North to York service (171km) also contributes to the higher demand. By comparison, the Blackpool South to Colne service is 79km and the Clitheroe to Manchester Victoria service is just 58km.

The demand on the Clitheroe to Manchester service is the second highest of the three services investigated and the average trip length at a service level is approximately 21km. These factors combined to produce the second highest level of potential transport benefits (£29.6 million).

The demand on the Blackpool South to Colne service is the lowest of the three services investigated. In addition, the Blackpool South to Colne service has the shortest average trip length at approximately 20km. Consequently, the journey quality improvements on the Blackpool South to Colne service produced the lowest level of potential transport benefits (£12.8 million).

7.6 The Impact of Doing Nothing

The journey quality Conditional Outputs relate to the passenger experience on board rail services travelling through the core study area.

If the current rolling stock is not improved or replaced then the quality of the trains will deteriorate over time, resulting in the passenger experience being negatively impacted. If the quality of the trains deteriorates significantly to a point where passengers find the train environment unattractive then passengers may look to alternative modes of transport in order to complete their journeys.



8



Journey Times Conditional Outputs

8.1 Introduction

This chapter summarises the appraisal methodology used to estimate the benefits associated with the journey times Conditional Outputs, as well as the key assumptions and an interpretation of the results of the appraisal.

Table 8-A shows the Conditional Outputs associated with the journey times objective.

Objective	Ref	Conditional Outputs
	13	Reduce rail journey times between Preston and Colne to under an hour (currently 71 minutes).
	14	Reduce rail journey times between Clitheroe and Manchester to under an hour (currently 74 minutes).
Journey Times	15	Reduce rail journey times between key core study area stations and Central Manchester to the equivalent or better than the average off peak period car journey time.
	16	Reduce rail journey times between key core study area stations and Manchester Airport to the equivalent or better than the average off peak period car journey time.
	17	Reduce rail journey times between key core study area stations and West Yorkshire (Halifax and Bradford) to the equivalent or better than the average off peak period car journey time.
	18	Reduce rail journey times between key core study area stations and Leeds to the equivalent or better than the average off peak period car journey time.
	19	Reduce rail journey times between key core study area stations and National Economic Centres to the equivalent or better than the average off peak period car journey time.

Table 8-A: Journey Times Conditional Outputs.

The key core study area stations were discussed and agreed with the project management group at the Conditional Outputs meeting (5th August 2014). It was agreed two tiers of station should be defined, primary and secondary.

Table 8-B shows the agreed key core study area stations.

Tier	Station	
	Preston	
Primary	Burnley	
	Blackburn	
	Clitheroe	
	Accrington	
Secondary	Nelson	
	Rose Grove	
	Darwen	

Table 8-B: Key Core Study Area Stations.

For the purposes of assessing Conditional Output 19, the National Economic Centres have been assumed to be Birmingham, Edinburgh and London.





8.2 Methodology

It is recognised that passenger's value reduced journey times. In order to measure the benefits associated with journey time savings, adjustments have been made to the timetables contained within MOIRA. The timetables have been adjusted to achieve targeted journey times based upon the average off-peak period car journey time (sourced from Google Maps).

The outputs from MOIRA have been used to calculate the Rail User Benefits (i.e. value of time savings associated with reduced journey times) and the TOC Benefits (changes in revenue) and the change in total rail passenger journeys.

It is recognised that MOIRA underestimates the total number of existing trips due to some passengers choosing to travel without purchasing a ticket and some passengers travelling using season tickets or weekly passes. The TOC Benefits have therefore been adjusted in line with the accordingly (see assumption in section 8.3).

To calculate the Non-Rail User Benefits associated with a change in rail demand (i.e. the change in the total rail passenger journeys), the marginal external costs associated with a reduction in car vehicle kilometres have been calculated.

8.3 Assumptions

To reflect the proposed interventions in the study area rail network which are scheduled for completion prior to the start of Control Period 6 (2019-2024), the May 2014 timetable in MOIRA has been updated to incorporate the following schemes:

- Blackburn Manchester (via Burnley) hourly service due to operational from December 2014 and will utilise the recently reinstated Todmorden Curve; and
- Blackburn Bolton Rail Corridor Improvements Scheme will enable an all-day half hourly service to operate between Blackburn and Manchester Victoria.

This updated timetable is referred to in this report as the 'Baseline Timetable'. Timetable changes as part of the journey times Conditional Outputs have been compared to the Baseline Timetable in order to provide a more accurate appraisal of the potential transport benefits.

To convert MOIRA outputs from weekday values (Monday - Friday) to full week values (Monday - Sunday), an uplift of 21% has been applied to the revenue and passenger values. This factor is estimated based upon the assumption that weekend rail demand is lower at than weekday rail demand.

To account for the impact of missed ticket sales, an uplift of 7.9% has been applied to the revenue and passenger values extracted from MOIRA. This figure has been obtained from the *"Business Case for Including Station Quality Standard in the Northern Franchise ITT"* (SYSTRA, August 2014).

Once the journey time savings required to achieve Conditional Outputs 13 and 14 had been coded into MOIRA, no further changes to the journey times within the core study area were made to in order facilitate Conditional Outputs 15 - 19. Consequently, any additional journey time savings required were made on sections of the line outside of the core study area.





Achieving Conditional Output 14 (Reduce rail journey times between Clitheroe and Manchester to under an hour) could potentially reduce the level of rolling stock required to maintain the timetabled service pattern. A reduction in required rolling stock could realise additional TOC Benefits, however these have not been quantified as part of this appraisal. To provide some context on the scale of these potential transport benefits, the cost associated with running a Diesel Multiple Unit (DMU) per year is approximately £1m.

A summary of the required journey time savings for each Conditional Output are shown in Table 8-C.

Conditional Output	Service		Time Saving (minutes)	Location of savings
13	Blackpool South	Colne	11	Time savings between Preston and Colne
14	Clitheroe	Manchester	15	Time savings between Clitheroe and Bolton
15	Blackburn	Manchester (via Burnley)	17	In addition to time savings for CO 13 & 14, further savings between Burnley & Manchester.
15	Clitheroe	Manchester	10	In addition to time savings for CO 13 & 14, further savings between Bolton and Manchester.
16	Blackburn	Manchester (via Burnley)	5	In addition to time savings for CO 13, 14 & 15, additional savings between Burnley & Manchester.
17	Blackpool North	York	5	In addition to time savings for CO 13 & 14, further savings between Bradford & Halifax.
17	Blackpool North	York	15	In addition to time savings for CO 13 & 14, further savings between Burnley and Bradford.
18	Blackpool North	York	10	In addition to time savings for CO 17, further savings between Bradford & Leeds.
19	There are no additional journey time savings required for journeys between Key Core Study Area stations and National Economic Centres as the required time savings have already been reached through Conditional Output 15.			

Table 8-C: Summary Journey Time Savings.

The journey time targets for Primary Tier Stations in the core study area have been reached for all Conditional Outputs.

It was not possible to reach the target journey time savings for some Secondary Tier Stations for Conditional Outputs 16 and 19. Following adjustment of the timetables the following observations were made:

- Services between Accrington and Manchester Airport were 14 minutes slower than the equivalent off peak journey time by car;
- Services between Nelson and Manchester Airport were 25 minutes slower than the equivalent off peak journey time by car;
- Services between Nelson and Birmingham were 18 minutes slower than the equivalent off peak journey time by car;





8.4 Results

The results from the journey times Conditional Output benefits appraisal are shown in Table 8-D.

	Potential Transport Benefits (£m) (60 year appraisal				
Conditional Outputs	Rail User Benefits	per TOC Benefits	Non-Rail User Benefits (MEC's)	Total Benefits	
Reduce rail journey times between Preston and Colne to under an hour (currently 71 minutes).	£23.7	£6.5	£1.7	£31.9	
Reduce rail journey times between Clitheroe and Manchester to under an hour (currently 74 minutes).	£43.6	£13.1	£5.3	£62.0	
Reduce rail journey times between key core study area stations and Central Manchester to the equivalent or better than the average off peak period car journey time.	£172.3	£57.2	£35.4	£264.9	
Reduce rail journey times between key core study area stations and Manchester Airport to the equivalent or better than the average off peak period car journey time.	£245.5	£86.4	£47.6	£379.5	
Reduce rail journey times between key core study area stations and West Yorkshire (Halifax and Bradford) to the equivalent or better than the average off peak period car journey time.	£126.8	£32.4	£15.4	£174.6	
Reduce rail journey times between key core study area stations and Leeds to the equivalent or better than the average off peak period car journey time.	£278.6	£71.3	£39.1	£389.0	
Reduce rail journey times between key core study area stations and National Economic Centres to the equivalent or better than the average off peak period car journey time.		N	/A	210	

Table 8-D: Journey Times Benefits Appraisal Results.

Each appraisal has been undertaken independently in order to measure the individual effect of each Conditional Output. For this reason it is not appropriate to combine the benefits of different Conditional Outputs.

8.5 Interpretation of Results

There is a significant variation in the results shown in Table 8-D. As expected there are potential transport benefits from reduced journey times on all lines. The largest potential transport benefit arises from journey time savings on the Blackpool North to York line between the core study area and Leeds. This can be attributed to the fact that more significant journey time savings were required for journeys between the Core Study Area and Leeds, outlined in the assumptions in section 8.3.





The results in Table 8-D show the benefits to the UK rail network as a whole. In order to understand the location of the potential transport benefits and the likely impact upon East Lancashire, further analysis has been undertaken in MOIRA. This analysis investigated the change in rail passenger journeys as a result of reducing journey times on each service. However, due to the commercial sensitivity of passenger demand figures, these figures have not been included in the report at the request of Northern Rail. A commentary is however provided below.

Analysis of the change in rail passenger journeys in MOIRA showed that the greatest increase in rail passenger journeys is generated through journey time savings between the core study area and Manchester Airport. However, only 37% of these additional rail passenger journeys have an origin or destination within the core study area.

There are also significant levels of increased rail passenger journeys generated through journey time improvements between the core study area and Central Manchester. Of these additional rail passenger journeys, 45% have an origin or destination within the core study area.

In comparison, only 22% of the additional rail passenger journeys generated through journey time improvements between the core study area and Leeds have an origin or destination within the core study area.

8.6 The Impact of Doing Nothing

With significant levels of potential transport benefits calculated it is clear there are benefits to both Rail Users and the Train Operating Companies from achieving reduced rail journey times.

There is a strong perception locally that East Lancashire is poorly connected, with both road and rail networks hindering the efficient movement of people and goods, and that this relative isolation is having a negative impact on economic development and impeding regeneration.

If rail journey times between East Lancashire and major settlements such as Manchester and Leeds are not improved, it is likely that the perception of East Lancashire being poorly connected will grow stronger. This perception is likely to be further exacerbated by recent announcements proposing rail network improvements in the North of England which have the potential to increase the connectivity gap between East Lancashire and economic centres in the North.

Consequently, if the rail journey times in East Lancashire remain the same and the connectivity gap with major settlements in the North of England widens, the economy of East Lancashire could suffer as people and businesses would be less likely to locate here.



9



Passenger Facilities Conditional Outputs

9.1 Introduction

This chapter summarises the appraisal methodology used to estimate the benefits associated with the passenger facilities Conditional Output, as well as the key assumptions and an interpretation of the results of the appraisal.

Table 9-A shows the Conditional Output associated with the passenger facilities objective.

Objective	Ref	Conditional Output
Passenger Facilities	20	Improve station facilities within the core study area.

Table 9-A: Performance Conditional Outputs.

9.2 Methodology

It is recognised that passengers value the facilities available to them at stations on the rail network. In order to measure the benefits associated with improved passenger facilities, PDFH values along with information from previous studies have been used.

It is acknowledged that the combined level of benefits realised from a package of passenger facility improvements is lower than the sum of the individual facility improvements. Consequently, the level of benefits generated has been capped at 8% of the average fare for the respective station, see assumptions (Section 9.3).

(a) Rail User Benefits

To calculate the benefits to rail passengers associated with improvements to station facilities, the following approach was undertaken:

- 1. Identify the facilities required at each station to meet Rail North's Station Quality Standard (SQS) criteria (contained in the Stage 1 Report).
- 2. Identify the values passengers place upon the introduction of missing station facilities.
- 3. Extract the number of passengers using selected stations from the ORR Station Usage datasets (contained in the Stage 1 Report).
- 4. Multiply the number of passengers (3) by the values of station facility improvements (2).





(b) Train Operating Company Benefits

In order to calculate the impact on demand of station improvements the relevant percentage demand uplift will be extracted from PDFH.

The impact on demand will be applied to an average fare in order to calculate the change in revenue generated by the TOC.

(c) Non-Rail User Benefits

To calculate the Non-Rail User Benefits associated with a change in rail demand, the marginal external costs associated with a reduction in car vehicle km will be calculated.

9.3 Assumptions

Average trip lengths to inform the additional rail kilometres undertaken as a result of increased demand have been calculated at a station level for the 40 greatest flows from each station using MOIRA passenger demand and distances. This calculation differs from the methodology used on other Conditional Outputs which had average trip lengths calculated at a service level.

Average fares to inform the TOC Benefits as a result of increased demand will be calculated at a station level for the 40 greatest flows from each station using MOIRA passenger demand and revenues. This calculation differs from the methodology used on other Conditional Outputs which had average fares calculated at a service level.

Key assumptions specific to the appraisal of the passenger facilities Conditional Outputs are:

- The demand per facility improvement has been based on the total number of entries and interchanges in 2013/2014 at each respective station, taken from the ORR Station Usage Datasets;
- The Centro and GMPTE values per journey are sourced from Stated Preference Surveys. Empirical evidence shows these values are overestimated and therefore the benefits per facility improvement have been halved;
- Empirical evidence has shown the value passengers are willing to pay for improved facilities is equal to approximately 8% of the total fare, for this reason the level of benefits per station has been capped at 8% of the average fare for the respective station.





9.4 Results

The results from the passenger facilities Conditional Output benefits appraisal are shown in Table 9-B.

	Potential Transport Benefits (£m) (60 year appraisal period)			
Conditional Output	Rail User Benefits	TOC Benefits	Non-Rail User Benefits (MEC's)	Total Benefits
Improve station facilities within the core study area.	£9.0	£1.7	£1.1	£11.8
N.B. All benefits quoted are for a 60 year appraisal period in 2010 prices, discounted to 2010.				

Table 9-B: Passenger Facilities Benefits Appraisal Results.

9.5 Interpretation of Results

The appraisal of the passenger facilities Conditional Output produced the lowest potential transport benefits of all Conditional Outputs. The primary reason for the reduced level of benefits is that many of the stations which require passenger facilities upgrades in order to meet Rail North's SQS criteria are low use stations. Consequently, this level of demand is considerably less than the demand used in the appraisal of other Conditional Outputs. High use stations such as Preston, Blackburn and Accrington require limited interventions in order to meet the SQS criteria.

However it should be acknowledged that although the benefits associated with the passenger facilities Conditional Output are lower than the other Conditional Outputs, the costs associated with achieving the Conditional Output could be significantly lower.

The GJT benefits in 2014 associated with achieving the passenger facilities Conditional Output was 16,474 hours. This equates to 2014 Rail User Benefits of approximately £189k and TOC Benefits of approximately £58k.

9.6 The Impact of Doing Nothing

The passenger facilities Conditional Outputs relate to the passenger experience at rail stations throughout the core study area.

The appearance of railway stations and the facilities provided greatly impact people's perception of the quality of the rail network. If no investment is made to improve the level of facilities offered at railway stations in East Lancashire then the rail network is less likely to be able to attract new demand. Furthermore, if the quality of passenger facilities at stations deteriorates over time then existing rail passengers may look to alternative modes of transport in order to undertake their journey.





10 Summary and Conclusions

10.1 Summary

The principal objective of the Rail Connectivity Study is to set out what East Lancashire requires of the rail industry in support of its growing economy. In order to address this objective a range of Conditional Outputs have been developed and their potential transport benefits over a 60 year period quantified.

This chapter summarises the results of each appraisal and draws conclusions as to which Conditional Outputs would provide the most significant benefits to East Lancashire.

Although the potential transport benefits associated with the delivery of each Conditional Output have been assessed independently, potential options are likely to contribute to a range of Conditional Outputs. For this reason an option appraisal will be undertaken as part of the Conditional Output Statement stage of the study (Stage 3) in order to determine the likely scale of contribution of each option towards the potential transport benefits of each Conditional Output. Further details on the Next Steps of the Rail Connectivity Study are included in Chapter 11.

10.2 Conclusions

Table 10-A at the end of this chapter summarises the total potential transport benefits for all Conditional Outputs. It shows that the potential transport benefits associated with the Conditional Outputs vary significantly.

The connectivity and journey time Conditional Outputs provide the largest level of potential transport benefits. The capacity, performance and journey quality Conditional Outputs provide comparable levels of potential transport benefits and the passenger facilities Conditional Output provides the lowest level of potential transport benefits.

It is important to note that the costs associated with delivering a scheme that could achieve each of the Conditional Outputs will also vary significantly and thus affect value for money.

Improvements to the Blackpool North to York service provide the greatest level of potential transport benefits for the connectivity, performance, journey quality and journey time Conditional Outputs. However, a significant proportion of these benefits will be realised outside of the core study area.

Connectivity

Improving the service frequency of the Blackpool North to York service generates the highest level of overall potential transport benefits across the UK rail network.

However, of all the Conditional Outputs investigated, a service frequency improvement of an additional two trains per hour on the Blackpool South to Colne service would provide the largest increase in rail passenger journeys within the core study area.





Improving access to Manchester and Leeds through improved service frequencies provides a comparable level of increased rail passenger journeys in the core study area.

Capacity

Analysis of passenger counts showed that that there is significant overcrowding on the morning peak services on the Clitheroe to Manchester line.

Improving train capacity on the Clitheroe to Manchester line to relieve current overcrowding and accommodate potential future growth in demand would generate significant benefits to the study area.

Performance

Improving the performance of all three services currently operating in the study area would generate significant potential transport benefits.

The Blackpool South to Colne service currently has the lowest PPM statistic. However, improving the current performance of the Blackpool North to York service to meet the target PPM figure of 92.5% would generate the highest level of potential transport benefits due to the demand on this service being higher.

Journey Quality

Improvements to journey quality relate to the physical environment of the train, cleanliness, security and the availability of information. Improving the quality of the rolling stock on all three services operating in the study area would generate significant journey quality benefits. Improving the quality of rolling stock would also contribute to achieving a number of the other Conditional Outputs.

Journey Times

Improving journey times between the core study area and Leeds generates the highest level of potential transport benefits across the UK rail network.

However, improving journey times between key core study area stations and Manchester would result in the largest increase in rail passenger journeys within the core study area.

Passenger Facilities

The appearance of railway stations and the facilities provided greatly impact people's perception of the quality of the rail network.

Although the potential transport benefits associated with the delivery of the passenger facilities Conditional Output are lower than the benefits associated with other Conditional Outputs, it is likely that the cost of delivering this Conditional Output would be significantly less.





The Impact of Doing Nothing

The Impact of Doing Nothing has been considered for all of the Conditional Outputs.

There is a strong perception locally that East Lancashire is poorly connected, with both road and rail networks hindering the efficient movement of people and goods, and that this relative isolation is having a negative impact on economic development and impeding regeneration.

If no improvements are made to improve the frequency and journey times of rail services operating in East Lancashire it is likely that the perception of East Lancashire being poorly connected will grow stronger. This perception is likely to be further exacerbated by recent announcements proposing rail network improvements in the North of England which have the potential to increase the connectivity gap between East Lancashire and economic centres in the North, in particular Manchester and Leeds.

Consequently, the connectivity gap between East Lancashire and major settlements in the North of England could widen in the future without investment in East Lancashire's rail network. This would have a negative impact on the economy of East Lancashire as people and business would be less likely to locate here.

In addition, if the current rolling stock in East Lancashire is not improved or replaced then the quality of the trains will deteriorate over time, resulting in the passenger experience being negatively impacted both in terms of journey quality, capacity and performance. Consequently, this could result in existing rail passengers seeking to use alternative modes of transport which would place additional pressure on an already congested highway network.



				Potential Transport Benefits(£m) (60 year appraisal period)					
Vision	Objective	Reference	Conditional Outputs	Rail Ben	User efits	TOC Benefits	Non-Rail User Benefits (MEC's)	Total Benefits	
	Connectivity	1	Improve the frequency of the Blackpool South - Colne service.	+ 1tph + 2tph	£118.9 £187.8	£34.4 £56.3	£11.6 £22.2	£164.9 £266.2	
		2	Improve the frequency of the Clitheroe to Manchester service.	+ 1tph + 2tph	£40.5 £113.4	£10.0 £32.5	£6.0 £19.9	£56.5 £165.8	
		3	Improve the frequency of the Blackpool North to York service.	+ 1tph + 2tph	£185.8 £400.0	£53.9 £115.4	£33.2 £92.8	£272.9 £608.3	
		4	Improve the frequency of the Blackburn to Manchester (via Burnley) service.	+ 1tph + 2tph	£12.3 £73.8	£4.3 £27.5	£2.4 £16.5	£19.1 £117.8	
	0	5	Relieve overcrowding in peak hours between Clitheroe and Manchester.	£6	0.9	£3.7	£2.5	£67.1	
	Сарасну	6	Ensure sufficient capacity to meet forecast rail passenger growth between Clitheroe and Manchester in the next 10 years.	£7	6.1	£4.6	£3.1	£83.8	
					· · · · · · · · · · · · · · · · · · ·				
	Performance	7	Improve the Blackpool South to Colne service PPM to an overall level of at least 92.5% moving annual average by the end of CP5.	£52.5		£2.5	£1.4	£56.5	
		8	Improve the Clitheroe to Manchester Victoria service PPM to an overall level of at least 92.5% moving annual average by the end of CP5.	£48.5		£2.4	£1.7	£52.5	
Improve rail		9	Improve the Blackpool North to York service PPM to an overall level of at least 92.5% moving annual average by the end of CP5.	£14	18.8	£5.2	£4.3	£158.3	
in order to	Journey Quality								
future		10	Improve the quality of rolling stock on the Blackpool South to Colne service.	£10.5		£1.5	£0.9	£12.8	
economic growth within East		11	Improve the quality of rolling stock on the Clitheroe to Manchester Victoria service.	£24.7		£2.9	£2.0	£29.6	
Lancashire.		12	Improve the quality of rolling stock on the Blackpool North to York service.	£5	2.0	£5.1	£4.2	£61.3	
	Journey Times	12	Reduce reil journey times between Presten and Colne to under an hour (ourrently 71 minutes)	6.0	2.7	<u>66 E</u>	C1 7	624.0	
		13	Reduce fail journey times between Presion and Coine to under an hour (currently 71 minutes).	£23.7		20.5	£1.7	£31.9	
		14	Reduce rail journey times between Clitheroe and Manchester to under an hour (currently 74 minutes).	£43.6		£13.1	£5.3	£62.0	
		15	Reduce rail journey times between key core study area stations and Central Manchester to the equivalent or better than the average off peak period car journey time.	£172.3		£57.2	£35.4	£264.9	
		16	Reduce rail journey times between key core study area stations and Manchester Airport to the equivalent or better than the average off peak period car journey time.	£245.5		£86.4	£47.6	£379.5	
		17	Reduce rail journey times between key core study area stations and West Yorkshire (Halifax and Bradford) to the equivalent or better than the average off peak period car journey time.	£126.8		£32.4	£15.4	£174.6	
		18	Reduce rail journey times between key core study area stations and Leeds to the equivalent or better than the average off peak period car journey time.	£278.6		£71.3	£39.1	£389.0	
		19	Reduce rail journey times between key core study area stations and National Economic Centres to the equivalent or better than the average off peak period car journey time.			Ν	N/A		
		-		•	1		1		
	Passenger Facilities	20	Improve station facilities within the core study area.	£	9.0	£1.7	£1.1	£11.8	
N.B. All benefi	ts quoted are for a 60 year appra	aisal period in 2010	prices, discounted to 2010.						

Table 10-A: Potential Transport Benefits Summary.







11 Next Steps

11.1 Introduction

This report represents the conclusion of the Conditional Output Development stage (Stage 2) of the Rail Connectivity Study.

The study will now move on to the Conditional Output Statement stage (Stage 3), the key steps of which are illustrated in Figure 11-A.

Stage 3: Conditional Output Statement	Identify Potential Options	
	Option Appraisal	
	Sift Options against the Conditional Outputs	
	Stage 3: Conditional Output Statement	

Figure 11-A: Stage 3 Methodology Overview

11.2 Identify Potential Options

A list of potential options was drafted as part of the Data Collection and Problem Identification stage (Stage 1) of the study. The majority of these options were identified at the Problems and Options Workshop held at County Hall in Preston on Thursday 1st May 2014.

Further potential options will be identified from the outcomes of the Data Collection and Problem Identification Report and following liaison with the Project Management group.

11.3 Option Appraisal

Following identification of the long list of options, a qualitative option appraisal exercise will be undertaken in order to identify the potential contribution of each option towards each Conditional Output.

11.4 Sift Options against the Conditional Outputs

Following the option appraisal exercise, a short list of options will be identified. The shortlisted options will be the options which are likely to make the most significant contribution to delivering the potential transport benefits associated with each Conditional Output.





11.5 Conditional Output Statement

Stage 3 will culminate in the production of a Conditional Output Statement.

The Conditional Output Statement will include a summary of the Data Collection and Problem Identification stage (Stage 1), the Conditional Output Development stage (Stage 2) as well as the findings of the option appraisal exercise (Stage 3).

The Conditional Output Statement will provide a robust evidence base to support the case for future investment in East Lancashire's rail network in support of growing its economy.