

# Edinburgh–Dunbar–Berwick-upon-Tweed Study

Final Report for East Lothian Council, Scottish Borders Council and SEStran

November 2013



## Document Control

Project Title: Edinburgh Dunbar Berwick Study  
MVA Project Number: 101834  
Document Type: Report  
Directory & File Name: D:\Edin Ber 2012\Report\20131128 Edin-Dunb-Berwick V4.0.Doc

## Document Approval

Primary Author: Scott Leitham  
Other Author(s): Andrew Weir  
Reviewer(s): Paul McCartney  
Formatted by: Nicola Milne

## Distribution

Issue	Date	Distribution	Comments
1	12/03/2013	SEStran, East Lothian Council, Scottish Borders Council	Confidential Initial Draft for Review
2	01/05/2013	SEStran, East Lothian Council, Scottish Borders Council, Transport Scotland	Draft Report
3	11/09/2013	SEStran, East Lothian Council, Scottish Borders Council, Transport Scotland	Redraft of previous Chapters 2 and 4
4	11/10/2013	SEStran, East Lothian Council, Scottish Borders Council, Transport Scotland	Final Draft Report
5	29/11/2013	SEStran, East Lothian Council, Scottish Borders Council, Transport Scotland	Final Report

This report, and information or advice which it contains, is provided by MVA Consultancy Ltd solely for internal use and reliance by its Client in performance of MVA Consultancy Ltd's duties and liabilities under its contract with the Client. Any advice, opinions, or recommendations within this report should be read and relied upon only in the context of the report as a whole. The advice and opinions in this report are based upon the information made available to MVA Consultancy Ltd at the date of this report and on current UK standards, codes, technology and construction practices as at the date of this report.

Following final delivery of this report to the Client, MVA Consultancy Ltd will have no further obligations or duty to advise the Client on any matters, including development affecting the information or advice provided in this report. This report has been prepared by MVA Consultancy Ltd in their professional capacity as Consultants. The contents of the report do not, in any way, purport to include any manner of legal advice or opinion. This report is prepared in accordance with the terms and conditions of MVA Consultancy Ltd's contract with the Client. Regard should be had to those terms and conditions when considering and/or placing any reliance on this report. Should the Client wish to release this report to a Third Party for that party's reliance, MVA Consultancy Ltd may, at its discretion, agree to such release provided that:

- (a) MVA Consultancy Ltd's written agreement is obtained prior to such release, and
- (b) by release of the report to the Third Party, that Third Party does not acquire any rights, contractual or otherwise, whatsoever against MVA Consultancy Ltd and MVA Consultancy Ltd, accordingly, assume no duties, liabilities or obligations to that Third Party, and
- (c) MVA Consultancy Ltd accepts no responsibility for any loss or damage incurred by the Client or for any conflict of MVA Consultancy Ltd's interests arising out of the Client's release of this report to the Third Party.

<b>1</b>	<b>Introduction</b>	<b>1.1</b>
1.1	Background	1.1
1.2	The 2011 Study	1.2
1.3	Structure of this Report	1.3
<b>2</b>	<b>Previous Projects</b>	<b>2.1</b>
2.1	Introduction	2.1
2.2	Previous Studies	2.1
2.3	Approach to the Current Study	2.4
<b>3</b>	<b>Analysis of Problems and Opportunities</b>	<b>3.1</b>
3.1	Introduction	3.1
3.2	The Strategic Context	3.2
3.3	Socio-economics – Berwickshire	3.4
3.4	Demographic Projections and Housing Allocations	3.16
3.5	Transport Supply	3.17
3.6	Public Transport Accessibility – Travel Times & Working in Edinburgh	3.26
3.7	Other Aspects of Poor Connectivity in Berwickshire	3.29
3.8	The Views of Local Business	3.31
3.9	Summary of Problems	3.34
3.10	Opportunities	3.36
<b>4</b>	<b>Transport Planning Objectives</b>	<b>4.1</b>
4.1	Introduction	4.1
4.2	STAG Part 1 Study Objectives	4.1
4.3	Planning Objectives	4.2
<b>5</b>	<b>Appraisal Against Transport Planning Objectives</b>	<b>5.1</b>
5.1	Introduction	5.1
5.2	Option Generation and Development	5.1
5.3	Assessment Against Planning Objectives	5.2
5.4	Summary of Assessment of Options against Planning Objectives	5.17
5.5	Economic Activity and Location Impacts - Eyemouth	5.19
5.6	Conclusion	5.21
<b>6</b>	<b>Business Case - Train Operations</b>	<b>6.1</b>
6.1	Introduction	6.1
6.2	The 2011 Study – Train Path Analysis	6.1
6.3	Current Train Services and ‘Available’ Paths	6.2
6.4	Connecting the Paths Identified in RailSys	6.4
6.5	Potential Connectivity with Other Services	6.5
6.6	Consultation	6.7

6.7	Summary	6.9
<b>7</b>	<b>Modelling and Appraisal of Services</b>	<b>7.1</b>
7.1	Introduction	7.1
7.2	Model Enhancements	7.1
7.3	Testing Programme	7.2
7.4	Impact on Boardings	7.3
7.5	Revenue, Operating Costs and Subsidy	7.6
7.6	60 Year Appraisal	7.9
7.7	Other STAG Criteria	7.16
7.8	New Stations in Scotland	7.18
<b>8</b>	<b>Option Summary Tables</b>	<b>8.1</b>
<b>9</b>	<b>Summary and Conclusions</b>	<b>9.1</b>

## Tables

Table 3.1	Dunbar bus / rail interchange from Berwickshire	3.24
Table 3.2	Berwickshire residents working in Edinburgh (2001 Census)	3.28
Table 5.1	Berwick-upon-Tweed to Edinburgh, typical fares	5.4
Table 5.2	Dunbar to Edinburgh, typical fares	5.5
Table 5.3	Changes in times and costs of travel	5.12
Table 5.4	Optimal travel choices from Berwickshire – Existing Options	5.12
Table 5.5	Optimal travel choices from Berwickshire – Existing & Potential Options	5.12
Table 5.6	Summary of options against Transport Planning Objectives	5.18
Table 6.1	Train services and paths south / east out of Waverley	6.2
Table 6.2	Train services and paths from south / east into Waverley	6.4
Table 7.1	Estimated annual operating costs for Edinburgh-Berwick service	7.8
Table 7.2	Summary of TEE Results (Three new train sets) (£'000)	7.12
Table 7.3	Rail Tests – BCRs by number of new train sets required	7.15
Table 7.4	No Dunbar LDHS Test Summary	7.16
Table 7.5	Summary of appraisal against STAG criteria	7.18
Table 7.6	Recent Scottish station openings	7.19

## Figures

Figure 2.1	Key Projects Timeline	2.1
Figure 3.1	Berwickshire Area Map	3.5
Figure 3.2	Total Population in Berwickshire by Intermediate Geography (SNS)	3.6
Figure 3.3	Population split by age, 2011 (SNS)	3.6
Figure 3.4	Local Employment by Sector (2001 Census)	3.7
Figure 3.5	SIMD Overall Deprivation Index – (2012 SIMD)	3.8
Figure 3.6	Local Authority Household Income per week (2008/09) (SNS)	3.9

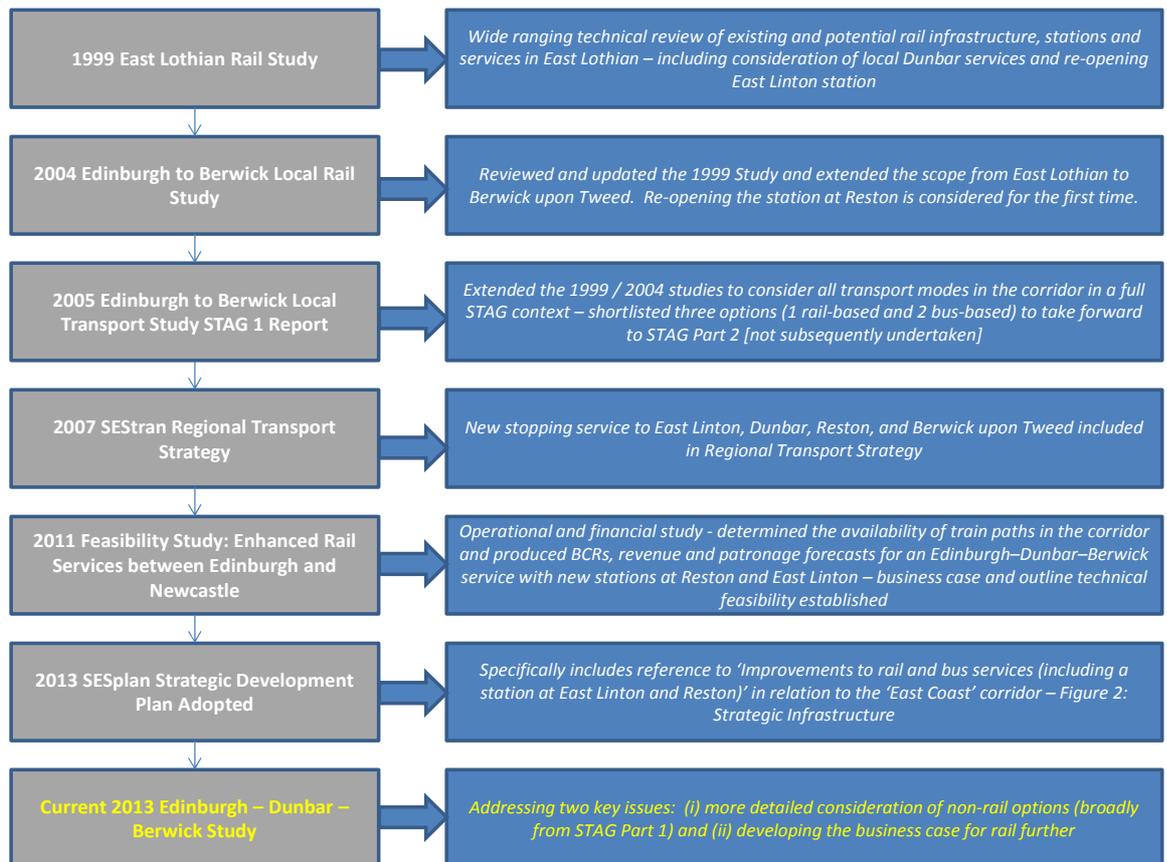
## Contents

Figure 3.7 Household incomes in Berwickshire (2008/09) (SNS)	3.10
Figure 3.8 Weekly Earnings – Workplace based, 2012 (SNS)	3.11
Figure 3.9 Percentage population claiming key benefits (2012Q4, SNS)	3.12
Figure 3.10 Percentage population claiming JSA (2012Q4, SNS)	3.12
Figure 3.11 Percentage of school leavers going to further / higher education (2011/12, SNS)	3.13
Figure 3.12 Average 'tariff' score for S5 pupils (2011-12, SNS)	3.14
Figure 3.13 Median house prices (2011, SNS)	3.14
Figure 3.14 Berwickshire car availability data (2001 Census)	3.15
Figure 3.15 Existing train departures from Dunbar to Edinburgh	3.20
Figure 3.16 Existing train departures from Edinburgh to Dunbar	3.20
Figure 3.17 SESplan SDP Transport Modelling – 2007 Link Delays	3.25
Figure 3.18 SESplan SDP Transport Modelling – 2032 Link Delays	3.26
Figure 3.19 Public Transport Accessibility to Edinburgh (bus and train)	3.27
Figure 3.20 SEStran PT commuting to Edinburgh and Travel Times (excluding CEC residents)	3.29
Figure 3.21 Business support for proposals	3.31
Figure 5.1 Generalised Costs for existing options - Leisure Travel	5.6
Figure 5.2 Example of breakdown of generalised costs via Berwick (Leisure)	5.6
Figure 5.3 Change in Generalised Cost from 'best' option – Leisure Travel	5.7
Figure 5.4 Generalised Costs for existing options (with concessionary fares): Leisure Travel	5.8
Figure 5.5 Generalised Costs for existing options: In-Work Travel	5.9
Figure 5.6 Change in Generalised Cost from 'best' option – In Work Travel	5.9
Figure 5.7 Generalised Costs for existing options: Commuting Travel	5.10
Figure 5.8 Change in Commute Generalised Cost from 'best' option	5.11
Figure 5.9 Change in Accessibility in East Lothian – new train service	5.14
Figure 5.10 Change in Accessibility in Berwickshire – new train service	5.14
Figure 5.11 P&R catchment areas – new train service	5.15
Figure 5.12 P&R catchment populations – new train service	5.16
Figure 7.1 R1 - Change in total boardings & alightings at existing and proposed stations (2010 & 2024)	7.4
Figure 7.2 Change in total boardings & alightings at existing and proposed stations (2024)	7.4
Figure 7.3 R1 - Change in Rail and Bus Boardings by Operator (2010 & 2024)	7.5
Figure 7.4 R1 – Forecast AM peak period park and ride usage (2010 & 2024)	7.6
Figure 7.5 R1 – Forecast annual revenue changes (2010 & 2024)	7.7
Figure 7.6 R1 – Annual rail operating cost, revenue & subsidy, 2016 opening year	7.9
Figure 7.7 R1 – Annual rail operating cost, revenue & subsidy, 2024	7.9
Figure 7.8 Distribution of Travel Time Benefits	7.14
Figure 7.9 No Dunbar LDHS Test –Change in Travel Time Benefits from R1	7.16

# Summary

MVA Consultancy was appointed by East Lothian Council, Scottish Borders Council and the South East Scotland Transport Partnership (SEStran) in 2012 to undertake further analysis with respect to the potential introduction of a new Edinburgh to Berwick-upon-Tweed local train service, together with the re-opening of stations at East Linton in East Lothian, and Reston in the Scottish Borders.

This report is the latest in a succession of studies which have considered new rail services in East Lothian and the eastern Borders as summarised below:



This study therefore closely follows on from a previous study 'Feasibility Study: Enhanced Rail Services between Edinburgh and Newcastle' undertaken for Transport Scotland and published in September 2011 (the '2011 Study'), and considers in more detail the case for Edinburgh to Berwick train services only. It takes forward the previous 2011 Study in two key respects:

- it considers non-rail public transport options in the corridor; and
- it uses a multi-modal transport model to develop the business case further and test some service variants around the core Edinburgh-Berwick train service proposition.

## Socio-Economic Context

There are two key factors underlying the case for a new local train service through East Lothian and Berwickshire to Berwick-upon-Tweed.

## Summary

In the case of East Lothian, GROS (General Register Office for Scotland) projections suggest that East Lothian will see the highest rate of growth in population of any Scottish local authority area to 2035. Peak hour North Berwick to Edinburgh trains currently operate at, or close to capacity near to Edinburgh. In the medium term, there is a high risk that the current level of train service provision would be unable to cope with the potential demand associated with this projected increase in East Lothian population, given the level of out-commuting from East Lothian to Edinburgh. This lack of capacity has been identified as a potential problem by Network Rail in their Route Utilisation Strategy for Scotland, ie it is recognised that some measures will be required to increase capacity here in the medium term. Clearly an Edinburgh-Berwick service could be one solution to this problem.

The situation in east Berwickshire is quite different. At present, public transport links between east Berwickshire and Edinburgh are poor. The existing bus service necessarily involves long journey times given the distances involved. This has the effect of essentially excluding much of Berwickshire from the Edinburgh jobs market, and this raises concerns as to the long term sustainability of the area. Although relatively close to Berwick-upon-Tweed the 'border' effect is a key factor in terms of access to public services meaning that Berwickshire residents often have to travel significant distances to access public services and indeed sporting and cultural events, which are more focussed on Edinburgh.

A range of socio-economic indicators highlight two issues in particular with respect to Berwickshire. One is a generally aging demographic profile across the area and the other is that the town of Eyemouth is 'lagging' by many measures. Eyemouth is the most deprived settlement in the Scottish Borders according to the Scottish Indices of Multiple Deprivation (SIMD), and has also been identified as a particularly 'vulnerable' rural community, being ranked 15<sup>th</sup> most vulnerable from 90 Scottish settlements considered by the Rural Policy Centre. Overall, across a range of indicators (eg household income / wages) the Scottish Borders tends to 'lag' the national Scotland-wide picture. East Berwickshire in turn 'lags' behind the Scottish Borders. In the context of the Borders, east Berwickshire will also suffer a further relative competitive disadvantage with the re-opening of the Borders Railway, where the central Borders will receive a significant boost.

Overall therefore there is a strong case for improved rail in **East Lothian to accommodate growth** and in east **Berwickshire** to assist in **regeneration** and the long term **sustainability** of the area.

### Non-Rail Options

The previous 2011 Study focussed on rail options in the corridor. In this current study, a STAG (Scottish Transport Appraisal Guidance) based and objective-led approach has been adopted to consider whether better coach or bus links to Edinburgh could provide a similar level of benefits to a rail-based solution at significantly lower cost.

Following a detailed review of the problems and current public services in the corridor, the previous (very general) 'planning objectives' from the original 2005 STAG Part 1 Study were reviewed and refined to the following for the purposes of this Study:

- Objective 1: Improve the generalised cost of travelling by public transport / park and ride by a meaningful amount in the corridor;
- Objective 2: Improve accessibility and connectivity between Berwickshire and Edinburgh;

## Summary

- Objective 3: Address known or foreseen public transport capacity issues in the corridor; and
- Objective 4: Improve the reliability of public transport journey travel times from Berwickshire to Edinburgh.

Coach / bus-based options were appraised in terms of these objectives, the first being an hourly service from Berwickshire running with a minimum of intermediate stops to Edinburgh, and the second being a service which would run directly from Berwickshire to Edinburgh. Both assumed a coach / bus-based park and ride facility at Reston to ensure a like for like comparison with rail. A feeder bus service to Dunbar was also considered as was expanded parking provision at existing stations.

It was demonstrated that none of these options would become the optimal travel choice for Berwickshire residents accessing Edinburgh, ie no advantage over other existing options (eg park and ride at Dunbar or Berwick) was derived. Coach / bus-based options were also shown not to provide a step change in accessibility in the same way that rail options do. Additional coaches / buses would not therefore alleviate potential rail capacity issues and evidence has been presented to demonstrate that buses are inherently less reliable than trains, particularly over longer distances. New coach / bus services also offer much less permanence than new train services, so are much less likely to have a lasting impact on people's residential and employment location decisions.

The two coach-based options were also shown to provide only around 15% of the economic benefits brought about by new rail services and both produced much weaker benefit cost ratios.

As such, the study has demonstrated that coach or bus-based options would not provide the step-change in public transport connectivity to Edinburgh that Berwickshire requires to address the transport and socio-economic problems identified here. Any new Berwickshire coach services would also produce only minimal impacts in East Lothian as they would be largely adding to existing services. **Coach and bus options have therefore been shown to be unable to provide the quantum of benefits provided by rail at a reduced cost** – this was a key question for study.

As they do not meet the transport planning objectives set, the coach-based and parking options were therefore discounted from further appraisal.

### **Rail - Developing the Business Case**

The development of the business case from that determined in the 2011 Study is focussed on both the costs and the benefits of providing a new Edinburgh to Berwick service. A new hourly Edinburgh-Berwick service would require three train sets to operate. A key aspect of the business case is whether three *new* train sets would be required, or whether existing ScotRail rolling stock could be redeployed in some way for the new service.

An analysis of the paths identified in the 2011 Study established the potential connectivity with existing Shotts line, Airdrie-Bathgate, and Carstairs line services slots at Edinburgh Waverley. This issue was also explored in meetings with ScotRail and Network Rail. Overall though there are a range of ongoing developments, in particular associated with the Edinburgh Glasgow Improvement Programme (EGIP), which create uncertainty with respect to train operations around Edinburgh Waverley station in particular, and at this stage, the scope for running through services to Berwick or re-allocating rolling stock to a new Berwick

## Summary

service cannot be definitively determined. However, the 2011 Study identified a set of train paths between Edinburgh and Berwick and it is reasonable to assume that the basic potential for the operational viability of an Edinburgh-Berwick service should hold, unless there are major changes to existing passenger and freight services on the East Coast Mainline between Edinburgh and Berwick. Indeed there could be scope to 'plan in' a new Edinburgh-Berwick service into emerging train plans around Edinburgh Waverley.

The SEStran Regional transport forecasting Model (SRM) has been used to progress the appraisal of the Edinburgh-Berwick service in terms of determining the economic benefits of the scheme, as well as forecasting revenues and hence operating subsidy. The SRM accounts for a far larger range of traveller behavioural responses, and also takes explicit account of the local planning context (based on SESplan 'Proposed Plan' housing allocations, which have subsequently been increased in East Lothian and the Scottish Borders), whereas the 2011 Study used a more general rail industry elasticity-based approach to appraise the proposals. As such the SRM provides a more comprehensive analysis based firmly in the local context.

The analysis here was focussed on the 'core' hourly all stopper Edinburgh-Berwick service including re-opened stations at East Linton and Reston. Variants of this service were also tested as follows:

- the testing of a conceptual station at Burnmouth, in place of Reston (*note though that the engineering feasibility of a station site at Burnmouth has not been considered through previous studies, unlike the Reston site*);
- connecting the Edinburgh-Berwick service to Airdrie-Bathgate line services to create a through route; and
- replacing East Coast and Cross Country (Long Distance High Speed (LDHS)) stops at Dunbar with the local stopping service.

The table below provides a summary of the key 60-year Transport Economic Efficiency (TEE) results arising from this analysis.

TEE Element (2002 prices and values)	Scheme Tested			
	<b>Core Edinburgh-Berwick Service</b>	Burnmouth Variant	Airdrie-Bathgate connection	No Dunbar LDHS stops
Present Value of Benefits (PVB) (£m)	<b>76.3</b>	90.0	76.6	71.6
Present Value of Costs (PVC) (£m)	<b>57.1</b>	62.9	54.7	59.2
Net Present Value (NPV) (£m)	<b>19.2</b>	27.1	21.9	12.4
Benefit Cost Ratio (BCR)	<b>1.34</b>	1.43	1.40	1.21

The BCR of the core test has improved in this study to 1.34, up from the 1.10 reported in the 2011 Study. This is mainly attributed to the more comprehensive multi-modal modelling approach adopted here which takes much more specific account of local factors.

## Summary

It can also be seen that locating a station at Burnmouth rather than Reston improves the economic case. This is mainly due to its much better existing bus links to Eyemouth. However, the feasibility of this site has not been determined and there would also be scope to improve bus links between the Berwickshire settlements and a new station site at Reston, negating this advantage to some extent.

Linking the new service to existing Airdrie-Bathgate line services to provide a through service to the west is also shown to improve the economic case. However, replacing all Dunbar East Coast / Cross Country services with the ScotRail stopping service leads to a weakening of the case, ie the benefits to through travellers on the mainline do not outweigh the disbenefits to existing users of Dunbar station, who would experience longer journey times.

These values are all based on an assumption that three new train sets are required. If fewer than three new sets are required, the BCR improves significantly. Annual operating subsidy is also heavily influenced by the number of new train sets required. If three new sets are required, an opening year annual subsidy of £1.9m has been estimated, dropping to £1.5m in 2024.

## Summary

This study has demonstrated a range of transport and socio-economic problems along the East Lothian and Berwickshire corridors.

Coach-based options have been shown not to meet the transport planning objectives set for the corridor and have therefore been discounted.

The rail-based options have been developed and tested here in the SEStran Regional Model and have demonstrated an improved business case from that reported in 2011.

# 1 Introduction

## 1.1 Background

1.1.1 MVA Consultancy was appointed by East Lothian Council, Scottish Borders Council and South East Scotland Transport Partnership (SEStran) in 2012 to undertake further analysis surrounding a proposed new local train service between Edinburgh and Berwick-upon-Tweed incorporating station re-openings at East Linton in East Lothian and Reston in the Scottish Borders.

1.1.2 This study can be seen as a follow on to the earlier '*Feasibility Study: Enhanced Rail Services between Edinburgh and Newcastle*' report dated September 2011 (referred to hereafter as 'the 2011 Study'). The 2011 Study was focussed on an operational and economic / financial assessment of potential new rail services in the corridor, including an assessment of proposed new stations at Reston in east Berwickshire, and East Linton in East Lothian. Specifically the study considered:

- Edinburgh-Dunbar local services;
- Edinburgh-Dunbar-Berwick local services; and
- Edinburgh-Newcastle semi fast services.

1.1.3 In response to the 2011 Study report, Transport Scotland requested that further work be undertaken to establish whether other, non-rail-based solutions could produce similar benefits to these rail-based approaches, at lower cost.

1.1.4 It should be noted that this report is focussed on the analysis of **Edinburgh-Dunbar-Berwick options only**. Services to Dunbar only and semi-fast services to Newcastle are not considered further in this Report.

1.1.5 The work reported here therefore takes forward the 2011 Study in two main parts with respect to the Edinburgh-Dunbar-Berwick corridor:

- Part 1: Completion of a proportionate transport appraisal study, including consideration and appraisal of potential bus / coach services options in the corridor; and
- Part 2: Development of the potential business case for the emerging transport options from Part 1.

1.1.6 The reader should refer to the 2011 Study for the details of the analysis undertaken and much of the background context.

1.1.7 It should be noted that the 2011 Study was itself the latest in a succession of relevant preceding studies in the East Lothian / eastern Borders corridor. These are outlined in Chapter 2.

1.1.8 This Report is therefore not a free-standing, conventional STAG (Scottish Transport Appraisal Guidance) Report as such, since it builds on a number of previous studies. The links to these

## 1 Introduction

studies are therefore noted in the course of this report, and the approach outlined here is compliant with STAG.

### 1.2 The 2011 Study

1.2.1 The 2011 Study took as its starting point two key developments of relevance to the East Coast Mainline (ECML). These were:

- the East Coast Route Utilisation Study (RUS) produced by Network Rail in 2008 which identified a number of 'gaps' of relevance to this section of the route; and
- the launch of the 'EUREKA' timetable on 22 May 2011 which was hailed as the biggest change on the East Coast route for more than 20 years.

1.2.2 This major timetable change provided the medium-term platform for the identification of potential train paths which could be used by Dunbar, Berwick and Newcastle services, a key objective of the 2011 Study.

1.2.3 Full details of the EUREKA timetable were provided in the form of a 'RailSys' model, which is an industry standard software tool used for detailed train planning and operational analysis. Analysis in RailSys revealed a number of train paths were potentially available throughout the day for use by local services. This exercise established that in principle, additional services could be accommodated on the ECML albeit not on a regular clock face basis.

1.2.4 Having established the principle of timetable delivery, the economic and business cases of various service permutations to Dunbar, Berwick and Newcastle were analysed. The analytical framework used to undertake this analysis was a combination of 'MOIRA'-based demand forecasting and spreadsheet-based economic analysis based on the MOIRA outputs and exogenous treatment of the new stations at East Linton and Reston.

1.2.5 The outcome of this analysis was a range of annual subsidy requirements and also 60-year benefit cost ratios (BCRs) consistent with STAG / Transport Economic Efficiency (TEE). These BCRs suggested a positive, if weak case for new services between Edinburgh and Berwick-upon-Tweed.

1.2.6 In summary, new local rail services to Berwick together with new stations at East Linton and Reston as analysed in the 2011 report would:

- increase train frequencies at the existing mainline stations in East Lothian – Musselburgh, Wallyford, Prestonpans, Longniddry and Drem (or a subset of these). This would add capacity and flexibility for users of these stations (and also reduce perceived wait times due to increased service frequency);
- improve southbound rail connectivity from these existing stations – ie changing at Berwick rather than Edinburgh, thus potentially reducing fares and journey times for anglo-Scottish travel from East Lothian;
- increase train frequency between Edinburgh and Berwick – although journey times would be slower on the stopping service compared to ECML services at around one hour;
- create a step change in public transport travel times and frequency across the day from the Reston area to Edinburgh and Berwick;

## 1 Introduction

- add a new park and ride facility for the wider Berwickshire area, with ample parking capacity and no parking charges; and
- create a step change in public transport travel times from East Linton to Edinburgh and Berwick.

1.2.7 This new train service could therefore be thought of as offering three distinct benefits or outcomes:

- higher frequency, more capacity and better connectivity for communities served by existing ECML stations (Musselburgh to Dunbar);
- significant but relatively localised accessibility improvements focussed on the village of East Linton; and
- more wide ranging impacts on accessibility around Reston and east Berwickshire.

1.2.8 All three of these outcomes would improve the travel options from these areas. The question addressed in the first part of this report (Chapters 3-5) is **to what extent could bus-based options provide the same benefits**, potentially at a substantially lower cost?

### 1.3 Structure of this Report

1.3.1 This Report contains the following chapters:

- Chapter 2: Previous projects;
- Chapter 3: Analysis of Problems and Opportunities;
- Chapter 4: Transport Planning Objectives;
- Chapter 5: Appraisal Against Transport Planning Objectives;
- Chapter 6: Business case – Train Operations;
- Chapter 7: Modelling of Services;
- Chapter 8: Option Summary Tables; and
- Chapter 9: Summary and Conclusions.

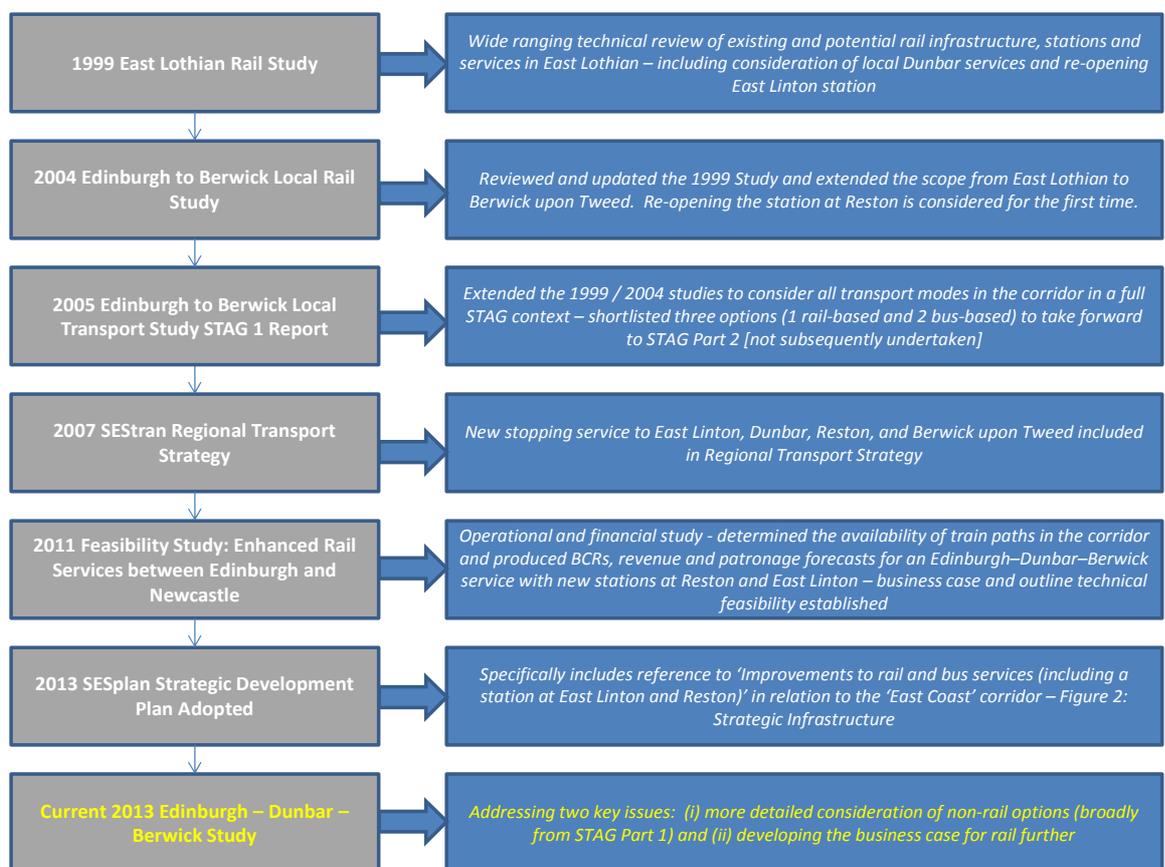
## 2 Previous Projects

### 2.1 Introduction

2.1.1 As noted above, proposals for enhanced rail services and new stations on the ECML between Edinburgh, East Lothian and Berwickshire have been developed over many years, dating back to 1999. This chapter provides a summary of these studies.

### 2.2 Previous Studies

2.2.1 The key studies are noted in Figure 2.1 below and an overview of each is found in the section which follows.



**Figure 2.1 Key Projects Timeline**

2.2.2 It can therefore be seen that the 1999 and 2004 studies worked up the feasibility of a number of rail-based initiatives in the corridor between Edinburgh and Berwick-upon-Tweed, including new stations at East Linton and Reston and new local services to Berwick-upon-Tweed.

2.2.3 The 2005 study then looked at these initiatives in a much wider STAG-compliant and objective-led context, where many other non-rail-based options were also considered. Rail and bus-based options were shortlisted from the STAG Part 1 process (including new stations

at East Linton and Reston). At this stage, it was envisaged that a Part 2 Appraisal would be undertaken but this was not taken forward. Subsequent to the 2005 Study, SEStran adopted the core Edinburgh–Berwick train service with new stations at East Linton and Reston as part of their Regional Transport Strategy. The scheme is also supported in the adopted Strategic Development Plan for south east Scotland.

- 2.2.4 As outlined in Chapter 1, the 2011 Study was commissioned to review the operational and financial aspects of a range of new rail services along the ECML between Edinburgh and Berwick-upon-Tweed, in addition to carrying out extensive stakeholder consultation in the area. A key driver for this was the major changes to ECML based services arising from the introduction of the EUREKA timetable. The approach taken to demand and revenue forecasting was adopted from the analysis undertaken as part of the ECML Route Utilisation Strategy (RUS). This study established a positive BCR for the core service option under consideration here, and also identified a set of train paths which could form the basis of an operational service.

### Previous Studies - Further Details

- 2.2.5 The **East Lothian Rail Study of 1999** considered a range of potential rail schemes in the corridor including:

- a detailed summary of all potential track and signalling improvements;
- a review of existing and potential freight services;
- a full assessment of all existing stations;
- a full assessment of (i) the potential for a new station at East Linton, (ii) the reinstatement of local services to Dunbar, and (iii) of reopening the line to Haddington;
- an appraisal of rail fare levels and comparison with competitive modes;
- a full assessment of service improvements to North Berwick; and
- a full assessment of potential sources of income, capital and revenue for achieving these aims.

- 2.2.6 The **2004 Edinburgh to Berwick Local Rail Study** then reviewed and updated the 1999 Study in the light of developments on the ground over that period. Importantly, the study area was also extended to Berwick-upon-Tweed so a new station at Reston was considered for the first time in this study. The study further established the basic feasibility of the service, albeit with a significant subsidy requirement.

- 2.2.7 The 2004 study was however a preliminary (albeit comprehensive) view of the viability of the options put forward, and the 1999 / 2004 studies were focussed on rail proposals and were therefore not objective-led. As such, they were not undertaken in accordance with STAG.

- 2.2.8 To address this, the comprehensive **2005 STAG Part 1 Study** was commissioned which followed the structure noted below:

- An analysis of past and future transport **problems** along the Edinburgh-Berwick corridor.

– The problems identified were as follows:

- *'Car Traffic on the A1 Corridor is growing at a rate that cannot be sustained indefinitely;*
- *Most Commuting takes place by car;*
- *Public Transport (and particularly bus) is unattractive compared to car travel;*
- *Both local authorities aspire to reducing car dependency; and*
- *Scottish Borders Council has identified key development hubs that will require better sustainable transport links.'*

- A description of the **Pre-Appraisal Process**, including the identification of appropriate objectives and development of options, and the 'nesting' of Planning Objectives into the over-arching Government Objectives.

– The objectives set were as follows:

- *'To maximise the modal share of public transport, cycling and walking on the study corridor by 2021 (compared to the Do-Minimum), with a target of 10% mode shift from car;*
- *Proposed options should support the Structure Plans' target increase in households by 2011 through improved access to principal transport corridors from key development areas within the study corridor (eg Eyemouth);*
- *To bring about a reduction of 5% in generalised journey times from destinations by 2011 and improve access to identified tourist attractions;*
- *Ensure that growth in overall demand for travel is below the SEStran average 2001 – 2021; and*
- *Compared to the 1994-1998 average, on the A1 by 2010 there will have been reductions of: 40% in people killed / seriously injured; 50% in children killed / seriously injured; and 10% in the slight casualty rate.'*

- Optioneering, sifting and identification of options for initial (Part 1) appraisal.

- An outline of the options requiring appraisal in the study.

– 29 options were generated and sifted to form seven packages for appraisal

- A range of consultations were carried out for the study.
- An Environmental appraisal, covering *inter alia* Noise and Vibration, Air Quality, Biodiversity, Visual Amenity and Cultural Heritage.
- An overview of **Safety**, focusing on Accidents and Security.
- Appraisal of **economic** impacts, through Transport Economic Efficiency (TEE) and scoping of Economic Activity and Location Impacts (EALIs).
- A consideration of transport **integration**, transport land-use integration and policy integration.
- Community **accessibility** and comparative accessibility was reviewed.
- A discussion of the Cost to Government, separated out from the TEE work.

- Risks and uncertainties associated with the proposals, along with a discussion of implementability.
- Summary of the work and its recommendations – *the following options were recommended to be taken forward to a Part 2 Appraisal – ie these options were judged to meet the objectives set and hence tackle the problems identified.*
  - *A new rail station at East Linton with, as second priority, a new rail station at Reston as a supplementary option in support of East Linton. Both these options are dependent upon the provision of a new dedicated local train service either Edinburgh–Dunbar or Edinburgh–Berwick.*
  - *Purpose-designed express coach package linking Eastern Borders/East Lothian to Edinburgh. The emphasis should be on services into the central part of the City of Edinburgh.*
  - *A new network of local feeder bus services linked to either new or existing railheads and/or new, dedicated coach service interchange points.*

2.2.9 This STAG Part 1 Study therefore followed the STAG structure very closely. Problems were considered, planning objectives were set and a wide range of options were generated. These were sifted and appraised against the STAG criteria and the planning objectives. A full set of Appraisal Summary Tables were produced. It was envisaged at that time that a STAG Part 2 Study would follow on from the 2005 Study, but this was never undertaken.

2.2.10 Instead, the **2011 Study** was commissioned by Transport Scotland (via ScotRail) to analyse the business case for enhancements to rail services on the line between Edinburgh and Newcastle. The appraisal was to utilise an approach compliant with STAG, and was intended to build on the findings of previous studies undertaken in the corridor. The focus of this study was rail timetable path analysis using RailSys based on the then new EUREKA ECML timetable, and patronage / revenue / benefits analysis of a range of train services between Edinburgh, Dunbar, Berwick-upon-Tweed and Newcastle. The stated objective of this study was to *'provide a complete, operationally robust, demand driven and economically sustainable train service proposal for the Edinburgh-Newcastle route, having considered and appraised all of the stakeholder desires'*. The analysis was to include the potential for new stations at East Linton and / or Reston.

2.2.11 The 2011 Study therefore established the availability of train paths for the prospective Edinburgh-Berwick service and produced a series of positive benefit cost ratios for different service options between Edinburgh and Newcastle – in part taking forward the 'rail' packages from the 2005 Study. In addition to this TEE analysis, other aspects of STAG were briefly touched upon. Note though that this study did not constitute a STAG Part 2 Appraisal – it was focussed on the operational and financial issues associated with new train services and stations on the line.

### 2.3 Approach to the Current Study

2.3.1 As noted above, following the completion of the 2011 Study, Transport Scotland requested that work be undertaken on two additional workstreams in relation to these proposals. This current study was therefore commissioned to address two specific areas as follows:

- Part 1 - to consider non-rail options in the corridor, to a similar level to the analysis undertaken for rail-based options; and
- Part 2 - to develop the rail business case further by considering variants of the 'core' Edinburgh – Dunbar – Berwick service.

2.3.2 The eight years which have elapsed between the 2005 STAG Part 1 Study and the 2013 Study means that the non-rail-based option appraisal could not seamlessly 'pick up' from the 2005 Study. In addition the role of this workstream more specifically is to determine **whether bus-based options could provide a similar quantum of benefits as those identified for rail-based options in the 2011 Study at a lower cost.** As such, the focus was rather narrower than the 2005 STAG Study.

2.3.3 Therefore, in order to progress this appraisal, the STAG Pre-Appraisal stage (in particular 'problems' and 'objectives') are 'refreshed' with more focus on the corridor, and new analysis is undertaken to determine the impact of bus-based options in addressing these newly defined problems and objectives.

2.3.4 Chapter 3 therefore takes a fresh look at the specific problems faced in the corridor, now and potentially in the future. These problems have in part been informed by consultation undertaken with stakeholders in the corridor during both the 2011 Study and this current study.

2.3.5 The resolution of these problems is then encapsulated in a set of Transport Planning Objectives in Chapter 4 and the potential of coach / bus-based options to meet these objectives is then assessed in Chapter 5. The second part of the study, developing the rail business case further, is considered in detail in Chapters 6 and 7. This can be summarised as follows:

- Part 1 – Appraisal of non-rail-based options:
  - Chapter 3: Analysis of Problems and Opportunities
  - Chapter 4: Development of Transport Planning Objectives
  - Chapter 5: Appraisal against Transport Planning Objectives
- Part 2 - to develop the rail business case further:
  - Chapter 6: Business case – train operations
  - Chapter 7: Modelling of rail and non-rail options.

## 3 Analysis of Problems and Opportunities

### 3.1 Introduction

3.1.1 The starting point for any STAG based appraisal is a clear description of the problems which the proposed transport investments are designed to address.

3.1.2 A wide ranging **consultation** exercise was undertaken for the 2011 Study. However, in order to bring the communities up to date with developments since the 2011 Study and to receive inputs for this study, further consultation meetings were held with:

- East Linton Community Council – meeting held in East Linton on 6 September 2012; and
- East Berwickshire Community Councils, elected representatives and other stakeholders – meeting held in Reston on 19 September 2012.

3.1.3 At both of these well attended meetings, the terms of reference for this study were outlined and very valuable insights and inputs were received from those present which has proved invaluable in shaping this current study. Many of the insights / problems are encapsulated in the sections which follow in this chapter.

3.1.4 As noted above, a STAG Part 1 Appraisal, the 'Edinburgh-Berwick Local Transport Study' was completed in 2005 and this report summarised the problems which the study was setting out to address as follows:

- *car traffic on the A1 Corridor is growing at a rate that cannot be sustained indefinitely;*
- *most commuting takes place by car;*
- *public transport (and particularly bus) is unattractive compared to car travel;*
- *both local authorities aspire to reducing car dependency; and*
- *Scottish Borders Council has identified key development hubs that will require better sustainable transport links.*

3.1.5 These problems still largely stand, although they are very general in nature. The possible exception is A1 traffic levels, as it is likely that they have dropped since 2007 in line with national road traffic trends, reflecting the economic downturn<sup>1</sup>. Note though that Scotland-wide traffic has started to grow again according to the most recent figures for 2012.

3.1.6 This chapter therefore comprises a detailed and updated look at the problems affecting the study area, defined as East Lothian and the A1 corridor through Berwickshire to Berwick-upon-Tweed. The problems are analysed in a number of areas:

- socio-economics in Berwickshire;
- the Planning context - demographic projections and housing allocations;

<sup>1</sup> Traffic in East Lothian in general dropped by 7% between the 2007 peak and 2011. Analysis of SRTDb A1 count data suggests a drop of around 5% at the River Esk (JTC00074 A1 River Esk) and smaller reduction of 1.5% at Wallyford (JTC00402 A1 Wallyford) over this period.

- transport supply;
- public transport accessibility; and
- connectivity in Berwickshire.

3.1.7 Firstly the strategic context in terms of local, regional and national transport policy is briefly updated from that reported previously in 2005.

#### 3.2 The Strategic Context

3.2.1 In terms of the **local authority** level, the objectives underlying the two existing Local Transport Strategies are outlined below.

##### **Scottish Borders Council Local Transport Strategy (2007-08)**

###### **Vision Statement**

3.2.2 The SBC LTS Vision Statement is as follows:

*'Our transport network will improve access for everyone, particularly to essential services within the community. It will offer real alternatives to the private car and provide socially inclusive travel for those who live, work and visit the region. The routes that connect to the national transport network will be improved, ensuring that more effective, safer connections with economic areas out-with the Scottish Borders are provided.'*

###### **Objectives**

3.2.3 A number of significant objectives have been developed for the Scottish Borders. These objectives were derived from the five key objectives outlined in guidance from the then Scottish Executive and are compatible with the community planning process. The current objectives for the Scottish Borders LTS are listed below:

- *Objective One – To ensure a safer and more sustainable environment;*
- *Objective Two – To help address the issues highlighted in the Council's Structure and Community Plans;*
- *Objective Three – To maximise personal mobility and accessibility for all;*
- *Objective Four – To promote and improve healthy modes of transport;*
- *Objective Five – To reduce social exclusion throughout the Council area;*
- *Objective Six – To enhance the local economy and provide improved transport to, from and within the Scottish Borders*

3.2.4 It is clear that proposals to improve public transport in the Edinburgh-Berwickshire corridor would be in line with all six of these objectives.

##### **East Lothian Council - Preparation of an Updated Local Transport Strategy**

3.2.5 The proposed vision for the strategy is:

### 3 Analysis of Problems and Opportunities

*"East Lothian will have well-connected communities with increased use of sustainable transport modes to access services and amenities."*

3.2.6 This is based on National Outcome 10 in the Council's Single Outcome Agreement (SOA) as submitted to the Scottish Government. The SOA sets out a number of indicators which will be measured to over time to check if the outcome is being achieved.

3.2.7 The personal freedoms offered by the car are recognised but the downside to these are the increasing levels of traffic congestion being experienced and, until alternative technologies become widespread, the problem of exhaust emissions. Promotion of the use of alternative modes will to be pursued together with more responsible use of the car. Land-use planning policies will be used to locate new developments so as to reduce the overall need to travel.

3.2.8 The Objectives of the Strategy are:

- *(1) to deliver a more attractive and safer environment for pedestrians and cyclists;*
- *(2) to reduce the overall dependence on the car and the environmental impact of traffic;*
- *(3) to promote the availability and use of more sustainable means of travel;*
- *(4) to locate new development to reduce the need to travel;*
- *(5) to maximise accessibility for all and reduce social exclusion; and*
- *(6) to promote integration and interchange between different means of travel.*

3.2.9 As with Scottish Borders, public transport improvements between Edinburgh and East Lothian is clearly in line with a number of these objectives, in particular objectives 2, 3, 5, and 6.

#### **SEStran Regional Transport Strategy**

3.2.10 At the **Regional** level, the SEStran Regional Transport Strategy comprises the following objectives:

*1. Economy - to ensure transport facilitates economic growth, regional prosperity and vitality in a sustainable manner;*

*1.1 to maintain and improve labour market accessibility to key business / employment locations, from all localities and communities.*

*1.2 to maintain and improve connectivity to the rest of Scotland, the UK and beyond.*

*1.3 to support other strategies, particularly land-use planning, and economic development.*

*1.4 to reduce the negative impacts of congestion, in particular to improve journey time reliability for passengers and freight.*

*2. Accessibility - to improve accessibility for those with limited transport choice (including those with mobility difficulties) or no access to a car, particularly those who live in rural areas:*

*2.1 to improve access to employment.*

### 3 Analysis of Problems and Opportunities

2.2 *to improve access to health facilities.*

2.3 *to improve access to other services, such as retailing, leisure / social and education.*

2.4 *to make public transport more affordable and socially inclusive.*

3. *Environment - To ensure that development is achieved in an environmentally sustainable manner:*

3.1 *to contribute to the achievement of the UK's national targets and obligations on greenhouse gas emissions.*

3.2 *to minimise the negative impacts of transport on natural and cultural resources.*

3.3 *to promote more sustainable travel.*

3.4 *to reduce the need to travel.*

3.5 *to increase transport choices, reducing dependency on the private car.*

4. *Safety and Health - To promote a healthier and more active SEStran area population:*

4.1 *to improve safety (accidents) and personal security.*

4.2 *to increase the proportion of trips by walk/ cycle.*

4.3 *to meet or better all statutory air quality requirements.*

4.4 *to reduce the impacts of transport noise.*

3.2.11 The RTS developed a series of measures aimed at addressing these objective and these were considered in three main themes: (i) region wide measures; (ii) initiatives for specific areas and groups; and (iii) network based measures. After an appraisal against the RTS Objectives, support for the Edinburgh-Berwick rail scheme (including new stations at Reston and East Linton) was included within the adopted RTS Delivery Plan.

#### **3.3 Socio-economics – Berwickshire**

3.3.1 An important element of the local aspirations for new rail services to Berwickshire is socio-economic. There is a strong feeling locally (as expressed via the consultation process) that the Berwickshire area is 'lagging' the rest of Scotland, and that poor connectivity to the capital, Edinburgh is an important underlying factor in this. This section presents the evidence primarily in terms of the key socio-economic statistics available for the Berwickshire area.

3.3.2 There is less of a *socio-economic* case for the new train services with respect to East Lothian / East Linton, so it is Berwickshire which forms the focus of the analysis presented in this Section. In the case of East Linton, the case for a station re-opening is based more on achieving modal shift and sustainable development. For other East Lothian stations and settlements, the case for new rail services is based on providing additional capacity and improving the service to accommodate a projected population increase. These issues are returned to in later sections.

3.3.3 The topics covered in this section are as follows:

- population and demographics;
- employment by sector;
- Scottish Indices of Multiple Deprivation (SIMD);
- household incomes;
- benefits claimants;
- education;
- house prices; and
- car dependency.

3.3.4 The study area is focussed on the GROS (General Register Office for Scotland) defined settlements of east Berwickshire as follows: Ayton (population 540, GROS 2010 estimate), Chirnside (1,310), Coldingham (600), Duns (2,730) and Eyemouth (3,370). In addition, there are a number of smaller villages in the area including St Abbs, Burnmouth and Reston itself. The east Berwickshire area is shown in Figure 3.1 below together with the proposed new station site at Reston.

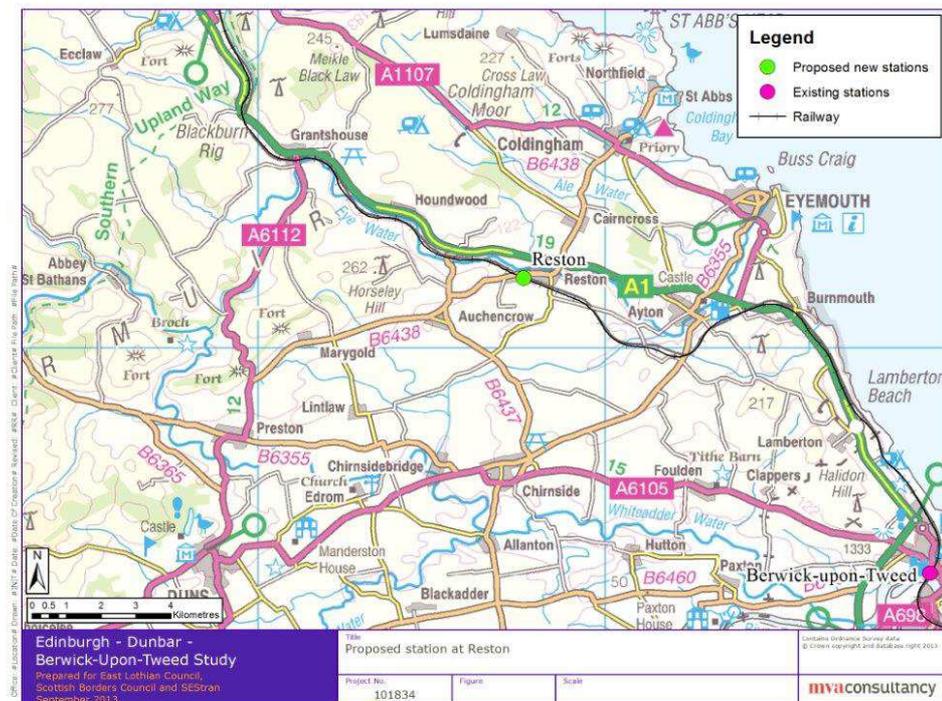


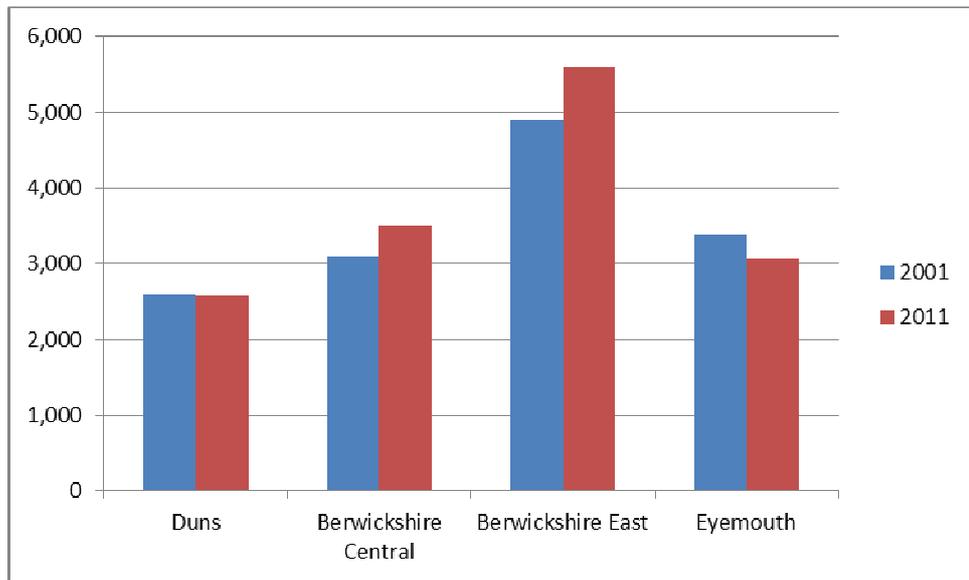
Figure 3.1 Berwickshire Area Map

### Population and Demographics

3.3.5 Scottish Neighbourhood Statistics (SNS) define 'intermediate geographies' (IGs) which form the basis of much of their statistical reporting. The four of most relevance here are 'East Berwickshire' (including the settlements of Ayton, Chirnside, Coldingham and Reston noted above), 'Eyemouth', 'Berwickshire Central' and 'Duns'. A further IG, 'Berwickshire West' has been excluded from this analysis as it lies closer to the A68 corridor in terms of accessing Edinburgh.

### 3 Analysis of Problems and Opportunities

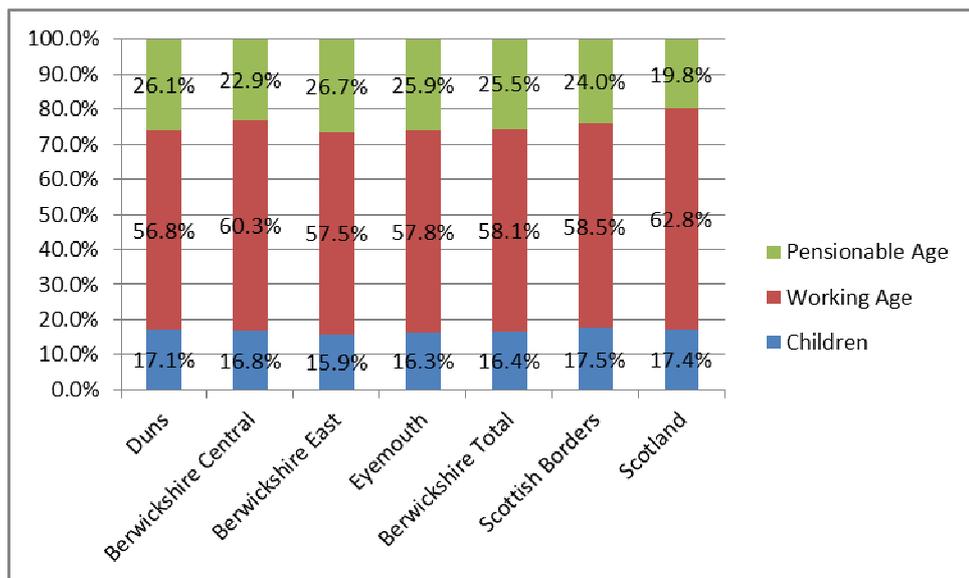
3.3.6 The estimated total population of the area covered by these four IGs in 2011 was 14,736, an increase of 5% from the 2001 figure of 13,984. Figure 3.2 below shows total population for the four IGs in 2001 and 2011.



**Figure 3.2 Total Population in Berwickshire by Intermediate Geography (SNS)**

3.3.7 Figure 3.2 shows that the overall increase in population across the area comprises a stable picture in Duns, increases in Berwickshire Central and East and a declining population in Eyemouth (down by 10%).

3.3.8 In more detail, Figure 3.3 below shows the split of total population by children, working age adults, and pensionable age for each of the four Berwickshire IGs, the total of these four Berwickshire IGs, together with the Scottish Borders and Scotland totals for comparative purposes, all based on 2011 data.



**Figure 3.3 Population split by age, 2011 (SNS)**

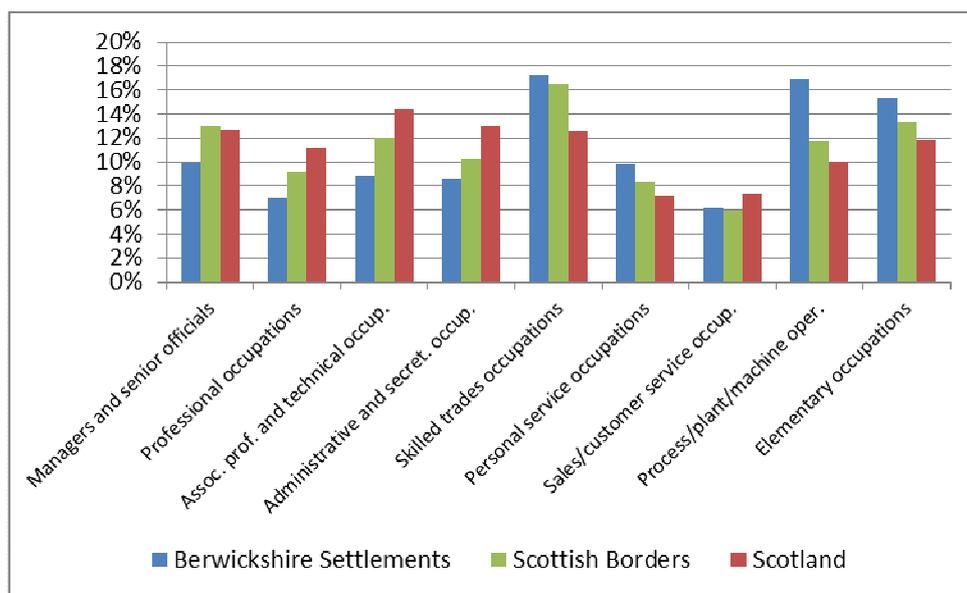
### 3 Analysis of Problems and Opportunities

- 3.3.9 At the Berwickshire Total level, the proportion at pensionable age is **higher** than the Scottish Borders average figure (25.5% versus 24.0%), which itself is much higher than the Scottish average figure (19.8%). The converse of this is that the proportion of working age population is **lower** than the Scottish Borders figure (58.1% versus 58.5%) which again is significantly lower than the Scotland wide figure (62.8%). The proportion of children in Berwickshire is also lower than the Scottish Borders and Scotland figures. This suggests an aging population profile when compared to the rest of the Scottish Borders, which itself has an aging profile compared to Scotland.
- 3.3.10 There is some variation to this pattern within Berwickshire, with an aging population in Duns and Berwickshire East in particular. As such, Duns sees the lowest proportion of those of working age.

■ Key Point: Although population in the area is growing, Eyemouth is seeing a declining population. The local population shows an aging profile compared to the rest of the Scottish Borders, which itself shows a more aging profile than Scotland.

#### Employment by Sector

- 3.3.11 The most recent breakdown of employment by sector at a high level of spatial detail is still the 2001 Census. Figure 3.4 below shows the breakdown of occupation by sector for the total of the five Berwickshire settlements (Ayton, Chirnside, Coldingham, Duns and Eyemouth), the Scottish Borders and Scotland.



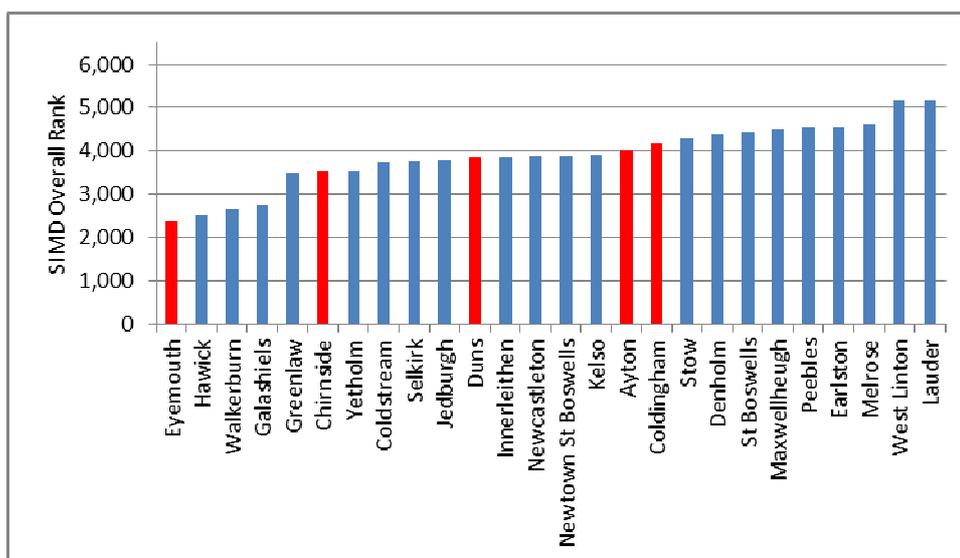
**Figure 3.4 Local Employment by Sector (2001 Census)**

- 3.3.12 A clear picture emerges here in that where the Scottish Borders typically 'lags' the Scottish average, the five Berwickshire settlements typically 'lag' behind the Scottish Borders. For example, Berwickshire has a lower proportion of residents working in professional occupations compared to the Scottish Borders, which in turn is lower than the Scottish figure. In general more Berwickshire residents work in lower paid sectors such as elementary occupations and process / plant / machine operations. This point is returned to later in this section.

■ Key Point: The Berwickshire area has a high proportion of residents working in typically lower paid sectors. Again the picture is worse than the Scottish Borders which itself is worse than the Scottish average.

**Scottish Indices of Multiple Deprivation (SIMD)<sup>2</sup>**

- 3.3.13 SIMD is a generally accepted measure produced by the Scottish Government which is used to target policies and resources at the places with greatest identifiable need. For the purposes of SIMD, Scotland is divided into 6,505 'datazones' and these are ranked from 1 (most deprived) to 6,505 (least deprived).
- 3.3.14 Figure 3.5 below shows the 2012 SIMD analysis at the 'nearest settlement' level for all Scottish Borders Council settlements. The values shown are the average rank for the datazones for which each of these settlements is the closest, and the 'Overall' domain results are shown here. This 'overall' domain consists of a composite indicator bringing together 31 different measures covering employment; income; health; education, skills and training; geographic access to services; crime; and housing.
- 3.3.15 The five Berwickshire settlements of relevance are shown here in red and all the Borders settlements have been ranked (from most to least deprived).



**Figure 3.5 SIMD Overall Deprivation Index – (2012 SIMD)**

- 3.3.16 Eyemouth is therefore the lowest ranked of all the Scottish Borders settlement in terms of this overall SIMD index, ie it is the settlement with the highest levels of deprivation. Eyemouth also ranks the lowest of the Borders settlements for the 'Education' and 'Employment' domains. Chirnside and Duns are also relatively deprived in terms of Scottish Borders settlements.
- 3.3.17 Although the above data suggest that, in the Scotland wide context, the Borders settlements are not amongst the most deprived, the most deprived areas by the SIMD measures tend to be in the post-industrial urban areas of west central Scotland. The '**Vulnerability Index**'

<sup>2</sup> <http://www.scotland.gov.uk/Topics/Statistics/SIMD>

### 3 Analysis of Problems and Opportunities

however provides a means of comparing the vulnerability of 90 different *rural* settlements across Scotland (see Rural Scotland in Focus 2012, from the Rural Policy Centre).

3.3.18 This index was based on data relating to:

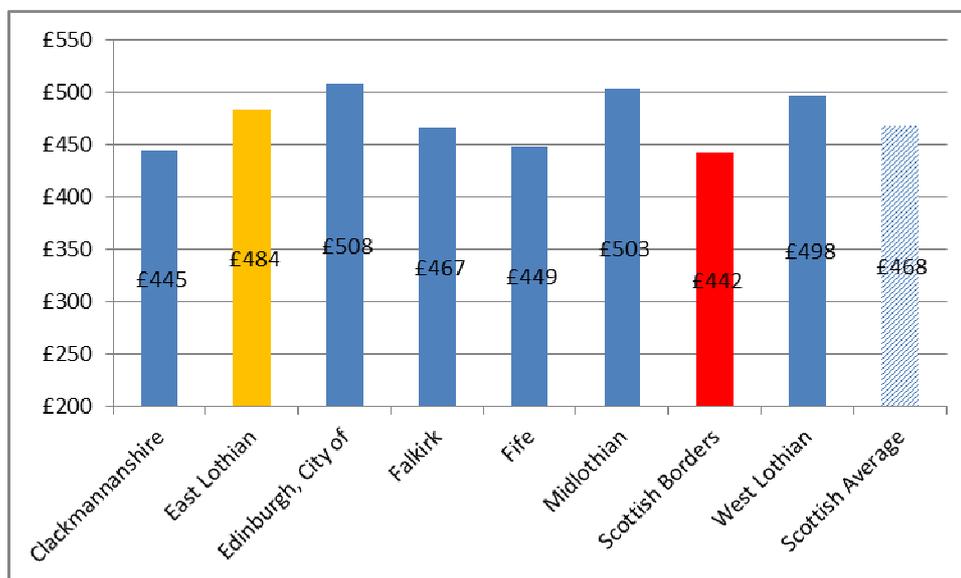
- the proportion of the local population of working age;
- the proportion of the local population claiming Job Seekers Allowance;
- the proportion of the local population working in the public sector; and
- a measure of income deprivation derived from the Scottish Index of Multiple Deprivation (SIMD).

3.3.19 Of the 90 settlements considered across Scotland, **Eyemouth was ranked 15th most vulnerable**. No other Berwickshire settlements were considered.

- Key Point: Eyemouth is the most deprived settlement in the Scottish Borders according to the Scottish Indices of Multiple Deprivation. Chirnside and Duns are also amongst the more deprived settlements in the Scottish Borders by this measure. Eyemouth has been separately identified as being amongst the most vulnerable *rural* communities in Scotland.

#### Household Incomes

3.3.20 The Scottish Borders in general is a low wage economy compared to the rest of Scotland. Figure 3.6 below shows the estimated gross median household income per week for households in each of the SEStran local authorities, together with the Scottish average, all as defined by SNS.



**Figure 3.6 Local Authority Household Income per week (2008/09) (SNS)**

3.3.21 By this measure, the Scottish Borders has the lowest median gross household incomes in the SEStran area and also ranks 24<sup>th</sup> lowest of the 32 Scottish local authorities. Household incomes are 6% below the Scottish average by this measure. By contrast East Lothian's

### 3 Analysis of Problems and Opportunities

household incomes are 10% higher than those of the Scottish Borders, and 3% higher than the national average.

3.3.22 There are however clearly variations of incomes within the Scottish Borders area. Figure 3.7 below shows the same household income measure for the four east Berwickshire intermediate geographies, together with the Scottish Borders average figure.

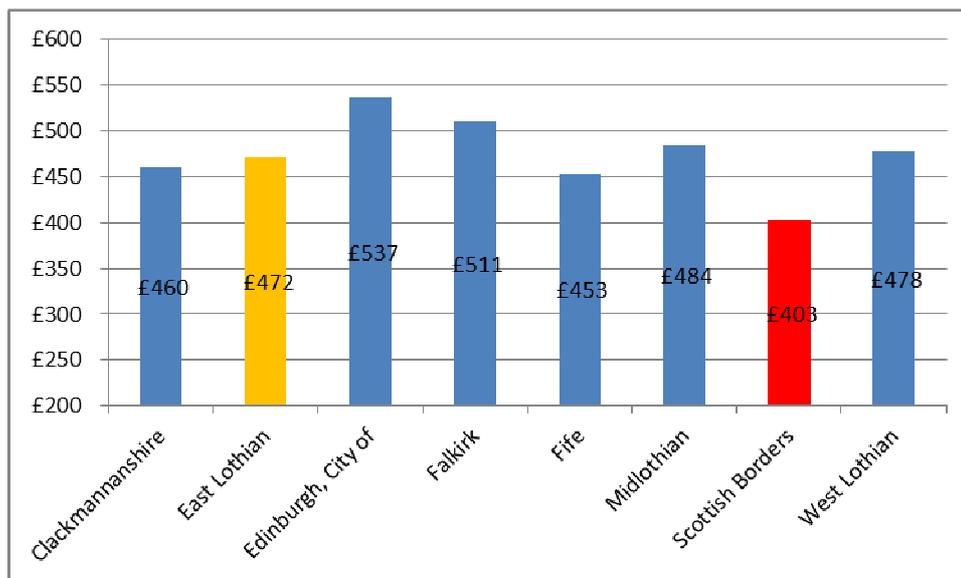


**Figure 3.7 Household incomes in Berwickshire (2008/09) (SNS)**

3.3.23 It can therefore be seen that household incomes in Eyemouth and Duns are far lower than the Scottish Borders average. Of the 29 Scottish Borders IGs defined by SNS, Eyemouth ranks 25th lowest in terms of household income. In Berwickshire Central and East, although household incomes are higher than the Scottish Borders average, they are still lower than the national average figure of £468 per week and indeed the SEStran average of £475 per week.

3.3.24 One potentially important factor in explaining Scottish Borders' low household incomes is proximity to Edinburgh. It is notable, that in Figure 3.6, of the SEStran local authorities, the three Lothians local authorities (East, Mid and West) have the highest household incomes after City of Edinburgh – ie those nearest to Edinburgh.

3.3.25 To further illustrate this, Figure 3.8 below shows the median gross weekly earnings (workplace based) for full-time employees in 2012, for each of the SEStran local authorities.



**Figure 3.8 Weekly Earnings – Workplace based, 2012 (SNS)**

3.3.26 Figure 3.8 therefore shows that on average, a full time job located in Edinburgh has a pay level which is 33% higher than a full time job located in the Scottish Borders. It also confirms that jobs located in the Scottish Borders have the lowest wages of the eight SEStran local authorities.

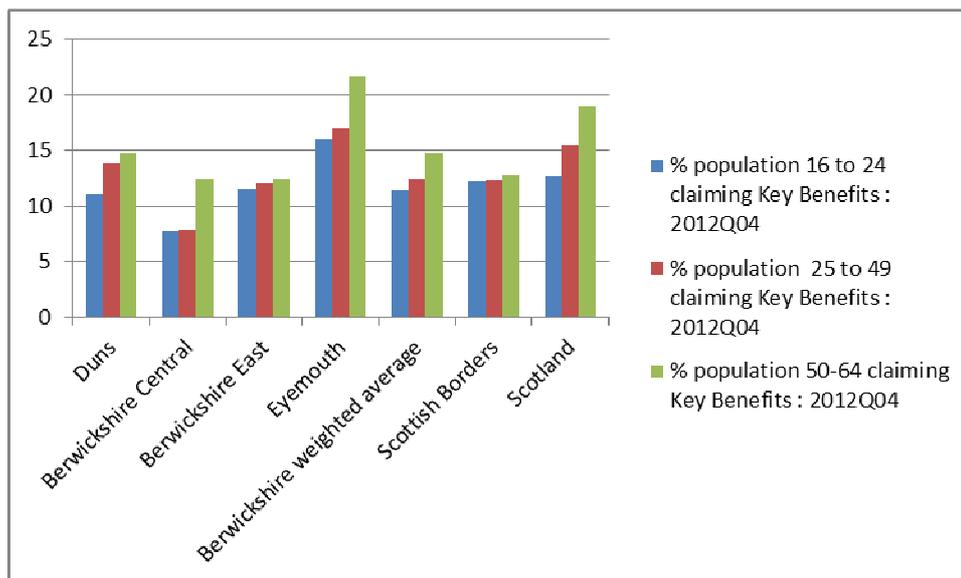
3.3.27 It is therefore reasonable to assume that if more Berwickshire residents are able to work in the City of Edinburgh, household incomes in Berwickshire area could increase. As an example, three of the five Scottish Borders IG areas with the highest household incomes are close to Edinburgh, namely ‘West Linton and Broughton’, ‘Earlston, Lauder and Stow’ and ‘Peebles South’. These areas typically have a high share of residents working in Edinburgh.

■ Key Point: Household incomes in the Scottish Borders are low by Scottish standards and are very low in Eyemouth and Duns. Pay levels for jobs located in Edinburgh are 33% higher than the Scottish Borders average. Berwickshire household incomes could be driven up by a greater participation in the Edinburgh labour market.

**Benefits Claimants**

3.3.28 Related to incomes and the labour market is the level of benefits claimants. Figure 3.9 below shows the percentage of the population by age group claiming ‘key benefits’<sup>3</sup> as defined in SNS for the four Berwickshire IGs, the total of these, the Scottish Borders and Scotland as a whole.

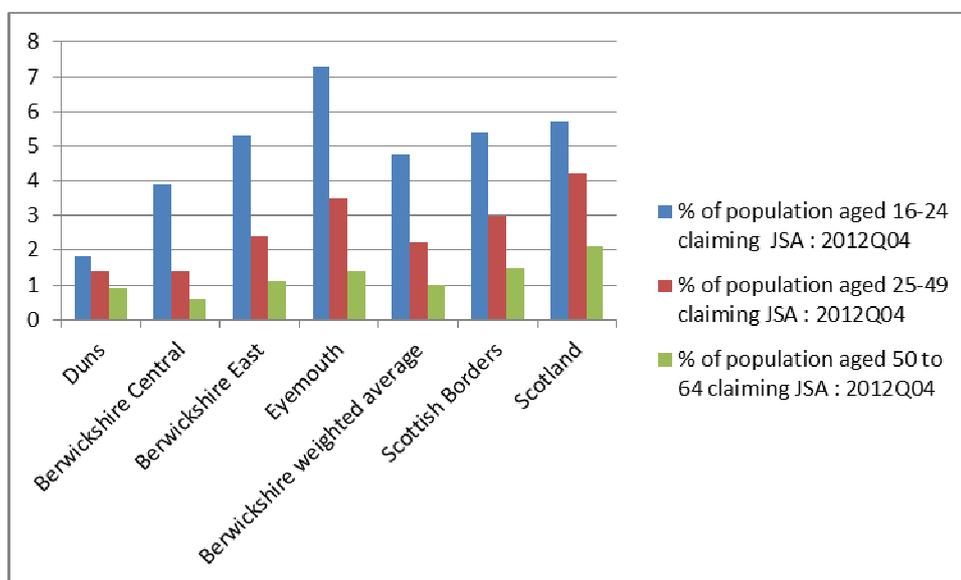
<sup>3</sup> These are: Job Seekers Allowance; Employment Support Allowance or Incapacity Benefit or Severe Disablement Allowance; Lone Parents Income support claimants with a child under 16 and no partner; Carer’s Allowance; Others on Income Related Benefit - Other income support (including IS Disability premium) or Pension Credit claimants under State Pension age; Disabled Disability Living Allowance (DLA); Bereaved Widows Benefit, Bereavement Benefit or Industrial Death Benefit.



**Figure 3.9 Percentage population claiming key benefits (2012Q4, SNS)**

3.3.29 Across the four Berwickshire IGs, the proportions of people between 25-49 and 50-64 claiming key benefits is higher than in the Scottish Borders generally, but levels in the Borders are significantly lower than the national average. The proportions across all age groups claiming key benefits are very high in Eyemouth however, far higher than the Scottish Borders and indeed Scotland average figures, reinforcing the SIMD and household income findings in particular.

3.3.30 Figure 3.10 below now shows similar data for the proportions claiming Jobseekers Allowance (JSA).



**Figure 3.10 Percentage population claiming JSA (2012Q4, SNS)**

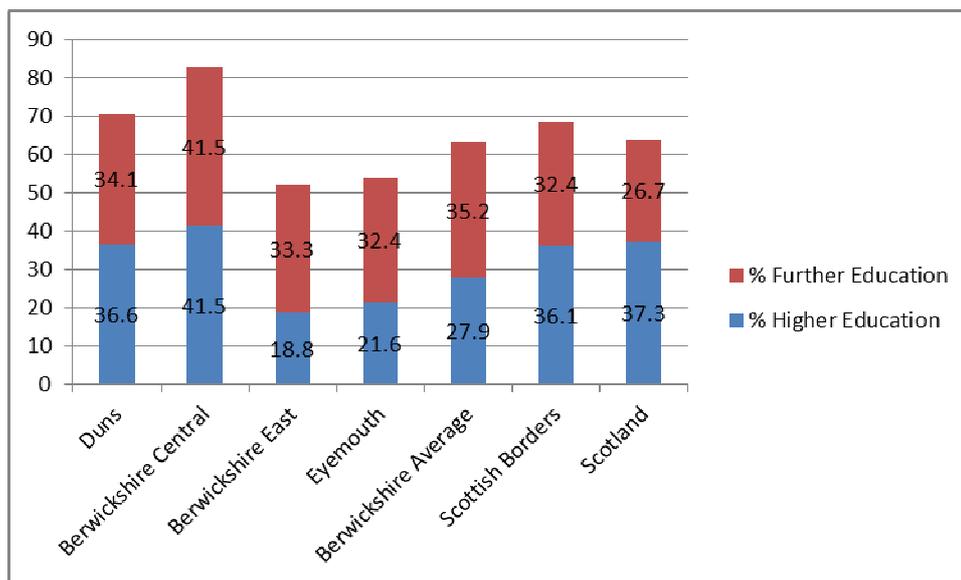
3.3.31 As with key benefits, JSA claimant rates are generally lower in Berwickshire compared to the wider Scottish Borders area and these rates are in turn lower than Scotland. However, these figures clearly highlight a particular problem of high rates of JSA claimants in Eyemouth for

the 16-24 age group, with claimant levels significantly higher than both the Borders and Scottish averages.

■ Key Point: Key Benefits / JSA figures highlight high levels of claimants in Eyemouth, even higher than the national average. A particular problem is youth unemployment (16-24).

**Education**

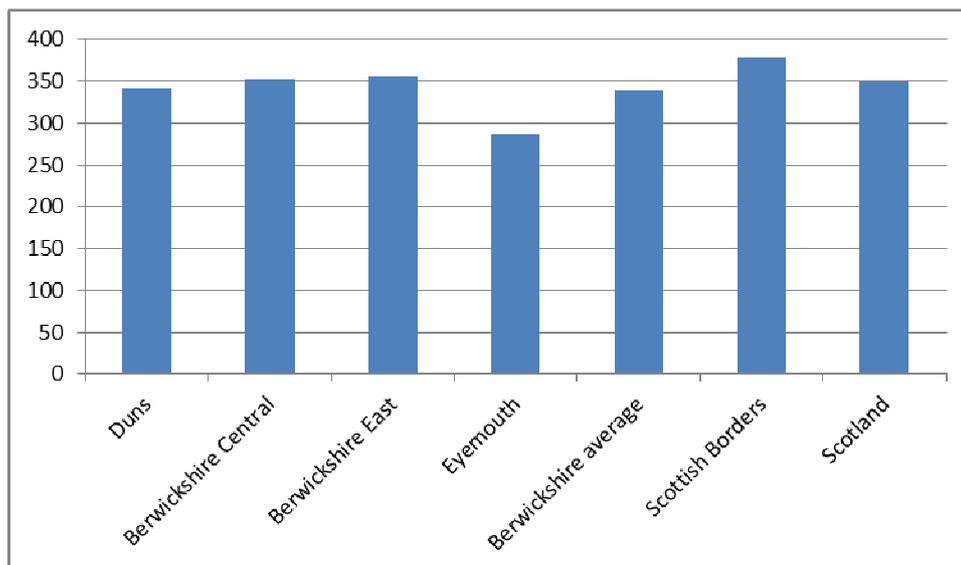
3.3.32 One issue which emerged strongly in the consultation undertaken for this study was local concerns regarding access to further and higher education. Figure 3.11 below shows the percentages of school leavers in 2011/12 going on to further or higher education for the areas of interest here.



**Figure 3.11 Percentage of school leavers going to further / higher education (2011/12, SNS)**

3.3.33 Taken together, it can be seen that the proportion of school leavers going on to further or higher education from the east Berwickshire area is lower than both the Scottish Borders and overall Scottish averages. It is notable that the participation rates are higher in the areas further west (Duns and Berwickshire Central) which are in closer proximity to Scottish Borders College campuses. The low rates in Berwickshire East and Eyemouth may reflect the difficulties in travelling to take up these opportunities for potential students resident in these areas.

3.3.34 Of course these participation rates may also reflect educational attainment, and this is explored further in Figure 3.12 below, where 2011/2012 figures are shown in terms of the average 'tariff' score attained by S5 pupils.



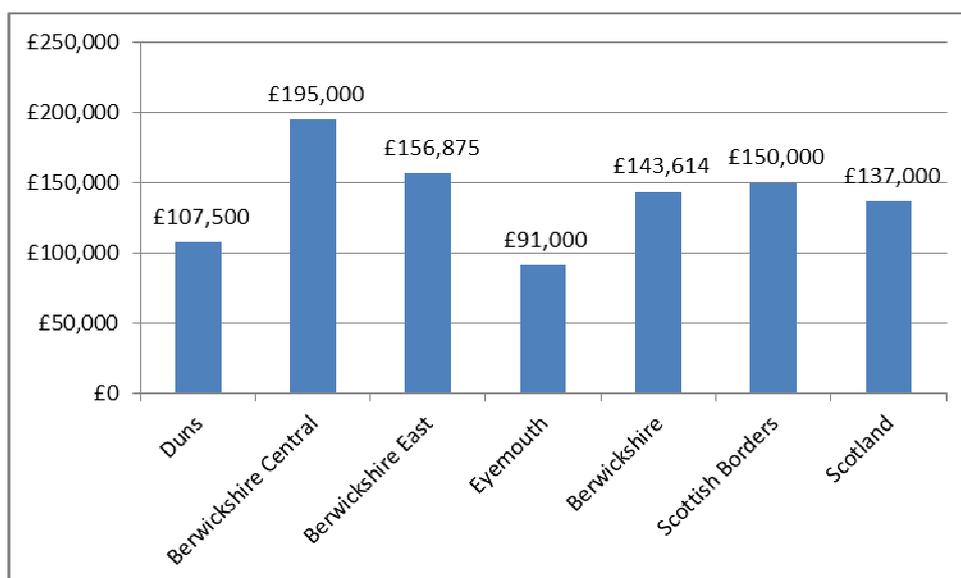
**Figure 3.12 Average 'tariff' score for S5 pupils (2011-12, SNS)**

3.3.35 These data suggest that educational attainment in the four Berwickshire IGs is lower than the Scottish Borders average but in line with the Scottish average. It is notable that Berwickshire East has the highest educational attainment of the four IGs but a very low rate of school leavers going on to further / higher education. Again, this may be a reflection of poor access to further / higher education from this area.

■ Key Point: Participation rates in higher / further education are lower than might be expected in Berwickshire. This may in part reflect the poor access to higher / further educational opportunities for locally based students.

**House Prices**

3.3.36 House prices are a reflection of the balance between the demand for and supply of housing. Figure 3.13 below shows the median house sale price for 2011 for the areas of interest.



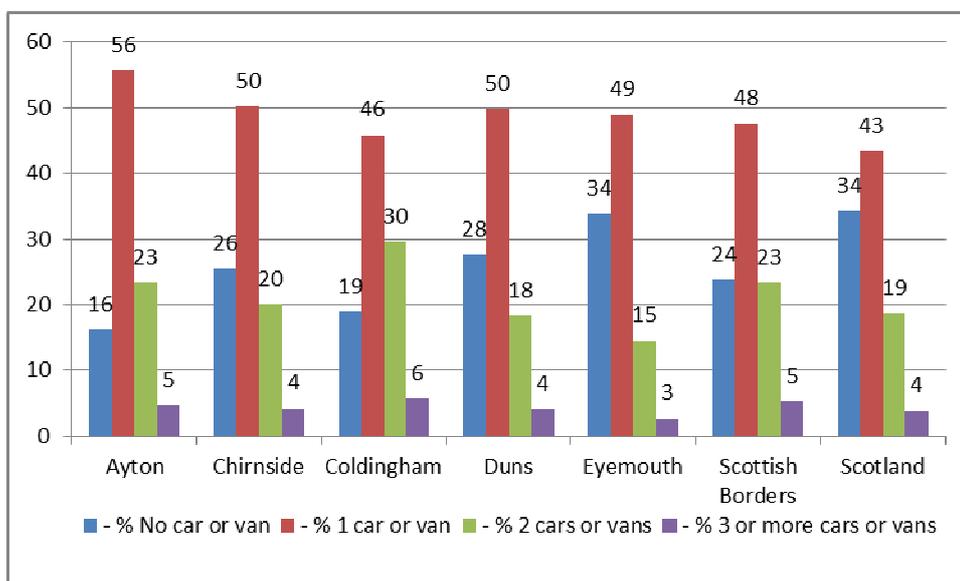
**Figure 3.13 Median house prices (2011, SNS)**

3.3.37 House prices in Eyemouth are far lower than in the rest of east Berwickshire and Scotland as a whole reflecting the relative lack of demand in the area. The values in Berwickshire East and Central are significantly higher than the national average values.

■ Key Point: House prices in Eyemouth are well below the national average. As well as reflecting the collapse of its local traditional industry, this will in part reflect the poor access to employment opportunities elsewhere.

**Car Dependency**

3.3.38 Figure 3.14 below shows the rates of household car availability for each of the five Berwickshire settlements according to the 2001 Census. Scotland-wide figures are shown for comparison, although these figures are heavily influenced by Glasgow and Edinburgh where car ownership rates are very much lower.



**Figure 3.14 Berwickshire car availability data (2001 Census)**

3.3.39 It can be seen that Eyemouth again stands out with a much higher proportion (34%) of households without access to a car. This compares to 24% for the Scottish Borders overall. The other settlements generally have higher rates of household car availability. Also of note in Eyemouth is the low proportion of two and three car households. This limits the potential use of park and ride from these households as the single vehicle would be parked all day and therefore be unavailable to other members of the household.

3.3.40 In general Scottish Borders car ownership rates are higher than the Scottish average which reflects the rural nature of much of the Borders.

■ Key Point: Car availability levels across Berwickshire are typical of the Scottish Borders with the exception of Eyemouth where over one third of households did not have access to a car in 2001. This will impact on these households’ prospects in the labour market and potentially exclude them from employment opportunities in Edinburgh.

#### Summary

- 3.3.41 The data reported above shows that Eyemouth is the main area of concern in east Berwickshire, in terms of economic and labour market related parameters. By most indicators, the area is lagging both the rest of the Scottish Borders and Scotland overall and the 'vulnerable' nature of the local economy has been recognised by many stakeholders. Although the problems have their source in the decline of a traditional local industry, this position cannot be helped by the town's poor connectivity to the wider employment market of east central Scotland and Edinburgh, and this may have an impact on the employment prospects of local residents.
- 3.3.42 Outwith Eyemouth in other parts of east Berwickshire, the socio-economic issues are more associated with an ageing demographic profile in the area, although household incomes are also relatively low. Improved connectivity to Edinburgh could assist in the retention of working age population, although rural areas do in general have an older age profile than the larger cities.

#### Borders Railway

- 3.3.43 Note also that some areas of the Scottish Borders will shortly be benefitting from a step change in rail-based accessibility through the re-opening of the Borders Railway, with new stations at Stow, Galashiels and Tweedbank. This will dramatically reduce journey times, eg Galashiels to Edinburgh will reduce from around 90 minutes by bus to approximately 50 minutes by train. The estimated journey time by rail from Reston to Edinburgh is also 50 minutes. Thus a new station at Reston would provide a level of accessibility to Edinburgh similar to that which will be achieved at Galashiels by Borders Rail. Without this, **Berwickshire would suffer a further competitive disadvantage** relative to the central Borders.

### 3.4 Demographic Projections and Housing Allocations

- 3.4.1 In general, East Lothian and the Scottish Borders are growing areas. GROS project that the population of East Lothian will increase from 97,500 in 2010 to 130,000 by 2035, an increase of 33%. This is the **highest growth rate** of any of the Scottish local authority areas in these 2010-based projections. The Scottish Borders is also projected to see a significant increase in population from 113,000 to 125,000 by 2035. East Lothian and the Scottish Borders Councils are therefore required to plan for significant quantities of new housing, and hence new housing allocations are being made across the area.
- 3.4.2 The Strategic Development Plan (SDP) for the area at the time of writing is being finalised by SESplan (the Strategic Development Planning Authority for Edinburgh and South East Scotland) covering the period to 2032. Reflecting the above population projections, the draft Supplementary Guidance of November 2013 notes a requirement for 10,050 new houses in East Lothian and 12,960 in the Scottish Borders between 2009 and 2024. As such, it is clear that there is very considerable scope for increasing demand for travel between East Lothian / eastern Borders and Edinburgh over the upcoming period. This would clearly add significantly to volumes and congestion / crowding in this corridor, both in terms of rail and road transport.

### 3 Analysis of Problems and Opportunities

3.4.3 It should be noted that the geography of East Lothian is such that virtually the whole of the local authority area can be regarded as being a potential catchment area for the railway stations in East Lothian (Musselburgh, Wallyford, Prestonpans, Longniddry, Drem, Dunbar, and North Berwick), either in terms of walk-in or park and ride. This level of development in East Lothian in the coming years is very likely to add significantly to the demand for rail travel between East Lothian and Edinburgh.

3.4.4 Scottish Borders Council and East Lothian Council are currently in the process of developing their Local Development Plans in the light of the adoption of the SDP and the Supplementary Guidance.

■ Key Point: East Lothian is projected to be one of the fastest growing parts of Scotland, in terms of population with a growth of 33% projected by 2035. This will create additional pressures on road and rail-based transport between East Lothian and Edinburgh as many of these new East Lothian residents will work in Edinburgh.

3.4.5 The planning allocations data used in the **modelling and appraisal exercise** as part of this study (see Chapter 7) was based on the SESplan Proposed Plan housing allocations (November 2011, Table 3). Since then, the Supplementary Guidance has increased the early allocations of new housing in East Lothian and the Scottish Borders and these are the figures noted above. This means that the modelling work represents a slightly conservative estimate of additional households and population in the corridor to 2024. More recent modelling of the SESplan Adopted SDP suggests that the forecast population in the East Lothian / Berwickshire corridor is now 7% higher than that used in the 2024 Proposed Plan scenario.

### 3.5 Transport Supply

3.5.1 This section reviews the level of transport supply and associated problems in the corridor between Edinburgh and Berwick-upon-Tweed, principally from the perspective of public transport. The East Lothian and Berwickshire areas are taken in turn below.

#### Current Picture – East Lothian

##### Bus Services

3.5.2 Lothian buses currently run frequent services to the western parts of East Lothian, as far as Seton Sands, Tranent, Pencaitland and Wallyford. Beyond this First Group provide the majority of services, primarily:

- 124 / X24 / X25 to North Berwick – also serving existing station locations of Musselburgh, Wallyford, Prestonpans, and Longniddry;
- 106 / X6 to Dunbar – also serving Haddington and East Linton; and
- X8 to Haddington.

3.5.3 Broadly speaking, these services provide a half hourly service from Haddington, an hourly service from Dunbar and a half hourly service from North Berwick (although only every other bus runs beyond Musselburgh to Edinburgh).

### 3 Analysis of Problems and Opportunities

- 3.5.4 In terms of East Lothian, the proposals considered in the 2011 Study would have the greatest impact on **East Linton** and Dunbar (although train frequencies would be improved at some or all of the stations between Musselburgh and Drem inclusive). Current bus services from East Linton consist of the First X6 / 106 (typical journey time of 65 minutes and hourly frequency – more in the peaks) and Perryman’s 253 (49 minutes but infrequent). The last bus from Edinburgh to East Linton leaves Haymarket at 2221. A train to Drem can be caught from Edinburgh at 2312.
- 3.5.5 As such East Linton is reasonably well served by bus services throughout the day.

■ Key Point: East Linton’s current bus services are broadly in line with equivalent East Lothian settlements.

#### Accessing the Rail Network – East Linton

- 3.5.6 The nearest stations to East Linton are Drem to the west and Dunbar to the east. Car parking at both stations is often at capacity and this therefore acts as a constraint for East Linton area residents in terms of accessing the rail network<sup>4</sup>. There are also parking charges at Dunbar. As a result, only 14% of East Linton residents who work in Edinburgh travel by public transport, compared to eg 31% in North Berwick (2001 Census Travel to Work data).
- 3.5.7 There is no effective bus link from East Linton westwards to the rail network but connections eastwards to Dunbar can be made.

■ Key Point: East Linton residents’ access to rail services is constrained by parking availability at the nearest stations and there are no effective bus links. Public transport mode share for commuting to Edinburgh is much lower than other East Lothian settlements as a result.

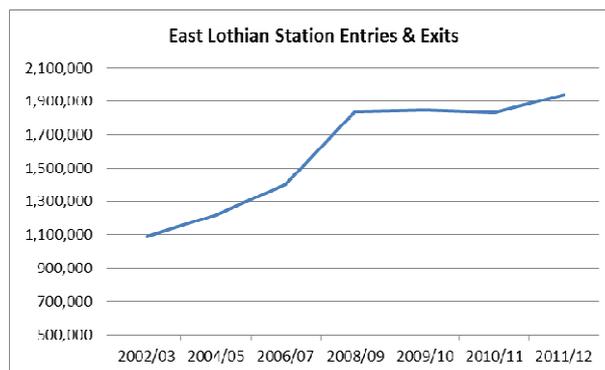
#### Train / Car Park Capacity Issues

- 3.5.8 There are 21 trains per day in each direction between North Berwick and Edinburgh, nearly all of which call at all of the intermediate stations (Drem, Longniddry, Prestonpans, Wallyford and Musselburgh). The trains used at present are four-car Class 380s and these trains have seating for 282 passengers<sup>5</sup>.
- 3.5.9 Data provided by ScotRail for 2012 confirms that the 0720 and 0756 services from North Berwick are loaded to or above their seated capacity on their departures from Wallyford and Musselburgh. On the return journey from Edinburgh, the 1641, 1705 and 1742 are loaded beyond capacity on leaving Waverley although this overcrowding lasts only to Musselburgh.
- 3.5.10 In addition, several of the station car parks along the line are operating at or beyond their capacity, potentially constraining the demand for train travel from these stations. If car parking provision is extended over time, this ‘latent’ demand together with a resumption of growth in train boardings with economic growth would add to pressure on these already full peak hour trains. It can be seen below that East Lothian rail volumes (summed across all East Lothian stations (ORR figures)) grew by almost 90% between 2002/03 and 2008/09 before levelling off with the onset of the economic difficulties in 2008/09. Between 2008/09

<sup>4</sup> Note that there may be scope to increase car parking capacity at Dunbar but there are no current plans in respect of this.

<sup>5</sup> <http://www.scotrail.co.uk/newtrains>

and 2010/11, there was no growth across the East Lothian stations. In contrast, total boardings at Edinburgh Waverley and Haymarket grew by 13% over this period. Much of this can be attributed to ongoing strong growth between Edinburgh and Glasgow and at the West Lothian stations over this period. Growth has however resumed at East Lothian stations during 2011/12 – up by 6% from 2010/11.



3.5.11 As such, train overcrowding represents a relatively small problem at present with the potential to become a bigger issue over time (affecting more trains and a greater proportion of the route), given the projected population increases discussed previously and the impacts of economic recovery on train volumes.

3.5.12 This point is recognised in Network Rail’s Route Utilisation Strategy Generation 2 for Scotland (June 2011)<sup>6</sup> which acknowledges that crowding will become more of a problem on some North Berwick services by 2019 under their ‘high-peak’ scenario. The RUS considered two scenarios in mitigation:

- extension of the single daily current Prestonpans service to Drem; and
- switching from four car units to three / six car units. Current platform lengths will not accommodate ‘2\*4’ car or ‘3+4’ car formations and a range of formations were considered, although it is noted that selective door opening would still be required. The recommendation was to keep rolling stock policy under review.

3.5.13 The first of these would be a very modest change with the second being potentially more significant. It does underline however that Network Rail recognise that there will be a problem of crowding on this line in the medium term which will require some measures to be put in place to address.

- Key Point: Peak hour train capacity is already being reached between Edinburgh and Musselburgh / Wallyford, and this is likely to become a growing issue on North Berwick service trains as the population in East Lothian is projected to increase and commuting to Edinburgh also increases.

**Train Service Patterns**

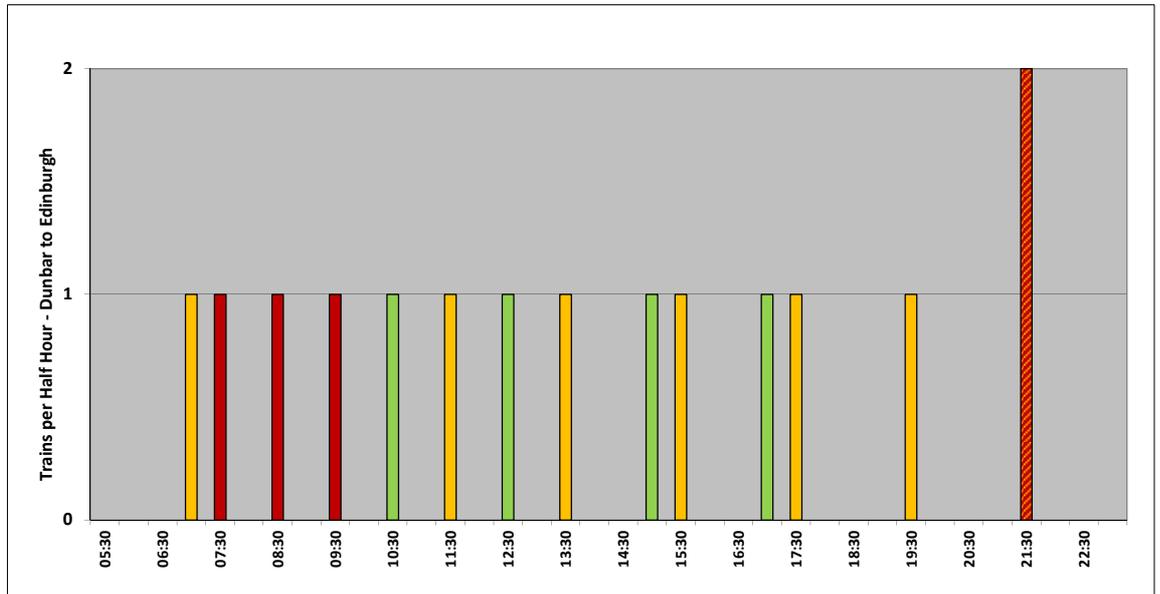
3.5.14 Train services on the North Berwick line are relatively evenly spread across the day, with a regular hourly pattern supplemented by additional peak hour trains.

3.5.15 However, Dunbar based services, which are provided by a mix of three operators, are more irregular as shown in Figure 3.15 and Figure 3.16 below. The figures show departure times from Dunbar to Edinburgh and from Edinburgh to Dunbar respectively in half hour segments across the day. The relatively recent ScotRail ‘infill’ services are shown in green, East Coast services are shown in red, and Cross Country service are shown in yellow. So for example

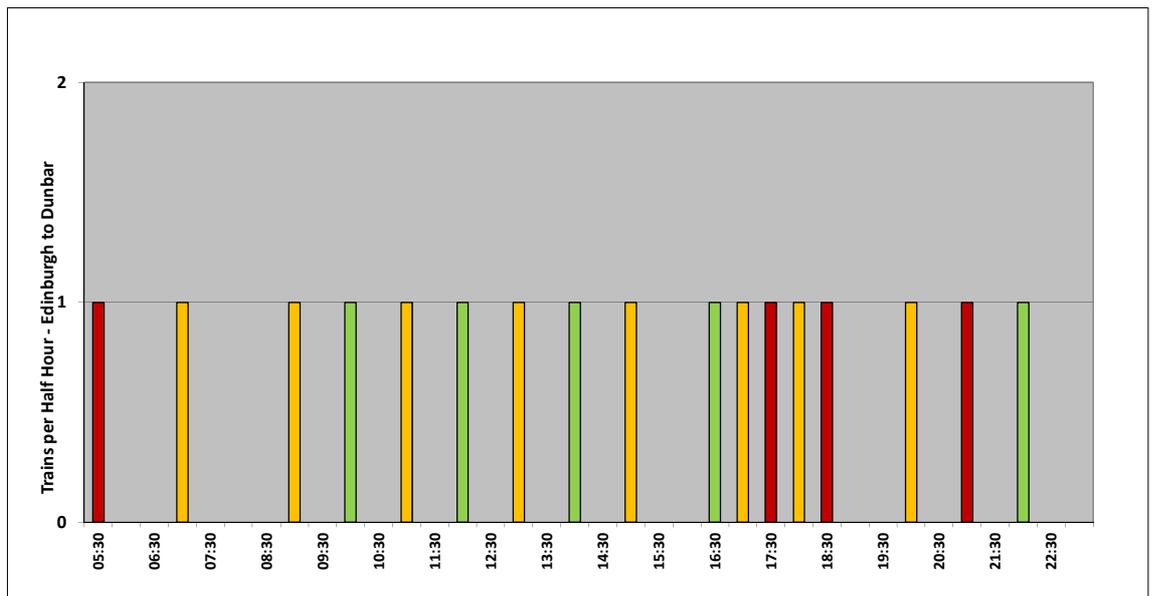
<sup>6</sup> <http://www.networkrail.co.uk/browse%20documents/rus%20documents/route%20utilisation%20strategies/rus%20generation%202/scotland/scottishrusbook.pdf>

### 3 Analysis of Problems and Opportunities

the figure suggests there is one departure from Dunbar to Edinburgh between 0930 and 1000 and this train is operated by East Coast. There are two trains between 2130 and 2200 one operated by East Coast and one by Cross Country.



**Figure 3.15 Existing train departures from Dunbar to Edinburgh**



**Figure 3.16 Existing train departures from Edinburgh to Dunbar**

3.5.16 It can be seen that, even with the ScotRail 'infill' services, there are periods of the day where there are long gaps between services, and at times this can be more than two hours.

■ Key Point: Despite recent improvements, train services from / to Dunbar are still irregular with long gaps at times across the day.

#### Current Picture – Scottish Borders, East Berwickshire

##### Bus Services

- 3.5.17 Beyond Dunbar and into the Scottish Borders, public transport connectivity to Edinburgh reduces markedly. Dunbar marks the limit of the First Bus services and Perryman's 253 Berwick to Edinburgh service provides the only link. There are eight Perryman's buses between Berwick-upon-Tweed and Edinburgh and vice versa per day. These run broadly hourly in the AM peak north / west bound and in the PM peak east / southbound, and then two hourly at other times of the day. Services stop running relatively early in the evening.
- 3.5.18 The 253 therefore provides a direct link between Burnmouth, Eyemouth, Coldingham and Reston, and Edinburgh / Berwick throughout the day. The service also calls at Grantshouse, Cockburnspath, Innerwick, Dunbar, East Linton and Haddington. Ayton has only one direct northbound service and one direct southbound service per day. St Abbs also has one direct service but this is listed as 'Request Only' on the timetable. Other settlements to the west of the A1, notably Chirnside and Duns have no direct links with Edinburgh and travel to the capital by public transport has to be made via Berwick. Indeed Duns is the largest settlement in the Scottish Borders without a direct public transport link to Edinburgh.
- 3.5.19 The typical journey time on the 253 between Reston and Edinburgh is one hour and 40 minutes with journeys from Burnmouth taking more than two hours. Adding access times to / from the bus stop plus a wait time to these on board journey times would increase total travel times even further. Analysis of Scottish Household Survey Travel Diary data suggests that less than 3% of bus trips nationally are of a duration of more than 110 minutes and the 2001 Census found no records of commuting by bus to Edinburgh from these east Berwickshire settlements. This suggests that the travel times provided by the current bus services are too long for regular use, eg travel to Edinburgh for work or education, and as such the **area is essentially beyond any reasonable measure of the Edinburgh travel to work /education area using public transport**. This clearly has implications for the employment prospects of east Berwickshire residents, and in many ways east Berwickshire residents are worse off in terms of access to Edinburgh compared to the adjacent area of England (ie the Berwick-upon-Tweed area).
- 3.5.20 Note though that recent timetable changes mean that a working day in Edinburgh is now technically possible using the 253 as buses now leave Edinburgh for Berwickshire at 1710, 1810 and 1910. The standard single fare is currently £10.20 (from Berwick and Eyemouth) although a 10 journey ticket can be bought for £76 reducing the cost to £7.60 each way.
- 3.5.21 Local services from Duns, Ayton, Eyemouth and Chirnside to Berwick are provided by Travelsure and in general at least an hourly service is provided. In addition, National Express run two coaches from Berwick to Edinburgh (0630-0750 - 80 minutes and 1710-1835 - 85 minutes) and two coaches from Edinburgh to Berwick (0945-1105 - 80 minutes and 2200-2315 - 75 minutes) each day although these clearly do not represent an outward and return commuting service.
- 3.5.22 First Bus briefly ran an 'infill' 253 service during 2011 (approximately June to October) on a commercial basis – this supplemented the Perryman's service to provide an hourly service from Berwickshire to Edinburgh as well as providing increased bus frequencies from Dunbar

### 3 Analysis of Problems and Opportunities

and East Linton. It is understood that the service did not prove to be financially viable and was therefore withdrawn.

3.5.23 First Bus number 60 connects Duns and Chirnside with Berwick-upon-Tweed including the railway station – two hourly during the day with more in the AM and PM peaks. Typical journey times via rail at Berwick to Edinburgh are around 90 minutes from Chirnside and 105 minutes from Duns.

3.5.24 TVS also operate the following cross Berwickshire services which in theory could connect other settlements to the 253 service:

- 260: Eyemouth – Coldingham – Reston – Duns – Chirnside – Berwick – Tweedmouth; and
- 34: Duns – Reston – Ayton – Eyemouth – Burnmouth – Berwick – Tweedmouth.

3.5.25 These are however very infrequent services and would not form the basis for regular and reliable bus links to Edinburgh.

- Key Point: Bus services from Berwickshire to Edinburgh are infrequent and journey times are long. Long journey times and reliability / punctuality issues associated with long distance bus travel effectively **exclude Berwickshire from the Edinburgh public transport based employment market.**

#### Access to the rail network

3.5.26 Park and Ride is clearly a major source of patronage for rural stations and a key source of accessing the rail network for those living in rural areas, given the dispersed nature of the population. Access to the rail network is therefore a particularly important issue for residents of East Berwickshire.

3.5.27 In terms of **car access**, the nearest points of access are Dunbar and Berwick-upon-Tweed. However, parking supply is regularly constrained at both these locations meaning that parking availability cannot be relied upon, and parking charges are in place at both of these locations. When parking supply cannot be relied upon, users have to plan for a contingency if they cannot find a parking space, adding further time, uncertainty and inconvenience to their journeys. For north / westbound travel, there is also a psychological and cost issue of travelling south to Berwick to then travel north for Berwickshire residents.

3.5.28 Berwick-upon-Tweed station car park has the following characteristics:

- 150 spaces (source: NationalRail.co.uk);
- council owned;
- parking charges: <30 minutes - £0.50, Up to 1 hour - £1.10, Up to 3 hours - £2.40, Over 3 hours to a day - £3.50, or weekly ticket of £16 (or £3.20 per day);
- 'residents only' parking in surrounding streets prevents 'overspill' parking from the station - the nearest alternative long stay parking is found at Castlegate which is around a 10 minute walk from the station (£2.50 per day);
- average train journey time of 47 minutes to Edinburgh Waverley via East Coast or Cross Country trains; and

- there are 25 northbound trains per day – a mix of East Coast and Cross Country services.

3.5.29 There have been a number of proposals in the past to extend the car park at Berwick station to provide additional parking capacity. However there are no committed plans in place at this time, and the area available is to the west of the railway line, which would be problematic in terms of gaining access to the station.

3.5.30 Dunbar is the closest station to the north of Berwickshire. It is the only station in East Lothian where parking charges are applied. Like Berwick-upon-Tweed, parking here is regularly at capacity adding to reliability concerns.

3.5.31 Dunbar station car park has the following characteristics:

- 59 spaces (source: NationalRail.co.uk);
- operated by East Coast;
- parking charges: £1 per hour, £4 daily, £432 annual ticket (around £1.85 per working day);
- on-street parking available to some extent in surrounding streets (Countess Road) – the nearest off street car park (free) is at the north end of the High Street, some distance from the station;
- average journey time of 27 minutes to Edinburgh Waverley; and
- there are 15 northbound trains per day – a mix of ScotRail, East Coast and Cross Country.

3.5.32 For travel to Edinburgh, if driving further than Dunbar, Wallyford or Newcraighall would provide options with a guaranteed parking supply – but Newcraighall with its two trains per hour is preferred in practice, despite the small parking charge there. People travelling on to Newcraighall clearly add to congestion at this important part of the A1 and its junctions and may have to allow more time for their journey if planning to catch a specific train during the AM peak period.

3.5.33 Considering **bus access** to the rail network, the Perryman’s 253 bus between Berwick and Edinburgh also calls at Dunbar. This in theory could link Burnmouth, Ayton, Eyemouth, Coldingham, and Reston to the existing fast trains at Dunbar. Table 3.1 below shows the current connectivity at Dunbar for the morning peak period, taking each of the first three buses from Reston in turn.

**Table 3.1 Dunbar bus / rail interchange from Berwickshire**

Service	1 <sup>st</sup> Bus	2 <sup>nd</sup> Bus	3 <sup>rd</sup> Bus
<i>Perryman's 253</i>			
Departs Reston	0707	0828	0928
Arrives Dunbar High Street	0746	0908	1008
<i>Next Train from Dunbar</i>			
Departs Dunbar	0854	0956	1049
Arrives Edinburgh	0924	1020	1115
Connection time	1hr 08m	0hr 48m	0hr 41m
Total Journey Time	2hr 17m	1hr 52m	1hr 47m

- 3.5.34 It is therefore clear that there is no effective connectivity at Dunbar between the Perryman's bus and Dunbar train services. The first bus from Reston in fact arrives at Dunbar at 0746, which is four minutes **after** the departure of the 0742 train to Edinburgh. Any of these three journeys would therefore be completed much more quickly and at much lower cost by staying on the bus.
- 3.5.35 A ten journey ticket from Eyemouth to Dunbar costs £34.30, working out at £3.43 per journey, in addition to the train fare between Dunbar and Edinburgh. Occasional buses do provide links from other settlements to the 253 bus, but these are very irregular and could not be regularly relied upon by many.
- 3.5.36 Overall, if wishing to access the rail network using public transport, east Berwickshire residents have no realistic alternative but to take a bus to Berwick to catch a northbound train, thus starting off their journey travelling away from the destination, and paying a 'double fare' for this leg of the journey.
- 3.5.37 Note also that there is little incentive to create an integrated bus / rail service at Dunbar given that the services are provided by different and hence competing operators.

■ Key Point: Access to the rail network from Berwickshire settlements is compromised by parking availability and charges at Dunbar and Berwick. There are no effective bus links to Dunbar based train services and, due to competition between operators, there is little incentive for an integrated service to be created.

### The Road Network

- 3.5.38 The road network in the East Lothian A1 corridor to Berwick-upon-Tweed is generally uncongested. Between Dunbar and Berwick, the road is mostly wide single carriageway with occasion stretches of dual carriageway. This can lead to slow journey times due to the presence of goods / agricultural vehicles etc on the single carriageway sections where these vehicles are limited to 40mph.
- 3.5.39 In terms of congestion, the exception is the A1 at, and north of its Old Craighall junction with the A720 Edinburgh City Bypass, and all the approaches to this junction in peak hours regularly experience traffic congestion and queuing.

### 3 Analysis of Problems and Opportunities

- 3.5.40 This plus regular congestion within Edinburgh itself on the approaches to the town centre contributes to the potential for lack of punctuality in relation to scheduled bus service timetables. These punctuality and reliability issues are an important factor in determining people's travel choices and are seen as a major negative characteristic of bus travel.
- 3.5.41 A transport appraisal was undertaken in relation to the initial development of the SESplan SDP. As part of this, a 'Reference Case' forecast run was undertaken using the SEStran Regional Model. This Reference Case was based on the SESplan SDP full build out to 2032 with committed transport schemes only and the following graphics are reproduced from this exercise.
- 3.5.42 Figure 3.17 and Figure 3.18 below show the AM peak modelled link delays (vehicle hours per km) in 2007 and 2032 respectively.

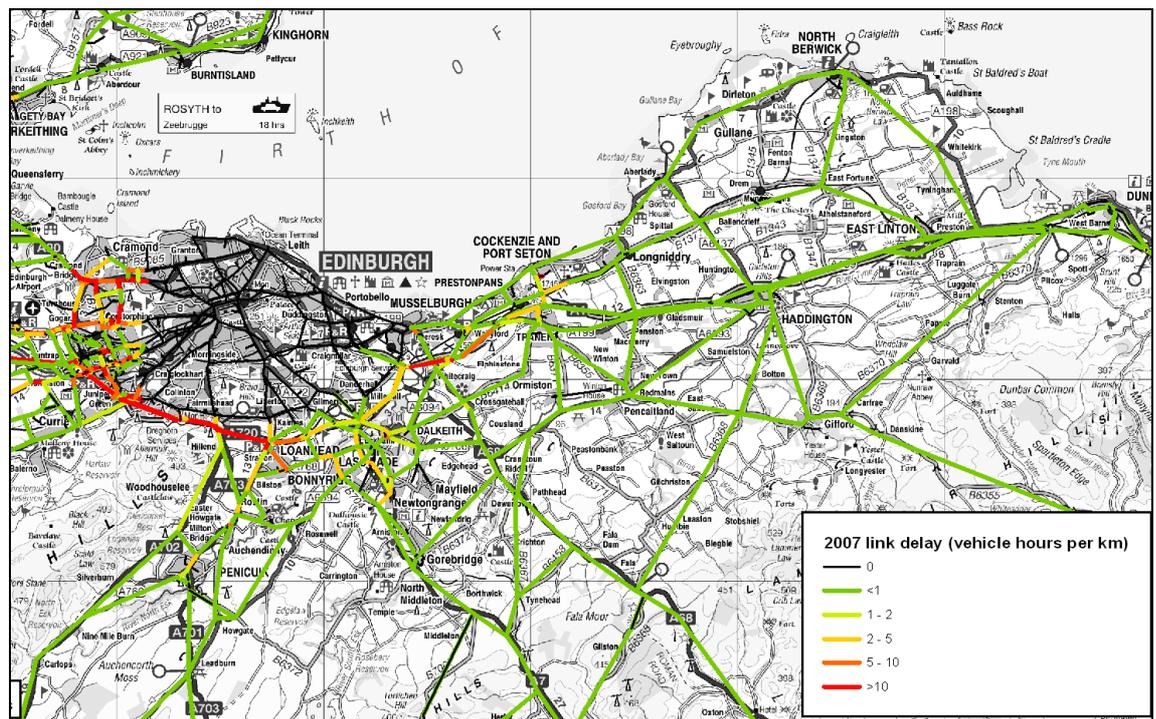
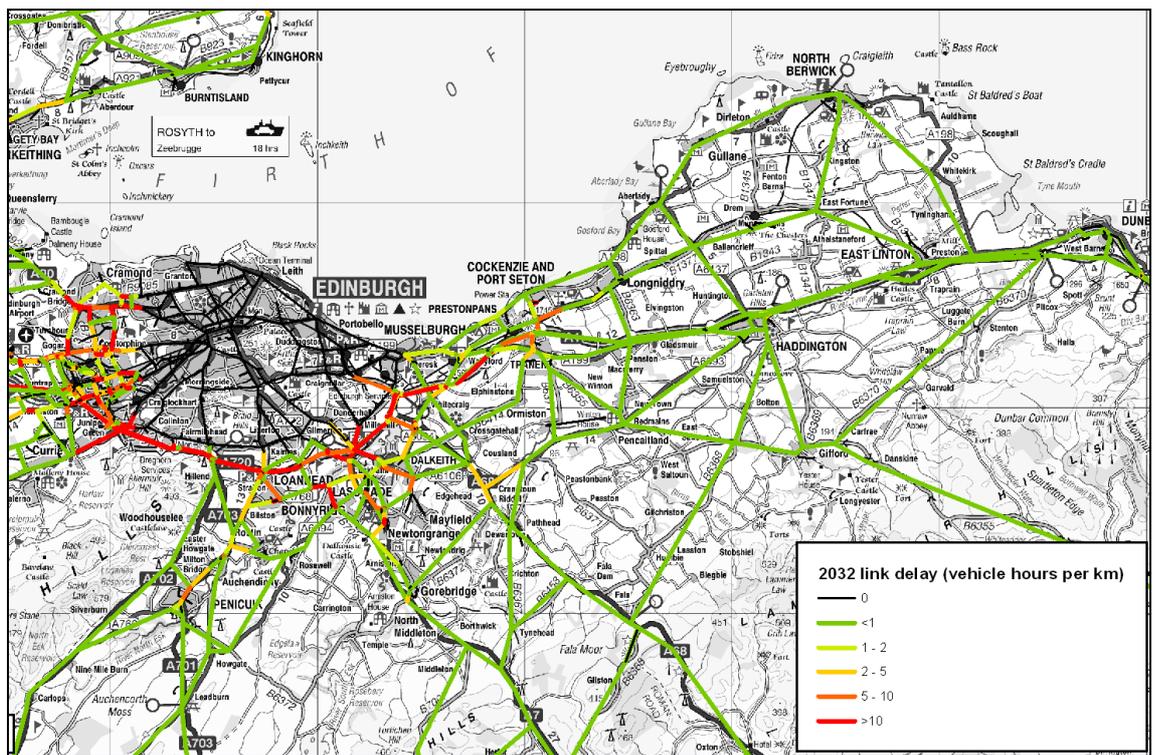


Figure 3.17 SESplan SDP Transport Modelling – 2007 Link Delays



**Figure 3.18 SESplan SDP Transport Modelling – 2032 Link Delays**

- 3.5.43 It can therefore be seen that delays on the A1 approaching Edinburgh are forecast to extend to east of Tranent by 2032. The eastern half of the A720 City Bypass is also forecast to see very significant increases in congestion and delay.
- 3.5.44 Any improvement in public transport along the A1 corridor would therefore be expected to provide a degree of mitigation in terms of this increased congestion. The extent of the mitigation would depend upon the attractiveness, cost and capacity of the new public transport options and hence the degree of modal shift from car achieved.

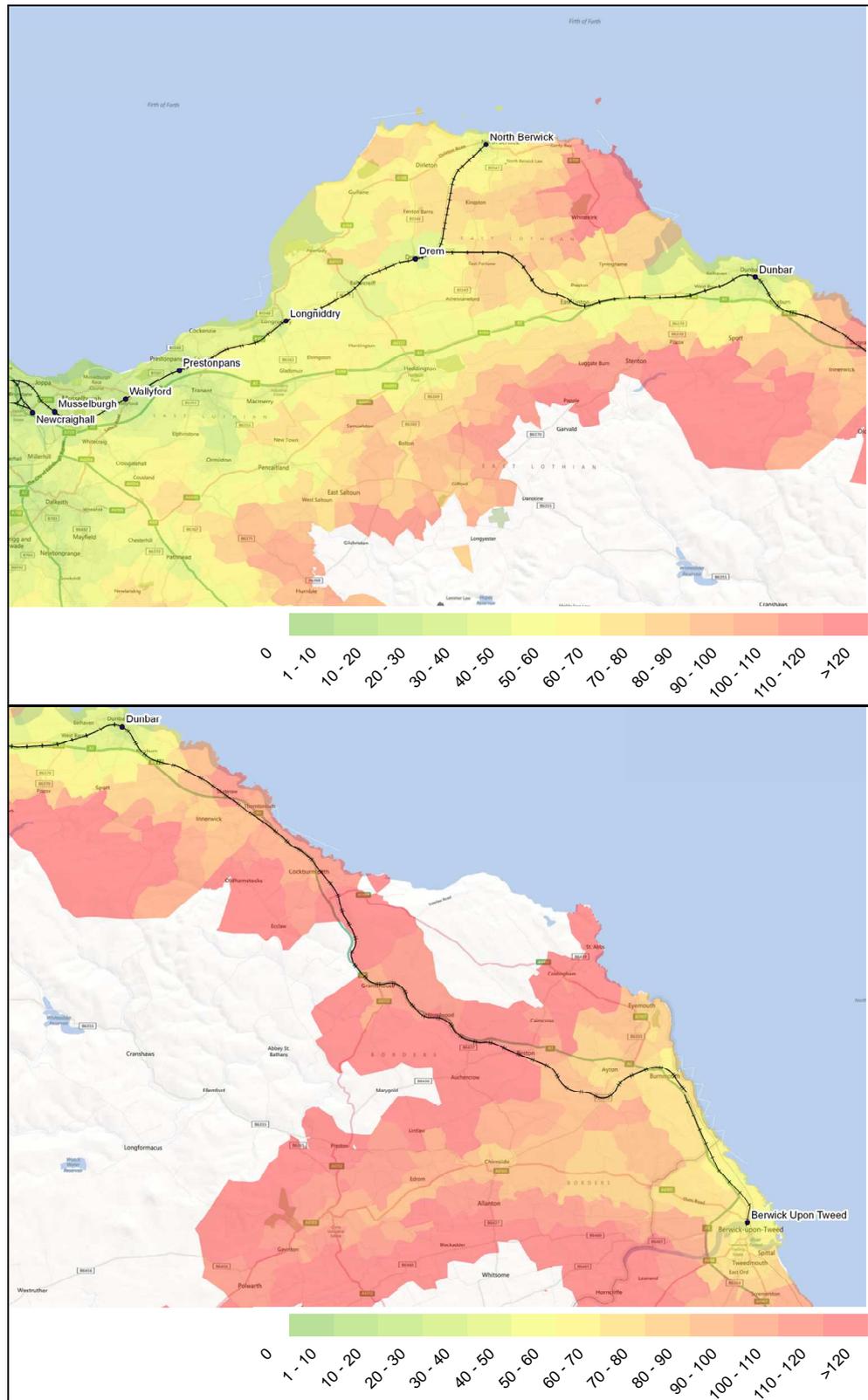
■ Key Point: The East Lothian / A1 Borders Corridor feeds into a very congested area at the A720 / A1 junction and on around the A720 and into Edinburgh. Work undertaken for SESplan demonstrated that delays and congestion will increase markedly over time with the projected population increases in the area. A step change in public transport in the corridor would provide some mitigation against the worst of these impacts.

**3.6 Public Transport Accessibility – Travel Times & Working in Edinburgh**

- 3.6.1 Accessibility is a key issue for the Edinburgh to Berwick corridor and this is a reflection of the public transport supply issues outlined in the previous section. This section considers the current travel times to Edinburgh using public transport and how these influence the level of commuting to Edinburgh.
- 3.6.2 In this context, accessibility is primarily a reflection of travel times, rather than cost. In Figure 3.19 below, the graphics show accessibility to Edinburgh city centre using public transport in an AM peak period. Shown here is the **fastest possible journey time** using any combination of public transport within this period, including any interchange times and

### 3 Analysis of Problems and Opportunities

walk times. The analysis has been undertaken using the specialist 'Accession' software at the full postcode level for maximum spatial detail.



**Figure 3.19 Public Transport Accessibility to Edinburgh (bus and train)**

### 3 Analysis of Problems and Opportunities

- 3.6.3 Berwickshire's 'accessibility gap' is clearly highlighted here with a large area of darker shades (or no connectivity at all) in the area between Dunbar and Berwick-upon-Tweed. Travel times beyond Dunbar increase dramatically from less than 30 minutes to over 100 minutes in a very short distance, in part explained by the lack of connectivity between bus and train at Dunbar as seen in the previous section. Travel times reduce again as Berwick-upon-Tweed is approached, but again there are clearly cost / fare implications in travelling initially in the opposite direction from the intended destination. If train via Berwick-upon-Tweed is excluded all 'bus only' times beyond Dunbar are greater than 90 minutes.
- 3.6.4 Section 3.3 above noted the wage differential between jobs located in Edinburgh and elsewhere in the SEStran area. Table 3.2 below now shows the proportion of employed residents in each of the Berwickshire settlements working in Edinburgh, and more specifically the percentage who work in Edinburgh and commute there using public transport. The equivalent figures for Dunbar and North Berwick are also shown for comparative purposes.

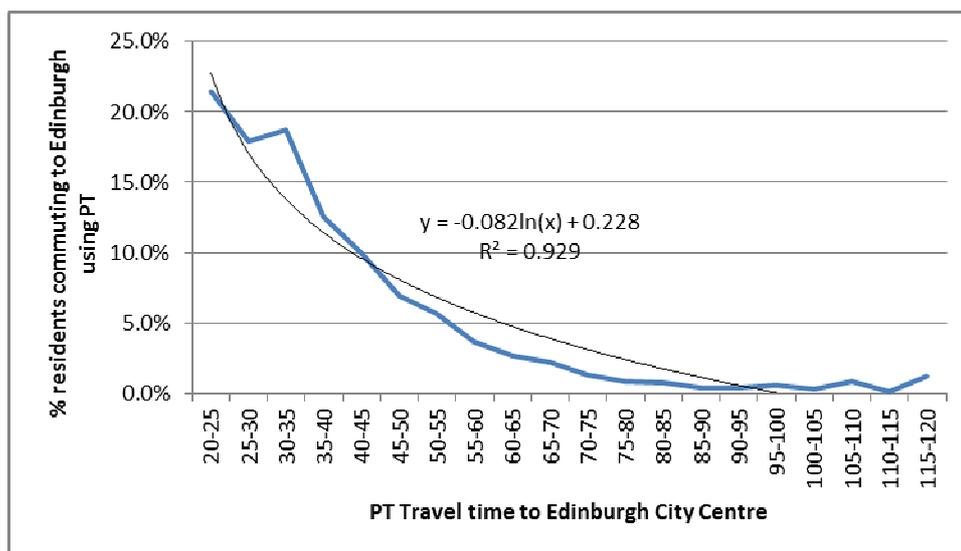
**Table 3.2 Berwickshire residents working in Edinburgh (2001 Census)**

	<b>% working in Edinburgh</b>	<b>% working in Edinburgh commuting by public transport</b>
Ayton	1.5	0.0
Chirnside	1.8	0.6
Coldingham	1.4	0.0
Duns	2.2	0.5
Eyemouth	2.3	0.5
Dunbar	16.9	6.4
North Berwick	31.3	9.5

- 3.6.5 The very low proportion of Berwickshire residents working in Edinburgh is therefore clear and rates of commuting to Edinburgh from Berwickshire by public transport are negligible.
- 3.6.6 Further analysis has been undertaken using 2001 Census travel to work data across the SEStran area in conjunction with the above Accessibility analysis. Firstly, the fastest travel time using public transport from all census datazones in the SEStran area to Edinburgh city centre was calculated. Secondly, for each datazone (excluding the City of Edinburgh Council area), the percentage of resident employed adults working in the City of Edinburgh Council area was determined from the Census. Each datazone was then allocated to a five minute 'travel to Edinburgh' time band (eg 15-20 minutes) and an overall average percentage working in Edinburgh value was then determined for each time band. The resulting relationship between:

- peak hour travel time to Edinburgh city centre using public transport; and
- the percentage of resident adults commuting to Edinburgh City Council area using public transport;

is shown in Figure 3.20 below.



**Figure 3.20 SEStran PT commuting to Edinburgh and Travel Times (excluding CEC residents)**

- 3.6.7 It can therefore be seen that there is a very strong statistical relationship between these two parameters and the percentage of residents working in Edinburgh declines steadily with increasing travel times. The existing travel time by bus from Reston to Edinburgh is around 100 minutes, equating to virtually no commuting to Edinburgh by public transport, as seen in Table 3.2 above. However, if travel times were to be cut to around 50-60 minutes with a new rail service, this figure could increase to around 5% of resident employed adults. This would be more in line with observed commuting levels from Dunbar and East Linton.

■ Key Point: current public transport accessibility from Berwickshire to Edinburgh effectively precludes public transport based commuting to Edinburgh and this may have knock on effects on household incomes.

### 3.7 Other Aspects of Poor Connectivity in Berwickshire

#### East Berwickshire – ‘Border’ Effect

- 3.7.1 East Berwickshire is perhaps an anomalous part of Scotland in some respects. It is close to Berwick-upon-Tweed (population >11,000) ie a medium sized town which would normally be of sufficient size to meet most of the ‘strategic’ needs of this mainly rural community. In the case of retail offering and some leisure and cultural facilities, this is likely to be the case.
- 3.7.2 Yet in terms of council and other **publically provided services eg health and education**, it is part of Scottish Borders Council so residents of this area must generally use Borders Health Board and Scottish Borders Council services. Local authority boundaries always have an impact on travel behaviour but in this case there is a national border between England and devolved Scotland which acts as a further administrative and political barrier.
- 3.7.3 Although close to Berwick and England, Berwickshire clearly has far stronger **cultural, political and social links to Scotland**. As such, Edinburgh remains a key destination as the capital city of the devolved administration. Any moves towards greater powers for the Scottish Parliament or indeed independence would further highlight the relatively poor

connectivity to Scotland's administrative and political capital affecting the east Berwickshire area.

■ Key Point: East Berwickshire has poor public transport connectivity to Edinburgh, Scotland's capital city and main cultural, administrative and political centre.

#### Late Travel back from Edinburgh

3.7.4 The issues with connectivity to Edinburgh are also manifested in terms of accessing evening events or entertainment in Edinburgh. The last 253 bus currently leaves Edinburgh at 1910 meaning that late trains to Dunbar / Berwick are the only options (via park and ride, or lift / taxi) or potentially connecting buses in the case of trains to Berwick. Public transport via Berwick involves a longer across the ground journey though including a bus leg to / from Berwick and train journey to / from Edinburgh.

3.7.5 The last train to Berwick leaves Edinburgh at 2100, with the last ScotRail train to Dunbar leaving at 2206. These last train times and lack of bus alternatives act as a severe constraint on accessing sporting, cultural or leisure events in Edinburgh by public transport. The situation is worse on a Saturday where the last train from Edinburgh to Berwick leaves earlier at 1900, however the 2206 to Dunbar does also run on a Saturday.

■ Key Point: Lack of late evening public transport services between Edinburgh and Berwickshire prevents local residents from accessing entertainment and cultural events using sustainable modes.

#### Higher and Further Education

3.7.6 There is a concern among local residents that school leavers in particular have to leave the area to take up Higher and Further education opportunities due to poor access to education establishments, as was noted in Section 3.3. This in turn makes it more difficult to retain young people in the area more generally as they may not then return to Berwickshire to live after they have completed their studies. This has a knock on impact on the number of working age adults as was also seen in Section 3.3.

3.7.7 Borders College has main campuses in Galashiels, Hawick and Newton St Boswells, all of which involve lengthy cross Borders bus journeys from east Berwickshire. A new rail service from Berwickshire to Edinburgh would however provide opportunities for locally based students to travel to Edinburgh in preference to making this cross Borders journey. Queen Margaret University offers a range of undergraduate and postgraduate courses at its campus at Musselburgh. This site is directly adjacent to Musselburgh railway station and a rail link from Berwickshire to here would clearly provide students with the option of staying at home during their studies, rather than leaving home with the additional expense this involves. At present, a bus-based journey from eg Eyemouth to QMU would take around 2:25 hours and current journey times by bus / rail are similar. Journey times of this length are not a practical proposition for daily travel and these journey times are also combined with infrequent services making them even less attractive.

■ Key Point: Poor public transport connectivity can prevent Berwickshire residents accessing further and higher education in Edinburgh. Better links could enable more students to access further / higher education whilst staying at home.

**3.8 The Views of Local Business**

3.8.1 The aspirations for a new local train service from Berwick to Edinburgh are well known locally. In parallel with this study, and in order to gauge the views of local business, the **Federation of Small Businesses** (Scottish Borders Branch) undertook a survey of its members with respect to the potential introduction of local rail services between Edinburgh and Berwick (including new stations at East Linton and Reston).

3.8.2 An email was circulated around the membership as follows:

*"Scottish Borders Council, East Lothian Council, and SEStran (South East of Scotland Transport Partnership) are currently undertaking a Feasibility Study into the introduction of new local train services between Edinburgh and Berwick-upon-Tweed, including new stations at Reston (park and ride) in Berwickshire and East Linton in East Lothian. These new services would supplement existing train and bus services.*

*We are interested in your views on how this proposal may impact on your business and would appreciate if you could take time to respond to the following brief questions:*

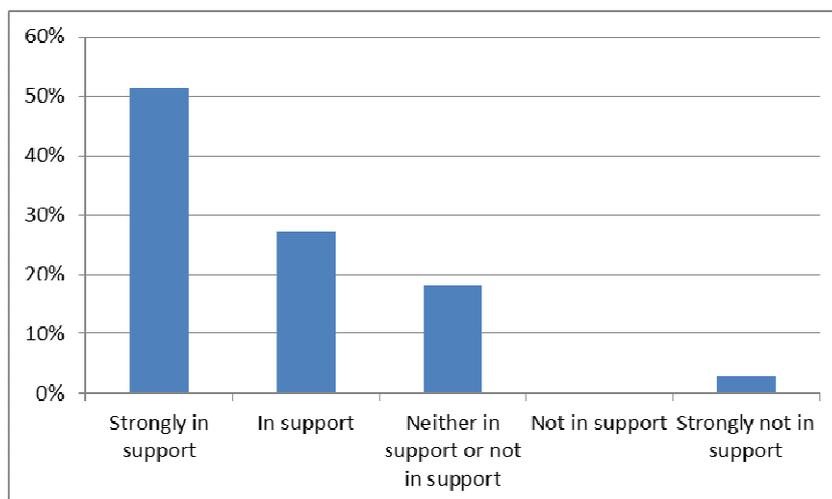
*Q1) How would you describe the view of your business with respect to these proposed new rail service and stations?*

- strongly in support
- in support
- neither in support or not in support
- not in support
- strongly not in support

*Q2) Specifically, in what ways do you think the new services / stations would benefit your business (if at all)?*

*Q3) Any other Comments"*

3.8.3 From the 33 completed questionnaire returns, the responses to Q1 are shown in Figure 3.21 below.



**Figure 3.21 Business support for proposals**

### 3 Analysis of Problems and Opportunities

3.8.4 It can therefore be seen that around 80% of respondents expressed support for the proposals.

3.8.5 In response to Q2 [*in what ways would your business benefit?*], the following responses were amongst those received:

- *increase the number of local trips between the towns therefore increase the catchment for the area which could help in customer spend*
- *not much impact in Kelso, but always good to bring people into the Borders*
- *bring more people into the area, enable easier connections to key nearby markets*
- *I live in Dunbar and work mainly in the central belt of Scotland and the North of England. I travel by train whenever possible. This new service will give me greater flexibility and reduce the amount of downtime because train services do not match appointment times. Also as a resident of Dunbar I believe that we should do everything possible to make local towns easily accessible*
- *increase footfall in the East Lothian area*
- *a more frequent train service would make travel to Edinburgh by rail more convenient*
- *any improvement in the rail link between the Borders and Edinburgh will be an improvement (but only if the Berwick to London service is not reduced further)*
- *it will assist in bringing colleagues/visitors/tourists to Dunbar and help alleviate the parking congestion which currently exists*
- *better, more frequent connections between Dunbar, Edinburgh and local towns would increase transport options for staff and business visitors as well as making it easier for tourists to visit Belhaven Brewery*
- *quicker, easier route into Edinburgh for meetings*
- *currently have to pick up customers from Drem or Dunbar, but with new station at East Linton I could pick them up from there, cutting down on travelling time*
- *improved access to Dunbar from East Linton*
- *a more frequent service and additional stations can only help in attracting visitors as well as Edinburgh residents to the area*
- *bringing more visitors and tourists to the area - we are a supplier to leisure parks and caravan sites*
- *brings Edinburgh closer making this a more desirable location for visitors*
- *positively - the more transport options for golfers the better*
- *not directly however having clients in the various areas will help them with better communications and also opening up these areas to commuters*
- *improve the local housing market and increased population*

3.8.6 In response to Q3 [*any other comments?*], the following responses were received:

- *increase the footfall in the connecting towns for day trippers and workers*
- *better transport links can only be a good thing I think*
- *would welcome the re-opening of more rural stations ie Cockburnspath, Ayton etc as there is no public transport available to accommodate people getting to work bus time table is a joke for workers. Also better train time tables ie late at night after Concerts/Playhouse in Edinburgh there are no trains available to get back after the end of the function.*
- *or it might take Berwickshire customers away to Edinburgh, instead of coming to Kelso.*
- *important to connect young people to training opportunities. Build the overall impact of the Borders in Scotland's economy.*

- *the more people we can get to leave their cars at home and take the train, the better it will be for our communities and the environment.*
- *it is vital that the rail link between Berwick and London is maintained at least at what they are and improved if possible. Since privatisation the number of London trains stopping at Berwick has greatly reduced. If as a result of this new link there is any sort of further reduction in the Berwick/London service I would be greatly opposed. Also it is essential to have better bus links from Berwick to the Border towns. The new line will be coming to Galashiels, but the Borders is a spread out region - to fully utilise the proposed new link from Berwick to Edinburgh it will need local bus timetables to link in with the rail timetable - I know this is complex but at the moment Borderers have to put up with the train arriving just after the bus to Kelso, or wherever has just left leaving them with a wait of 1 or 2 hours. This new rail link will only be of real use if a complete review and full integration of bus and rail services also happens using modern innovative ideas.*
- *having a regular local train service will assist in the economic improvement of the local community and will also improve the transport connections to other smaller towns etc.*
- *great for locals who commute to Edinburgh, plus the local community who may be more inclined to take day trips etc. time of last train will mean everything for cultural pursuits. will probably have a positive influence on local house prices.*
- *with the track already in place a new station at East Linton makes a lot of sense and would boost numbers of visitors to the village and would benefit many local businesses.*
- *yes a cross country service across the width of the Borders from Berwick through Greenlaw, Gordon, Earlston and so to Melrose and Tweedbank, then onwards through to Carlisle would open up the Borders enormously. Now that would have a real impact!*
- *East Lothian Council have recognised the value of attracting visitors to the area and have employed a number of staff to promote the county, additional trains and stops would be a great help.*
- *virtually everything is in place for this to happen. Compare the cost of this to the Waverley Line and it becomes a bargain.*

3.8.7 It is therefore clear that there is widespread support amongst those who responded to the survey for the proposals within the business community.

3.8.8 **VisitScotland** was also approached to comment on the proposals and offered the following in support:

*"According to recent research 15% of UK visitors to Scotland arrive by train. Demand for ScotRail passenger services has increased by 25.5% over the last 7 years and this demand is expected to continue to grow - a significant proportion of this demand is likely to be from domestic visitors travelling around Scotland, or from international visitors choosing to explore the country once they are here.*

*The challenge raised by increasing demand on rail services will be to balance the need for developing the industry in a sustainable way, with the demand from visitors for quicker, easier access.*

*All VisitScotland activity has sustainability at its heart - as an industry, tourism touches every part of the country. By looking to extend the tourism season and increase access to more remote, rural locations, VisitScotland is committed to making Scotland one of Europe's most sustainable destinations.*

### 3 Analysis of Problems and Opportunities

*VisitScotland would encourage any new transport strategy will enable Scottish tourism to grow sustainably. Tourism employs 9% of Scotland's workforce (1.8% of the national total is employed in Scottish Borders) and is therefore a vitally important part of the economy. VisitScotland welcomes the discussion of provision of new routes, particularly in rural areas, and of improvements to the existing rail infrastructure.*

*The Scottish Borders currently welcomes 430,000 visitors per annum from the UK and 52,000 from overseas. It would be a missed opportunity if did we do not invest in the infrastructure while we have the chance to safeguard The Scottish Borders tourism related businesses.*

*According to a recent Tourism in Scotland report, more than 12m visitors arrive in Scotland every year from the United Kingdom and Ireland, spending £2.812 billion - any improvement in the service therefore has the potential to further increase the economic benefit for Scotland available from this important market."*

- Key Point: There is strong support from local business for the introduction of the new rail service and stations. This adds to the very strong support provided by local stakeholder, community councils and elected representatives, as expressed during this and the 2011 Study.

#### 3.9 Summary of Problems

3.9.1 This section provides a summary of the key problems and issues which the study is setting out to address. These problems essentially take two forms; in East Lothian, these are associated with accommodating growth, and in Berwickshire, these are associated with the need for improved accessibility to Edinburgh.

3.9.2 A range of issues associated with the current level of transport supply (in particular public transport) has been identified as follows:

- peak hour **train capacity** is already being reached between Edinburgh and Musselburgh / Wallyford, and this is forecast to become a growing issue on North Berwick service trains as the population in East Lothian is projected to increase and commuting to Edinburgh also increases. This has been previously recognised by Network Rail;
- despite recent improvements, train services from / to Dunbar are still **irregular** with long gaps at times across the day;
- East Linton residents' access to rail services is constrained by **parking availability** at the nearest stations and there are no effective bus links to these stations. Public transport mode share for commuting to Edinburgh is much lower than other East Lothian settlements as a result;
- bus services from east Berwickshire to Edinburgh are **infrequent and journey times are long**. Long journey times and reliability / punctuality issues associated with long distance bus travel effectively exclude Berwickshire from the Edinburgh area employment market for those wishing / requiring to travel by public transport;
- **access to the rail network** from Berwickshire settlements is compromised by parking availability and charges at Dunbar and Berwick. There are no effective bus

links to Dunbar-based train services and there is little incentive for an integrated service to be created (due to competition between operators);

- East Berwickshire has poor **public transport connectivity** to Scotland's capital city and main cultural, administrative and political centre;
- lack of late **evening public transport** services between Edinburgh and Berwickshire prevents local residents accessing entertainment and cultural events using sustainable modes;
- poor public transport connectivity can also prevent Berwickshire residents **accessing further and higher education** in Edinburgh. Better links could enable more students to access further / higher education whilst staying at home, improving the long term prospects for the area;
- the East Lothian / A1 Borders Corridor feeds into a **very congested area** at the A720 / A1 Old Craighall junction and on around the A720 and into Edinburgh. Delays and congestion will increase markedly over time with the projected population increase in the area. A step change in public transport in the corridor would provide some mitigation against the worst of these impacts; and
- East Lothian is projected to be one of the **fastest growing parts of Scotland**, in terms of population with a growth of 33% projected by 2035. This will create additional pressures on road and rail-based transport between East Lothian and Edinburgh as many of these new East Lothian residents will work in Edinburgh.

3.9.3 For Berwickshire, these issues are then in part manifested in a range of demographic and socio-economic issues as follows:

- although population in the Berwickshire area is growing, Eyemouth is seeing a **declining population**. The Berwickshire population shows an **aging profile** compared to the rest of the Scottish Borders, which itself shows a more aging profile than Scotland;
- the Berwickshire area has a high proportion of residents working in typically **lower paid sectors**. Again the picture is worse than the Scottish Borders which itself is worse than the Scottish average;
- Eyemouth is the most **deprived settlement** in the Scottish Borders according to the SIMD. Chirnside and Duns are also amongst the more deprived settlements in the Scottish Borders by this measure. Eyemouth has been separately identified as being amongst the most vulnerable rural communities in Scotland;
- **household incomes** in the Scottish Borders are low by Scottish standards and are very low in Eyemouth and Duns. Pay levels for jobs located in Edinburgh are 33% higher than the Scottish Borders average. Berwickshire household incomes could be driven up by a greater participation in the Edinburgh labour market but current public transport accessibility from Berwickshire to Edinburgh effectively precludes public transport based commuting to Edinburgh. Reduced journey times to Edinburgh could substantially increase commuting to Edinburgh and hence drive up local household incomes;
- **key benefits / JSA** figures highlight high levels of claimants in Eyemouth, even higher than the national average. A particular problem is youth unemployment (16-24);

- **participation rates in higher / further education** are lower than might be expected in Berwickshire. This may in part reflect the poor access to higher / further educational opportunities for locally based students;
- **house prices** in Eyemouth are well below the national average. As well as reflecting the collapse of its local traditional industry, this will in part reflect the poor access to employment opportunities elsewhere; and
- **car availability** is low in Eyemouth where over one third of households did not have access to a car in 2001. This will impact on these households' prospects in the labour market and potentially exclude them from employment opportunities in Edinburgh due to the long journey times by bus.

3.9.4 Overall therefore, this study is looking at address issues of growth and capacity in East Lothian, and improved access to Edinburgh to tackle a range of demographic and socio-economic issues in Berwickshire.

#### 3.10 Opportunities

- 3.10.1 Clearly the main opportunity for the area is the existence of the ECML and the potential new station sites at East Linton and Reston (which are both protected in local plans), and this is at the heart of this study.
- 3.10.2 Along with the obvious benefits for 'outbound' rail-based travel by residents of Berwickshire and East Linton, perhaps the main opportunity is associated with improved 'inbound' travel opportunities for visitors to these areas.
- 3.10.3 East Linton is an attractive village and is at the centre of a network of footpaths including the John Muir Way. The village is being actively promoted by local stakeholders and marketing material has been produced to support this initiative. Improved inward connectivity to East Linton from Edinburgh would clearly improve the prospects for day trippers or longer stays coming to the village, supporting local businesses.
- 3.10.4 Berwickshire also has a number of tourist and heritage attractions including St Abbs and Coldingham, and Eyemouth (including the Eyemouth Museum) which would benefit from improved access to Berwickshire.
- 3.10.5 Both areas could therefore benefit from increased tourism and economic activity if connected more directly into the rail network.
- 3.10.6 Chapter 4 now goes on to develop Transport Planning Objectives in the light of the analysis undertaken in this Chapter.

## 4 Transport Planning Objectives

### 4.1 Introduction

- 4.1.1 Having considered the socio-economic and transport related problems associated with the corridor, this Chapter develops a set of Transport Planning Objectives for the subsequent appraisal of options.
- 4.1.2 The previous (2005) Transport Planning Objectives are reviewed before new updated objective are developed.

### 4.2 STAG Part 1 Study Objectives

- 4.2.1 To recap, the objectives adopted for the 2005 STAG Part 1 study were as follows:

- *1 - to maximise the modal share of public transport, cycling and walking on the study corridor by 2021 (compared to the Do-Minimum), with a target of 10% mode shift from car.*
- *2 - proposed options should support the Structure Plans' target increase in households by 2011 through improved access to principal transport corridors from key development areas within the study corridor (eg Eyemouth).*
- *3 - to bring about a reduction of 5% in generalised journey times from destinations by 2011 and improve access to identified tourist attractions.*
- *4 - ensure that growth in overall demand for travel is below the SEStran average 2001 - 2021.*
- *5 - compared to the 1994-1998 average, on the A1 by 2010 there will have been reductions of:*
  - *40% in people killed/seriously injured;*
  - *50% in children killed/seriously injured; and*
  - *10% in the slight casualty rate.*

- 4.2.2 These objectives in general were aimed at encouraging modal shift away from car in the corridor (and reducing the need to travel) in the interests of sustainability, congestion relief on the A1 / City Bypass, increased accessibility etc. This is clearly in line with many policy and strategy objectives at the national, regional and local authority level.

#### Generalised Cost

- 4.2.3 Objective 3 refers to reducing **generalised costs / times** – this is implicit in any measure if it is to be successful in achieving the other objectives – ie if the proposal does not reduce the generalised cost of travelling by public transport it is highly unlikely to bring about any modal shift away from the car.
- 4.2.4 Generalised cost is an accepted measure in transport planning which incorporates: in vehicle travel time, wait time (based on service frequency); access times; and fares in one single

## 4 Transport Planning Objectives

composite measure and as such, this forms an important quantitative measure used in the analysis which follows.

- 4.2.5 This study is addressing the issue of whether bus-based options can deliver similar benefits to rail options. So a key question is therefore **whether bus / coach-based options can bring about a meaningful reduction in the generalised costs of travelling by public transport compared to the travel costs associated with the options currently open to residents of East Lothian and east Berwickshire**. Thus, to be successful, any measure has to improve the competitive position of public transport relative to the car, and this issue is explored further in Chapter 7.
- 4.2.6 This is further complicated in the case of Berwickshire where travel options include a range of potential park and ride (P&R) related choices. In a dispersed rural area P&R provides the only meaningful access to the rail network for most, as has been discussed previously. Indeed in the prospective case of Reston station, there would be a very low walk-in catchment for the station with the majority of users likely to be car-based P&R.
- 4.2.7 In addition to the generalised costs of travel, many of the problems highlighted above relate to **connectivity and accessibility**, with particular emphasis on east Berwickshire. Accessibility and connectivity tend to be measured in terms of pure travel time and the ability to travel at different times across the day / week.

### 4.3 Planning Objectives

- 4.3.1 In the light of the analysis reported in Chapter 3, the following targeted Transport Planning Objectives are therefore developed here:

- **Objective 1:** Improve the generalised cost of travelling to Edinburgh by public transport / park and ride by a meaningful amount in the corridor;
  - *does the option bring about an improvement compared to the travel options currently available and therefore deliver economic benefits to East Lothian and Berwickshire?*
- **Objective 2:** Improve accessibility and connectivity between Berwickshire and Edinburgh;
  - *does the option address the poor accessibility to Edinburgh which has been demonstrated to affect the Berwickshire area?*
  - *does the option potentially bring the Berwickshire area into the Edinburgh labour market?*
- **Objective 3:** Address known or foreseen public transport capacity issues in the corridor;
  - *does the option address the forecast capacity constraints on the rail network in particular given the projected population / household increases in the area?*
- **Objective 4:** Improve the reliability of public transport journey travel times from Berwickshire to Edinburgh.
  - *does the option improve the reliability and hence long-term attractiveness of public transport?*

## 4 Transport Planning Objectives

- 4.3.2 The central question here is whether bus-based options can meet the objectives set in the light of the problems faced in the corridor, to the same extent that rail-based options could.
- 4.3.3 Having set Planning Objectives here, Chapter 5 now considers how well the non-rail-based options perform against these objectives, compared to rail-based options.

# 5 Appraisal Against Transport Planning Objectives

## 5.1 Introduction

- 5.1.1 This chapter considers a number of options in terms of their performance against the Transport Planning Objectives set in Chapter 4.

## 5.2 Option Generation and Development

- 5.2.1 To recap, the 2005 STAG Part 1 study recommended the following options be taken forward to a STAG Part 2 Appraisal:

- *a new rail station at East Linton with, as a second priority, a new rail station at Reston as a supplementary option in support of East Linton. Both these options are dependent upon the provision of a new dedicated local train service either Edinburgh-Dunbar or Edinburgh-Berwick;*
- *purpose-designed express coach package linking Eastern borders / East Lothian to Edinburgh. The emphasis should be on services into the central part of the City of Edinburgh; and*
- *a new network of local feeder bus services linked to either new or existing railheads and / or new-dedicated coach service interchange points.*

- 5.2.2 The second two of these three options forms the basis for the non-rail-based options developed here.

### Express Coach Services – Reston P&R

- 5.2.3 In order to make a meaningful comparison with the rail-based options which have already been appraised in previous studies, it has been assumed that an express coach service would run from a new P&R facility at Reston. In the analysis which follows, the performance of rail and non-rail-based options is assessed against the Planning Objectives set.

- 5.2.4 The existing Perryman's 253 bus service takes around **100** minutes between Reston and Edinburgh. Two options for an 'express' service are therefore:

- Option 1: Minimal intermediate calls. For example, the Perryman's 253 1610 from Berwick runs to Edinburgh omitting Burnmouth village, Eyemouth, Ayton, Coldingham, St Abbs, Reston, Cockburnspath, Innerwick, Dunbar town centre and East Linton, arriving in Edinburgh at 1748. This reduces the end-to-end time from 133 minutes to 98 minutes, a reduction of 35 minutes. Running straight along the A1 from Burnmouth to Lemington saves 18 minutes. Omitting Cockburnspath and Innerwick saves 16 minutes. Omitting Dunbar town and East Linton saves a further two minutes. On this basis, a service which runs from Reston omitting Cockburnspath and Innerwick but calling at Dunbar, East Linton and Haddington could take **84** minutes. The 253 takes around 12 minutes in diverting off the A1 to call at Haddington, so

omitting this could save an additional nine minutes, but a major market would clearly be missed.

- Option 2: Direct express coach from Reston P&R on the A1 to Edinburgh St Andrew Square: stopping only within the Edinburgh city boundary – estimated journey time of **75** minutes.

### Feeder Bus Services

- 5.2.5 As has been demonstrated, the Berwickshire settlements have reasonable bus links to Berwick-upon-Tweed station. It has also been shown that bus links to Dunbar based rail services are very poor. A bus service which connected eg Burnmouth, Ayton, Eyemouth, Coldingham and Reston to Dunbar railway station designed around train arrival / departure times could therefore be a feasible option. Bus times from Reston to Dunbar are 40 minutes (although omitting Cockburnspath and Innerwick would reduce this to 25 minutes).
- 5.2.6 The geography of Duns / Chirnside would however require a separate bespoke feeder bus service via Grantshouse. Journey times from Duns are estimated at 20 minutes (Duns to Grantshouse) and 32 minutes Grantshouse to Dunbar (16 minutes if Cockburnspath or Innerwick are omitted), a total of 52 minutes. Services from Chirnside to Dunbar via Duns would take a further 10 minutes at 62 minutes.
- 5.2.7 These feeder bus service times are summarised as follows:

- Reston to Dunbar train station: 40 minutes;
- Duns to Dunbar train station: 52 minutes; and
- Chirnside to Dunbar train station: 62 minutes.

- 5.2.8 Note though that there are potentially practical issues in implementing feeder bus services where the services are being provided by competing operators.

### Additional Car Parking at Existing Stations

- 5.2.9 It was noted in Chapter 3 that the station car parks at Berwick-upon-Tweed, Dunbar and Drem are frequently filled to capacity. A further option considered here is therefore the provision of additional parking capacity at these locations.

## 5.3 Assessment Against Planning Objectives

### Objective 1: Improve the generalised cost of travelling to Edinburgh by public transport / park and ride by a meaningful amount in the corridor

- 5.3.1 This section focusses primarily on Berwickshire as this is where the principal problems relating to public transport supply (ie high generalised costs) have been identified. A spreadsheet based model has been developed to analyse in detail the current and potential travel options from the Berwickshire settlements (Reston, Ayton, Eyemouth, Coldingham, Duns, Chirnside and also Berwick-upon-Tweed) to Edinburgh.
- 5.3.2 The analysis presented here is used to explore the various options for travelling to Edinburgh available from the Berwickshire settlements. This is because any new station at Reston is

intended to serve a wide hinterland. Any new station at East Linton is not intended to serve a wide hinterland so no similar analysis is presented. Residents of East Linton would clearly benefit from a station at East Linton and the 'case' for further services to East Lothian comes through the economic benefits generated in the TEE (ie more capacity and reduced headways). This is reported in full in Chapter 7.

5.3.3 This analysis therefore compares:

- Existing travel options from each Berwickshire settlement – existing bus and rail-based P&R; and
- Potential new options – coach and rail-based.

5.3.4 The travel options are defined as:

- Existing options:
  - via P&R at Berwick-upon-Tweed station with current train services;
  - via P&R at existing Dunbar station using East Coast / Cross Country services;
  - via the existing Perryman's bus service direct (where available);
  - via P&R at Reston using the existing bus service; and
  - via P&R at Newcraighall.
- Potential options:
  - via P&R at a re-opened Reston railway station and with a **Berwick to Edinburgh stopping service**;
  - via P&R at Reston using a **new express coach service** (best case 75 minutes as outlined above) and assuming no change to fares;
  - via P&R at Dunbar station using a **new ScotRail stopping local service between Edinburgh and Dunbar only** (potentially replacing Long Distance High Speed (LDHS) service stops); and
  - using a new feeder bus to **link with a ScotRail local Dunbar service**, assuming integration can be achieved.

5.3.5 Each of the nine travel options above is assessed in terms of the generalised cost of travel to Edinburgh from each of the seven Berwickshire settlements noted above, the cost being built up in terms of each component of a single journey to Edinburgh. This takes the pure cost elements and adds the time elements, converted to a monetary value using standard 'values of time' as specified by the Department for Transport's WebTAG<sup>7</sup>. These values of time vary by travel purpose and three different journey types were considered:

- Occasional travel: based on non-season ticket fares and parking prices and 'other' values of time;
- Occasional travel in work: as above but using 'in work' values of time; and
- Regular travel: using 'commute' values of time and season ticket pricing (for fares and parking).

<sup>7</sup> <http://www.dft.gov.uk/webtag/>

## 5 Appraisal Against Transport Planning Objectives

5.3.6 Taxi and cycling would provide further potential P&R access modes but these are not considered here.

5.3.7 A particular issue for this exercise is rail **fares**. Rail fares from Berwick to Edinburgh vary widely depending on the timing of the journey and when the tickets are purchased. There is much more variability in the Berwick fares than is the case from ScotRail's East Lothian services. The three main fare types are as follows:

- Advance fares: applies to selected trains in limited numbers and the fare is generally cheaper the further ahead it is bought. These fares can be bought as singles only;
- Off Peak fares: applies to less busy services, can be bought at any time and used on any off peak train, singles and returns available; and
- Anytime: fully flexible tickets can be used on any train at any time.

5.3.8 Typical fares from Berwick are shown in Table 5.1 below (fares taken in Autumn 2012 from relevant websites).

**Table 5.1 Berwick-upon-Tweed to Edinburgh, typical fares**

Standard Class Berwick - Edinburgh	Single	Return
Advance – <i>(needs to be booked at least one day in advance)</i>	From £5.50, typically £9.00-£12.00	NA
Off Peak	£15.50	£21.70
Anytime	£23.00	£46.00

5.3.9 So a typical 'turn up and go' on-the-day return trip to Edinburgh would cost £21.70 return from Berwick. This fare could be almost halved if 'Advance' tickets could be bought, but these tickets would have to be bought some time in advance. It appears that the 0718, the 0819 and the 0831 from Berwick to Edinburgh are defined as peak trains (ie off peak tickets cannot be used). Travelling on the day on these trains would therefore require an 'Anytime' ticket to be bought, although Advance fares are also available. Booked a day ahead, single fares on these trains can be bought for £10.50, £9 and £10.50 respectively. Evening trains from Edinburgh to Berwick do not appear to be classed as peak so the £15.50 fare applies on eg 1708, 1730, 1804 from Edinburgh.

5.3.10 It is therefore clear that travelling by rail between Berwick and Edinburgh requires a degree of advance planning to avoid the higher fares if using peak hour trains.

5.3.11 The Perryman's 253 bus from Berwick to Edinburgh costs £18 for a day return ticket (or £15.20 with a 10 ticket journey). As such the price premium for rail is small in the off peak but high if peak / Anytime train tickets are being bought. Of course pensioners will get free travel on the bus and 1/3 off rail fares with the purchase of a £28 Railcard.

5.3.12 Table 5.2 below now shows the equivalent fares from Dunbar.

**Table 5.2 Dunbar to Edinburgh, typical fares**

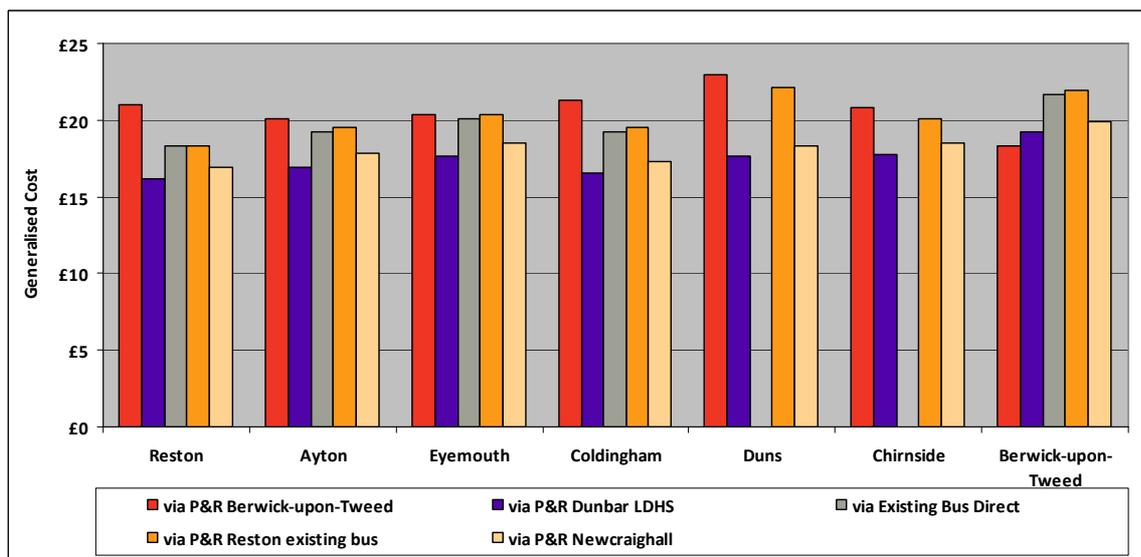
Standard Class: Dunbar-Edinburgh	Single	Return
Advance – (need to be booked at least one day in advance)	From £3.00, typically £5.00-£7.00	NA
Off Peak	£6.90	£10.80
Anytime	£9.50	£15.70

- 5.3.13 From Dunbar, a typical 'turn up and go' on-the-day return trip to Edinburgh would cost £10.80 return.
- 5.3.14 A 12-month season ticket from Berwick costs £3,288. Assuming 232 working days per annum, this equates to £14.17 return per day. A season ticket from Dunbar costs £1,636 or £7.05 return per day. These two fares equate to roughly 13p and 12p per mile respectively, so the season ticket prices are broadly consistent, given the relative distances to Edinburgh.
- 5.3.15 The other key assumptions used in the analysis which follows are:

- Petrol = £1.35 per litre;
- Fuel consumption = 35mpg;
- Full parking charges: Dunbar £4, Berwick-upon-Tweed £3.50;
- Season ticket parking charges: Dunbar £432 (**£1.86** per 232 working days), Berwick £16 per week so **£3.20** per working day;
- Cheapest non season fares: Dunbar £6.90, Berwick £9, Reston £8.30 estimate (rail), Reston £10.20 existing bus;
- Season ticket prices: Dunbar £1,636 (£7.05 per 232 working days), Berwick £3,288 (£14.17 per 232 working days), Reston £2,092 estimated from ScotRail East Lothian stations (£9.02 per 232 working days), Reston bus £7.60 (10 journeys @ £76);
- Train times: Dunbar 26 minutes (LDHS), Berwick 45 minutes, Reston 51 minutes (local rail), Reston 98 minutes (existing bus), Reston 81 minutes (express coach);
- 5 minutes parking space search time assumed at Berwick and Dunbar due to limited availability;
- Values of time as per WebTAG;
- Drive times and distances from each settlement to each station taken from Google Maps; and
- No account taken of service frequency or wait time – assumed that travellers turn up at known times.

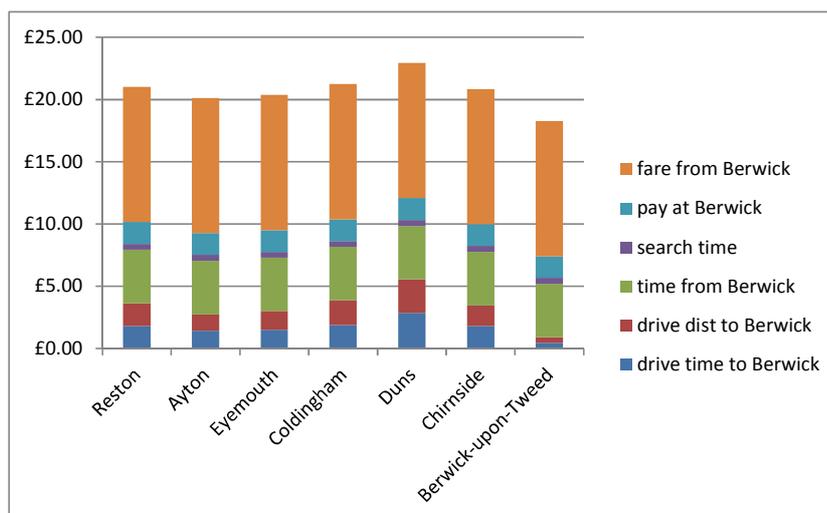
### Leisure Travel

- 5.3.16 Firstly, Figure 5.1 shows the generalised costs of travel from each settlement to Edinburgh using **existing travel options** for those making **occasional** (ie non season ticket) **leisure** (ie not work or commute) journeys.



**Figure 5.1 Generalised Costs for existing options - Leisure Travel**

5.3.17 Before analysing these figures further, Figure 5.2 below shows an example of how these generalised costs are built up, in this case for travel from each of the settlements to Edinburgh via Berwick (ie a breakdown of the red bars from Figure 5.1 above).



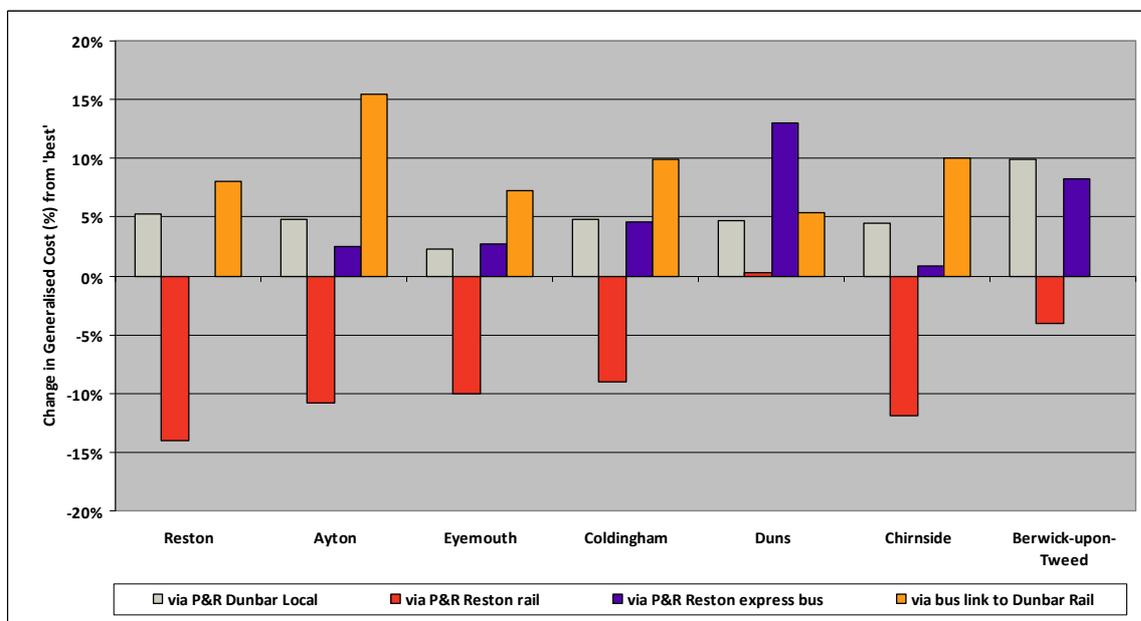
**Figure 5.2 Example of breakdown of generalised costs via Berwick (Leisure)**

5.3.18 It can be seen that the generalised cost therefore comprises money (petrol costs, fares, parking charges) and time (drive time, search time, train time). The time is converted into money using the prevailing value of time. It can also be seen that the train fare is a high proportion of the overall generalised cost and the things which vary by settlement in this case are drive time and cost to Berwick.

5.3.19 Returning to Figure 5.1, for all the Berwickshire settlements it can therefore be seen that, of these existing options, P&R via Dunbar and P&R via Newcraighall are closely matched in terms of being the lowest generalised cost (ie optimal) options from all settlements except Berwick-upon-Tweed. Parking availability is not an issue at Newcraighall though and there is a regular two trains per hour service which probably makes this the more attractive option.

However accessing Newcraighall is prone to congestion on the A1 which could make Dunbar the best option for some despite the parking issues there. For residents of Berwick-upon-Tweed, P&R via Berwick station is the best option. Note that there are no direct bus options from Duns and Chirnside.

5.3.20 Figure 5.3 below shows the impact of the **four new possible options** in terms of the resulting difference in generalised costs between each and the **lowest** generalised cost option from each settlement, as noted above.



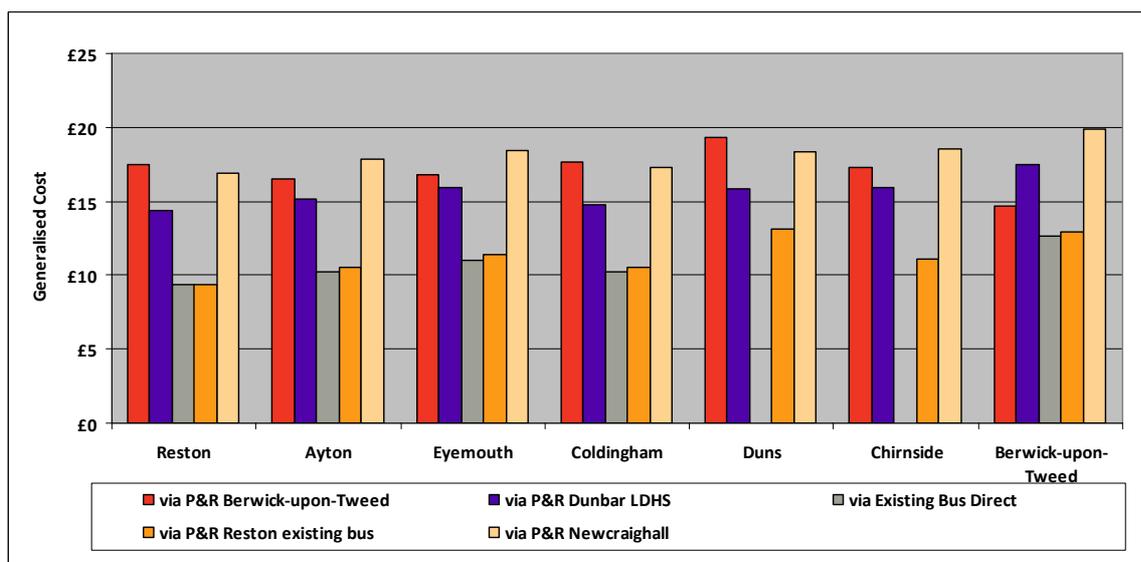
**Figure 5.3 Change in Generalised Cost from 'best' option – Leisure Travel**

5.3.21 Taking Eyemouth as an example (where it was shown that P&R via Dunbar was the lowest cost existing option), this shows that:

- travelling by train via P&R at Dunbar on a local stopper service would **increase** generalised costs by 2% (due to longer journey time on stopping service);
- travelling by train via P&R at Reston would **reduce** generalised costs by 10%;
- travelling by express coach via P&R at Reston would **increase** generalised costs by 3%; and
- travelling via a bespoke feeder bus service to a Dunbar stopping service would **increase** generalised costs by around 7% - note that even linking to LDHS services would not reduce generalised costs.

5.3.22 So **residents of Reston, Ayton, Eyemouth, Coldingham, Chirnside and even Berwick would all see a reduction in generalised costs from their current 'best' option if travelling via a new train service from Reston.** Berwick residents benefit partly due to free parking at Reston. Duns residents do not benefit as there is an element of 'doubling back' from Duns to Reston, although in practice, unconstrained parking at Reston would probably make this the best option. Express and Feeder coach / bus options would not reduce generalised costs compared to the options currently available.

- 5.3.23 As a sensitivity test, the feeder bus link to Dunbar would reduce generalised costs to some extent if (i) the bus was to omit Innerwick and Cockburnspath, and (ii) it was to connect to LDHS rather than stopping services. Even so the reduction in costs is much less than with the Reston rail option and it would be difficult to justify omitting Cockburnspath and Innerwick to residents of these settlements.
- 5.3.24 The key point here is that on the core assumptions, **both bus-based options (Express P&R and Feeder to Dunbar) do not reduce generalised costs** for Berwickshire residents travelling to Edinburgh, compared to their best present day travel options.
- 5.3.25 A key issue affecting the public transport market is the Scottish **Concessionary Travel Scheme** which provides free and unlimited national bus travel for those aged 60 and over with a National Entitlement Card (including services to / from Berwick-upon-Tweed). On rail, a Senior Railcard can be bought by those aged 60 and over which brings a 33% discount on rail fares. Where rail and bus 'compete' in a corridor, free travel is clearly likely to sway many 60+ travellers to bus rather than rail.
- 5.3.26 The effect of concessionary bus fares is shown below in Figure 5.4. Here, a zero fare for the existing bus options and a 33% reduction in rail fares has been assumed. Note that this data relates only to the holders of the necessary cards, ie it is not an overall average with some account taken of concessionary fares.

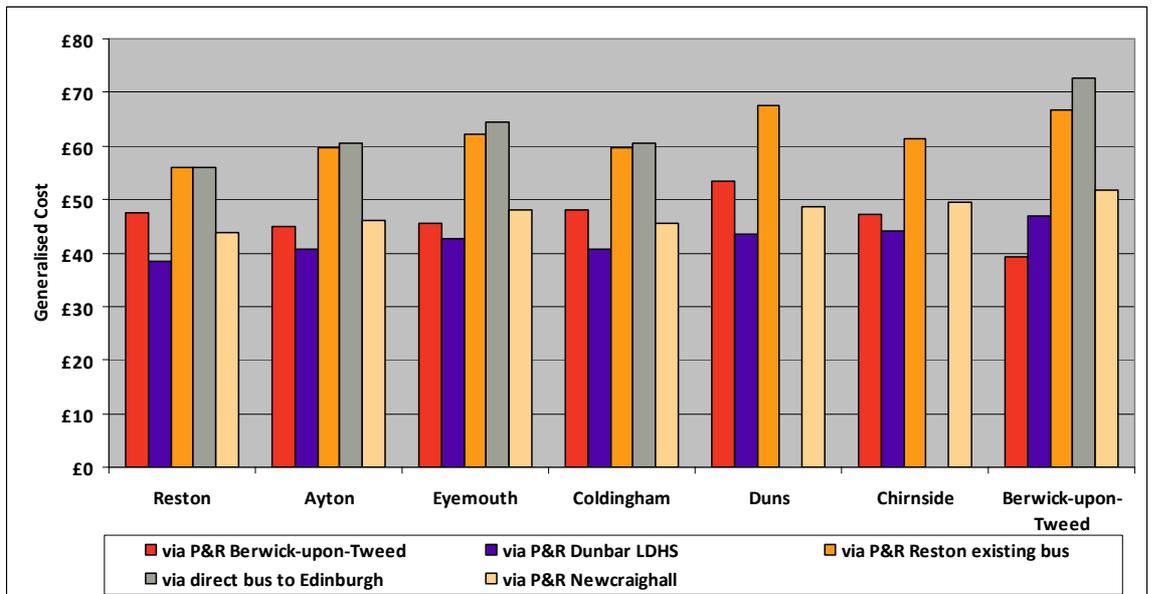


**Figure 5.4 Generalised Costs for existing options (with concessionary fares): Leisure Travel**

- 5.3.27 It can be seen that concessionary fares make existing bus services the lowest cost options by some margin. For those in receipt of concessionary fares, the generalised cost of travel using the bus options would still be lower than any Reston rail-based options.

**In Work Travel (Business)**

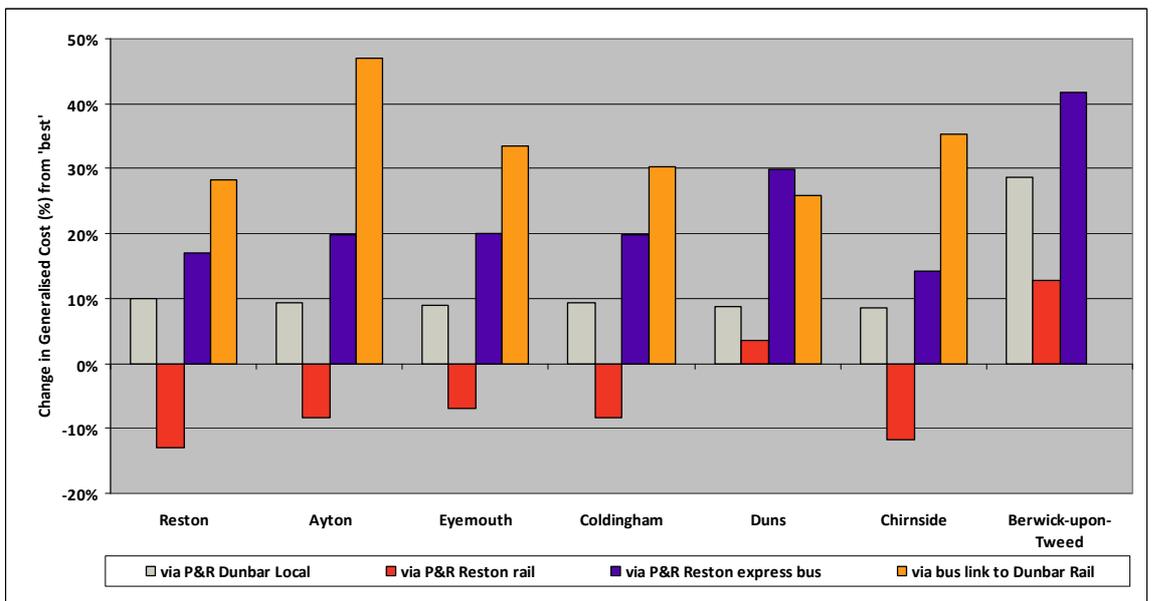
- 5.3.28 Figure 5.5 now shows the generalised costs of travel using existing travel options for those making **occasional** (ie non season ticket) **in-work** journeys.



**Figure 5.5 Generalised Costs for existing options: In-Work Travel**

5.3.29 The generalised cost of travel in work time is far higher than non work time reflecting the relative economic importance of this time. Travellers in work time favour higher cost faster modes over slower cheaper modes and this can be seen here with very high generalised costs associated with bus options (which are slow and cheap). As before though, with the exception of Berwick, Dunbar P&R has the lowest generalised cost for travel from all settlements.

5.3.30 The impact of the potential new options on the lowest generalised cost for each settlement is shown in Figure 5.6 below.



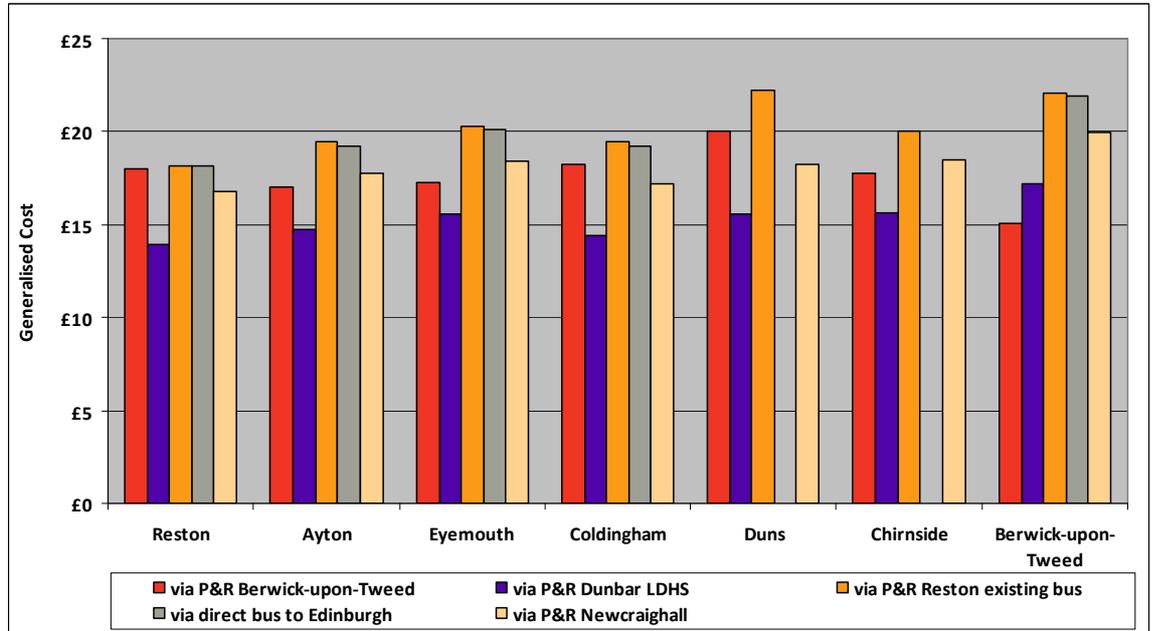
**Figure 5.6 Change in Generalised Cost from 'best' option – In Work Travel**

5.3.31 A similar pattern to leisure travel emerges in that only rail-based P&R at Reston has any impact on reducing generalised costs. In this case though from Berwick, Berwick P&R

remains the best option. Again, it is therefore the case that the **bus-based options offer no benefits relative to the current 'best' travel options** from Berwickshire to Edinburgh.

**Regular Commuting**

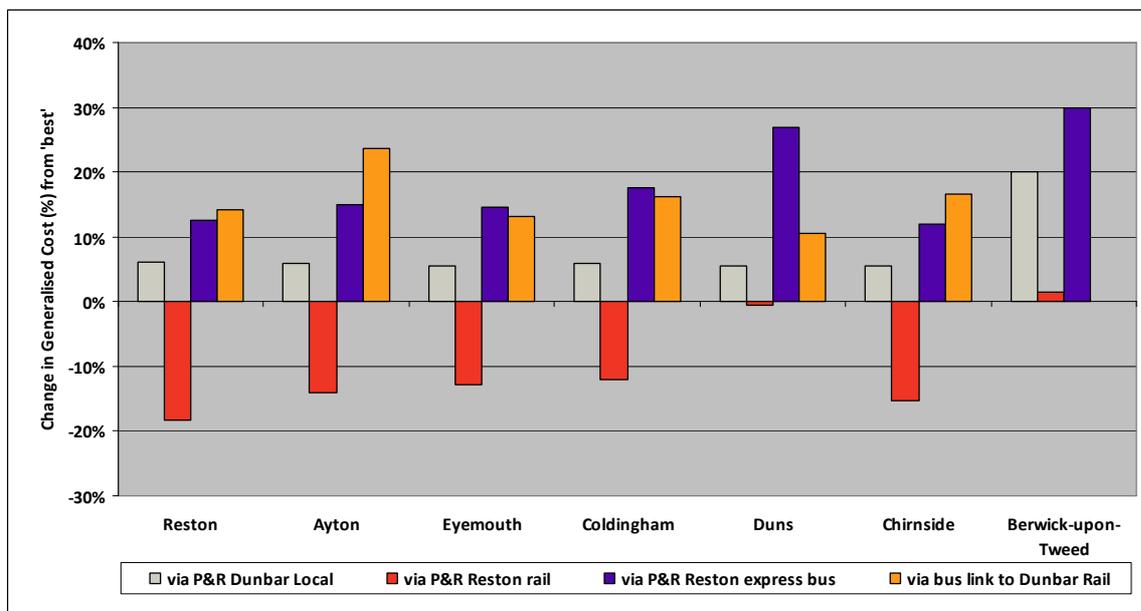
5.3.32 Thirdly, Figure 5.7 shows the generalised costs of travel using existing travel options for those making **regular** (ie season ticket) **commute** journeys.



**Figure 5.7 Generalised Costs for existing options: Commuting Travel**

5.3.33 As with the other journey purposes, the lowest generalised cost for the Berwickshire settlements, comes from P&R at Dunbar. This is the lowest cost option by a significant margin followed by Newcraighall or Berwick. The high generalised cost of commuting by bus is clearly shown, reflecting the long journey times.

5.3.34 The impact of the potential new options on the lowest generalised cost for each settlement is shown in Figure 5.8 below.



**Figure 5.8 Change in Commute Generalised Cost from 'best' option**

- 5.3.35 For regular commuting, generalised costs are again only reduced with the Reston rail option, with the exception of Berwick, where Berwick remains the optimal choice and even Duns residents benefit slightly this time. In this case, the savings in generalised cost are somewhat larger but this would depend on exactly what the season ticket price was at Reston. As with the other journey purposes, **the bus-based options would not reduce generalised costs** compared to the best present day option.
- 5.3.36 Note that in a '**kiss and ride**' option, no parking charges or search times would apply for the P&R options – ie it is assumed that the traveller is being dropped off at the station. This has the effect of reducing the generalised cost of travel from Dunbar P&R, Newcraighall P&R and Berwick P&R, and in this case Reston P&R no longer becomes the lowest cost option. However to arrive at that conclusion requires the exclusion of the cost of a return car trip (ie the person doing the dropping off). In some case, this is reasonable as the person dropping off may be combining this journey with something else, but this would clearly not always be the case, particularly at Dunbar. Where the 'lift' is a bespoke journey, the times and costs associated with the 'empty' return car trip would make this a much less attractive option.
- 5.3.37 Figures 5.1 to 5.8 explored the travel options from each of the Berwickshire settlements in terms of a 'composite' measure of travel based on a combination of times and cost. For illustrative purposes, Table 5.3 below shows the cost and time components separately for (i) the current best option, and (ii) via rail at Reston, for leisure travel, although the pattern is very similar for other purposes. The green shading shows where travel via Reston is superior to the current best option.

**Table 5.3 Changes in times and costs of travel**

Settlement	Current Best Time (mins)	Current Best Cost	Time via Reston Rail (mins)	Cost via Reston
Reston	58	£10.63	51	£9.03
Ayton	62	£11.03	58	£9.58
Eyemouth	65	£11.50	62	£10.02
Coldingham	63	£10.57	58	£9.56
Duns	68	£11.17	72	£10.84
Chirnside	69	£11.19	61	£9.84
Berwick upon Tweed	55	£13.04	70	£10.87

5.3.38 It can therefore be seen that for example residents of Ayton would see their P&R travel times to Edinburgh reduce from 62 to 58 minutes, and their costs reduce from £11.03 to £9.58. Any people not using the lowest cost option to begin with (eg travelling by existing bus for the whole journey) would see far larger reductions in generalised costs.

5.3.39 The above analysis is summarised in Table 5.4 and Table 5.5 below. This shows the lowest generalised cost option for travel to Edinburgh for the existing situation (Table 5.4) and the situation where all the proposed options are available (Table 5.5). Note that (i) and (ii) relate to leisure travel, (iii) relates to business travel and (iv) is based on regular commuting.

**Table 5.4 Optimal travel choices from Berwickshire – Existing Options**

Settlement	Existing Options Only			
	(i) Park and Ride One Off (non season fares and parking charges)	(ii) Kiss and Ride (no parking charges or serach times)	(iii) Park and Ride In Work (as (i) with in work VOT)	(iv) Park and Ride Season Ticket (season fares and parking charges, commute VOT)
Reston	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS
Ayton	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS
Eyemouth	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS
Coldingham	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS
Duns	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS
Chirnside	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS
Berwick-upon-Tweed	via P&R Berwick-upon-Tweed	via P&R Dunbar LDHS	via P&R Berwick-upon-Tweed	via P&R Berwick-upon-Tweed

**Table 5.5 Optimal travel choices from Berwickshire – Existing & Potential Options**

Settlement	Including all Options			
	(i) Park and Ride One Off (non season fares and parking charges)	(ii) Kiss and Ride (no parking charges or serach times)	(iii) Park and Ride In Work (as (i) with in work VOT)	(iv) Park and Ride Season Ticket (season fares and parking charges, commute VOT)
Reston	via P&R Reston rail	via P&R Dunbar LDHS	via P&R Reston rail	via P&R Reston rail
Ayton	via P&R Reston rail	via P&R Dunbar LDHS	via P&R Reston rail	via P&R Reston rail
Eyemouth	via P&R Reston rail	via P&R Dunbar LDHS	via P&R Reston rail	via P&R Reston rail
Coldingham	via P&R Reston rail	via P&R Dunbar LDHS	via P&R Reston rail	via P&R Reston rail
Duns	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Dunbar LDHS	via P&R Reston rail
Chirnside	via P&R Reston rail	via P&R Dunbar LDHS	via P&R Reston rail	via P&R Reston rail
Berwick-upon-Tweed	via P&R Reston rail	via P&R Berwick-upon-Tweed	via P&R Berwick-upon-Tweed	via P&R Berwick-upon-Tweed

5.3.40 The tables illustrate that P&R via Reston rail becomes the optimal travel option for nearly all travel purposes and Berwickshire settlements.

## 5 Appraisal Against Transport Planning Objectives

- 5.3.41 Clearly, the bus-based options would provide some benefits to existing bus users, but it has already been demonstrated that the journey times associated with bus travel from Berwickshire to Edinburgh are prohibitive for most – especially for accessing the Edinburgh employment market and education. The point here is that these **bus options would be very unlikely to bring about a shift from current travel behaviours for anyone currently using the car to access Edinburgh.**
- 5.3.42 A new train service running through East Lothian with a new station at East Linton would also clearly significantly reduce the generalised cost of travel from Musselburgh, Wallyford, Prestonpans, Longniddry, Drem, East Linton and Dunbar. At existing stations, the improved frequency would reduce perceived wait times and thus reduce the generalised cost. These impacts are picked up fully in the demand and revenue modelling in Chapter 7.
- 5.3.43 Note that coach options have also been tested in the SEStran Regional Transport Model (SRM). This is reported in Chapter 7 where a full set of costs, revenue and benefits data are reported.

### Expanded Parking Provision at Existing Stations

- 5.3.44 In terms of the above analysis, expanding parking provision at Dunbar and / or Berwick would have the effect of removing the modelled parking search time, as any parking constraint would be removed in the short term. In practice search time only accounts for 2-3% of the generalised cost calculations above, and its removal would therefore have a very limited impact in terms of reducing these generalised costs.
- 5.3.45 In addition, it would have no impact on those traveling entirely using public transport or accessing the rail network via kiss and ride.

■ Key Point: The generalised costs analysis undertaken here confirms that only rail-based options would provide a benefit to Berwickshire settlements compared to the best transport options currently available to travel to Edinburgh. Coach-based options would offer no improvements in terms of reducing the generalised cost of transport and therefore do not meet this planning objective. Expanding existing parking supply at Berwick and Dunbar would have a very limited impact in terms of reducing generalised costs of travel.

### Objective 2: Improve accessibility and connectivity between Berwickshire and Edinburgh

- 5.3.46 Accessibility analysis was initially undertaken to assess the impact of the proposed new rail service on journey times to Edinburgh. Comparisons are then drawn with coach-based options.

#### Public Transport Only

- 5.3.47 Accessibility here is measured in terms of fastest AM Peak travel times by (i) public transport only; and (ii) park and ride catchments. Figure 5.9 and Figure 5.10 below show the changes in accessibility brought about by the proposed new train service in East Lothian and Berwickshire respectively in terms of public transport travel times.

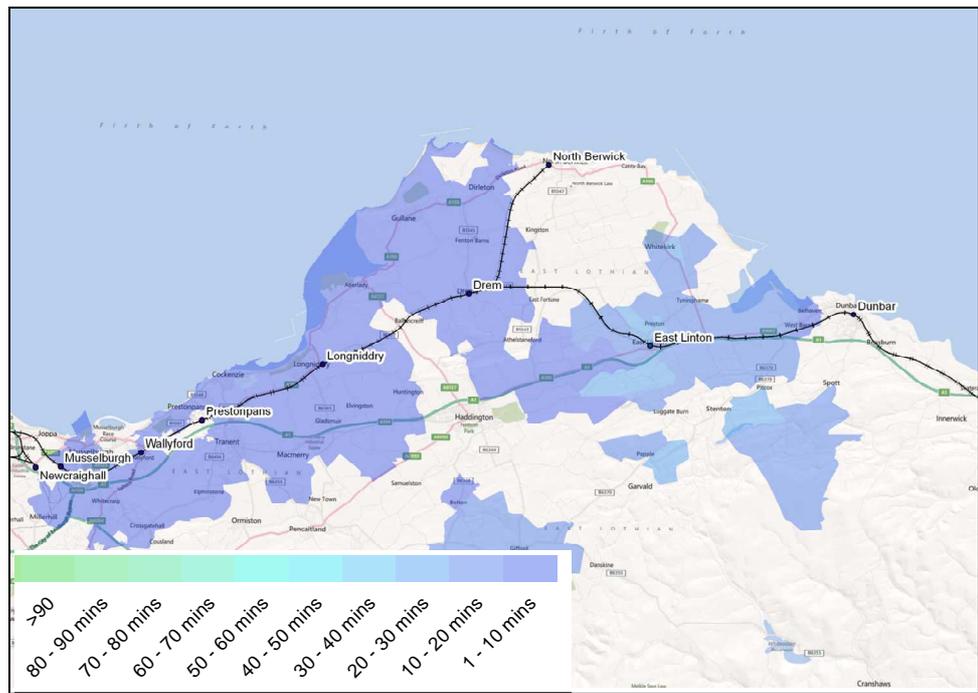


Figure 5.9 Change in Accessibility in East Lothian – new train service

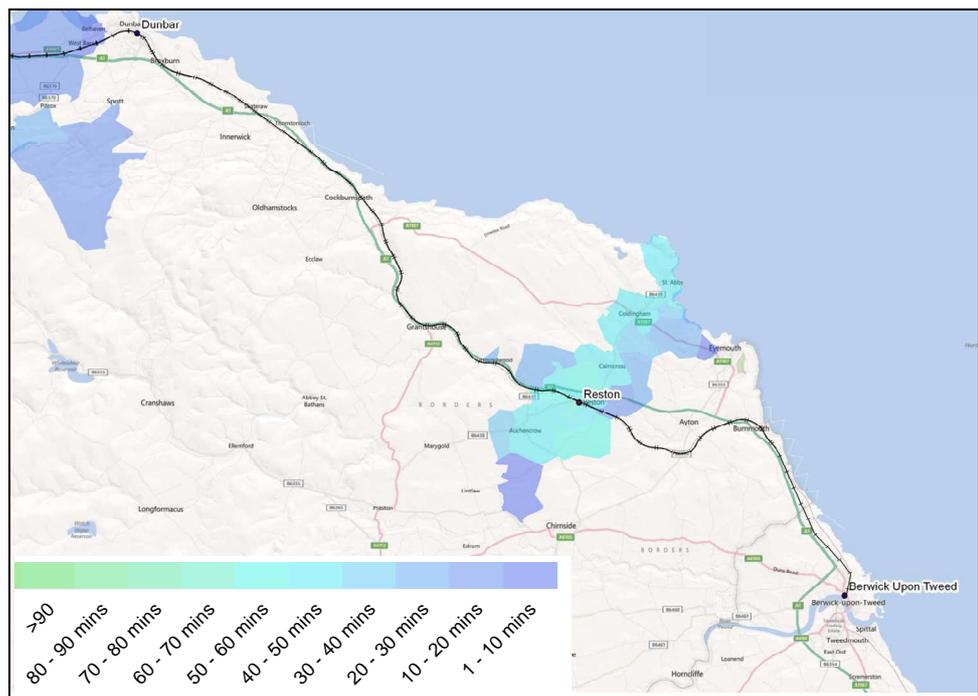


Figure 5.10 Change in Accessibility in Berwickshire – new train service

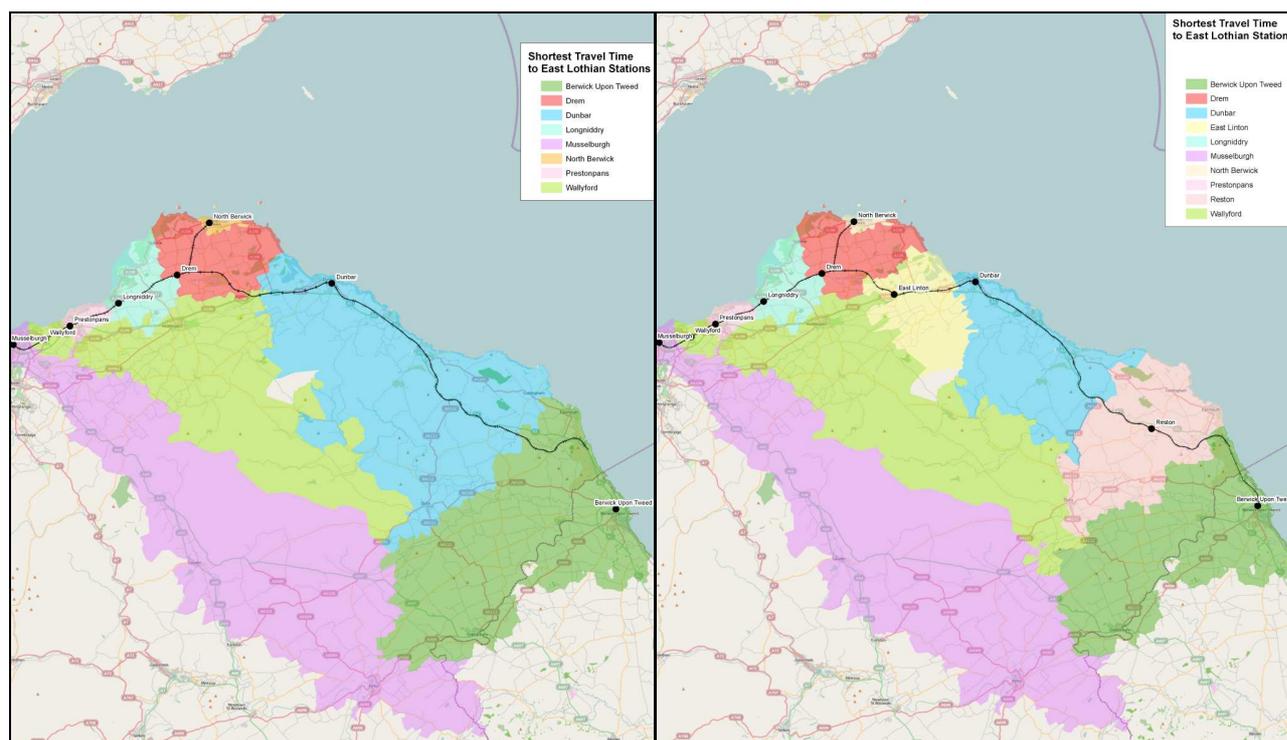
5.3.48 These figures show that accessibility is improved across East Lothian (due to reduced wait times / higher train frequency) with a pocket of larger time savings around East Linton itself. Much larger changes in accessibility are seen in Berwickshire, where reductions of up to 60 minutes are evident. Note that no additional bus services have been coded to link Berwickshire towns to Reston.

## 5 Appraisal Against Transport Planning Objectives

- 5.3.49 The fastest bus option discussed above would provide a 75 minute journey time from Reston to Edinburgh, compared to 50 minutes by train. With the current bus time being 100 minutes from Reston, the **express coach option would therefore provide only around half the accessibility improvements** achieved from the new rail service.
- 5.3.50 Operating across a typical rail operating day (eg 0600-2400) would also provide a step change in evening connectivity to Edinburgh. The rail option would essentially bring Berwickshire into the Edinburgh travel to work area – whereas any bus option would not. It would also provide a step change in accessibility for East Linton and enable a significant modal shift away from the car to take place here, bringing it into line with other East Lothian settlements.

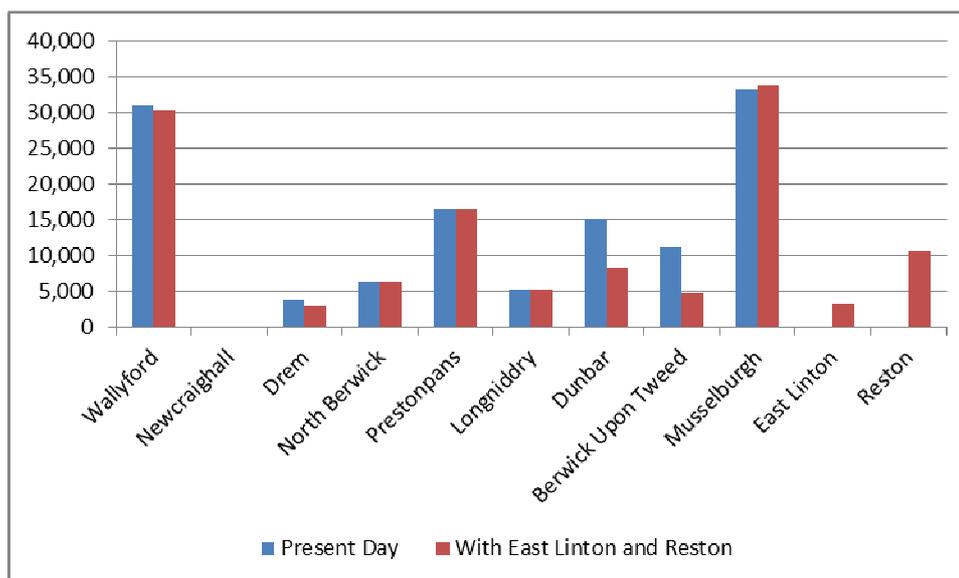
### Park and Ride

- 5.3.51 The importance of P&R for east Berwickshire residents in particular has been noted previously. In the graphics which follow, each Census output area has been 'allocated' to a station in terms of the minimum combined car / train travel time to Edinburgh city centre and these areas are defined as station catchment areas. Figure 5.11 below shows the catchment areas defined firstly for the present day, and secondly with the proposed stations at Reston and East Linton stations in place, together with an Edinburgh-Berwick stopping service.



**Figure 5.11 P&R catchment areas – new train service**

- 5.3.52 This graphic confirms that all the east Berwickshire settlements would come in to the Reston station catchment for P&R, when considered in terms of pure travel times to Edinburgh. A total quantified population 'catchment' can then be defined from Census data for the above catchment areas and these are shown in Figure 5.12 below.



**Figure 5.12 P&R catchment populations – new train service**

- 5.3.53 In population terms, Reston therefore becomes the best option for around 10,750 people whilst East Linton becomes the best option for 3,400. The catchment areas for Dunbar and Berwick-upon-Tweed are reduced by roughly equal amounts.
- 5.3.54 Coach-based P&R via Reston would be an inferior option to rail-based P&R from Dunbar or Berwick-upon-Tweed, as shown in the previous section.
- 5.3.55 Extending parking provision at existing stations would have no impact on public transport based accessibility. It would have a limited impact on P&R based accessibility and connectivity. The only positive impact would be if expanded provision allowed the use of a station where previously this was not possible. In practice, it is always possible to park in Dunbar or Berwick, the issue is the distance from the station where parking can be found.

### **Objective 3: Address known or foreseen public transport capacity issues in the corridor**

- 5.3.56 There are no constraints (either present or foreseen) in terms of bus-based public transport capacity. As such, providing additional buses would not provide a benefit in this respect. However, it was noted in Section 3.5 that train capacities east of Edinburgh are being reached, and this has been recognised as a problem by Network Rail. Clearly, running a new Berwick service in addition to North Berwick services would provide significant additional capacity through East Lothian to accommodate the projected increases in population and households in the area.

### **Objective 4: Improve the reliability of public transport journey travel times from Berwickshire to Edinburgh.**

- 5.3.57 A further key issue with respect to public transport is **reliability**. ScotRail (who would be the operator of any new service) performance statistics<sup>8</sup> for the four weeks ending 15/09/12 indicated that ScotRail East achieved **96.3% punctuality** (defined as arrivals within 10

<sup>8</sup> <http://www.scotrail.co.uk/performance>

## 5 Appraisal Against Transport Planning Objectives

minutes) and 99.5% reliability (ie trains running). In contrast, GB Quarterly Bus Statistics<sup>9</sup> indicated that only **82.7% of non-frequent bus services run on time** (2011/12 – England, no Scottish statistics available). The evidence therefore suggests a **significant reliability benefit for rail compared to bus**.

- 5.3.58 In addition, as well as being more reliable, train services provide a much greater degree of permanence than bus services, which can be withdrawn at very short notice. This makes train services much more likely to affect people's medium and longer travel choices and indeed other decisions such as residential and employment locations.
- 5.3.59 Additional parking provision at Dunbar and / or Berwick would have a minor positive impact on those using P&R (as some uncertainty in their journey would be removed), otherwise there would be no impact on the reliability of public transport journey times between Berwickshire and Edinburgh.

### 5.4 Summary of Assessment of Options against Planning Objectives

■ Objective 1: Improve the generalised cost of travelling by public transport / park and ride by a meaningful amount in the corridor

- 5.4.1 Neither bus-based option (express or Dunbar feeder) would become the optimal travel choice for Berwickshire residents when accessing Edinburgh. In contrast, train via P&R at Reston would be the optimal travel choice for accessing Edinburgh for almost all Berwickshire residents across the large majority of travel purposes. Similarly, a slight improvement in generalised cost from East Linton to Edinburgh stemming from a faster bus would not lead to a significant change in travel behaviour by East Linton residents. Coach / bus options do not therefore materially improve generalised costs of travelling to Edinburgh, therefore do not meet this planning objective.
- 5.4.2 Expanding P&R provision at Drem, Dunbar or Berwick could reduce the generalised cost of travel somewhat through reduced parking search times, or in the case where a lack of capacity at these locations was forcing people to use a 'sub-optimal' (ie higher cost) station.

■ Objective 2: Improve accessibility and connectivity along the Edinburgh–Dunbar–Berwick corridor

- 5.4.3 The travel time provided by an express coach (even with the most favourable assumptions) would not be able to compete with the times offered by rail. Even a direct bus from Reston would take around 75 minutes, some 25 minutes longer than by rail. This would represent an improvement on current coach-based journey times though.
- 5.4.4 A train time of around 50 minutes from Reston would also provide a step change in travel time accessibility via P&R across a wide catchment area in Berwickshire. This would essentially bring the east Berwickshire area much closer to the Edinburgh employment market, helping address the labour market issues identified in Chapter 3.
- 5.4.5 Expanded station car parks would have a very small impact on accessibility via P&R but no impact on journey times where only public transport is used.

---

<sup>9</sup> <http://www.dft.gov.uk/statistics/releases/quarterly-bus-statistics-quarter-2-2012/>

## 5 Appraisal Against Transport Planning Objectives

### ■ Objective 3: Address known or foreseen public transport capacity issues in the corridor

5.4.6 There are no constraints (either present or foreseen) in terms of bus-based public transport capacity. As such, providing additional buses would not provide a benefit in this respect. Additional rail services would however address existing and forecast capacity issues on trains east of Edinburgh. Additional station parking provision would clearly address the known parking constraints. However, this would add to rail-based crowding in the future if further rail capacity is not provided, and indeed further parking may be necessary in tandem with any enhanced rail services through East Lothian to ensure that the opportunities presented by the new service are maximised.

### ■ Objective 4: Improve the reliability of public transport journey travel times from Berwickshire to Edinburgh

5.4.7 Train services are inherently more reliable than bus services, particularly over longer distances. As such, additional bus services would not provide any benefits in this respect. They would still be subject to the vagaries of traffic congestion and incidents on the road network. Rail services would however bring about a step change in public transport reliability and punctuality in the corridor.

5.4.8 Further station parking would bring a minor benefit where the uncertainty of finding a parking space currently impacts on peoples' travel plans (eg allowing more time than is necessary for a journey).

5.4.9 Table 5.6 below provides a summary of the various options against the transport planning objectives using the STAG seven point scale.

**Table 5.6 Summary of options against Transport Planning Objectives**

Option	Obj 1: Improve the generalised cost of travelling by public transport / park and ride by a meaningful amount in the corridor	Obj 2: Improve accessibility and connectivity along the Edinburgh – Dunbar – Berwick corridor	Obj 3: Address known or foreseen public transport capacity issues in the corridor	Obj 4: Improve the reliability of public transport journey travel times from Berwickshire to Edinburgh
P&R via Reston – Express bus	✓	✓	0	0
P&R via Dunbar – New local rail service	✓	✓	0	0
Feeder bus to Dunbar rail	✓	✓	0	0
Expanded P&R capacity at Drem	✓	✓	✓	0
Expanded P&R capacity at Dunbar / Berwick	✓	✓	✓	✓
P&R via Reston –New local rail service	✓✓✓	✓✓✓	✓✓✓	✓✓✓

### 5.5 Economic Activity and Location Impacts - Eyemouth

- 5.5.1 The above sections have discussed the performance of various options against the planning objectives set. Given the prominence of Eyemouth in the socio-economic analysis in Chapter 3, this section considers in more detail the issues with specific reference to Eyemouth. In STAG terms, it is important to identify proposals which could have a beneficial effect on 'deprived' communities, under the EALI (Economic Activity and Location Impacts) element of the Economy criterion. As such it is worth considering specifically the means by which a new station at Reston could have a positive impact on Eyemouth, and whether bus-based options could have an equivalent impact.
- 5.5.2 At present, as we have seen, east Berwickshire is on the very edge of or outwith the Edinburgh Travel to Work area. In the 2001 Census, under 3% of residents of the five east Berwickshire settlements worked in Edinburgh, and this is towards the bottom of the list of all Scottish Borders settlements in this respect. Although the existing 253 Perryman's service has recently had its timetable extended to permit a working day in Edinburgh (previously this was not possible), the bus takes nearly two hours from Eyemouth to Edinburgh bus station. This can be regarded as an unacceptably long daily commute and the census data confirmed this.
- 5.5.3 Even though Berwick-upon-Tweed is relatively close, only 9% of the five Berwickshire settlements' residents employed adults work there, and the figure for Eyemouth was only 17% despite the relatively good access to the town by car and bus. This suggests that the Scotland - England border does have a real impact on local labour markets and employment opportunities. In addition, east Berwickshire is some distance from the main Scottish Borders towns and administrative centres such as Galashiels, Hawick and Newton St Boswells where many local health and other services are provided. Scheduled bus services from Eyemouth to Galashiels involve at least one change and take at least one hour and forty minutes. Again, this is not a viable daily commute for most. This all means that **travel to work or further education from Eyemouth is very limited** relative to other towns, to the south, west and north.
- 5.5.4 Improving connectivity from Eyemouth to Edinburgh would therefore create a step change for the community in terms of accessing employment and education / training. This would also help the regeneration of Eyemouth in maximising its potential as an attractive seaside location in terms of attracting residents, businesses and visitors in the future. The nature of this change in connectivity is explored below.
- 5.5.5 Reston Station would be around 5.5 miles from Eyemouth via an uncongested rural road. As such it would clearly not be within a walking catchment although cycling from Eyemouth would be an option for some (and Scottish Borders Council would be keen to promote this via defined cycle routes, together with cycle parking facilities at the station). However all Eyemouth residents could access the station by bus, taxi or car (either as a driver or passenger).

#### Public Transport Links

- 5.5.6 Travel from Eyemouth to Edinburgh by rail currently involves a bus trip to Berwick followed by an East Coast or Cross Country train to Edinburgh. This involves an 11 mile bus journey in the wrong direction to catch the train at Berwick, and fares can be high when combined

## 5 Appraisal Against Transport Planning Objectives

with the bus fare to Berwick. Travel times are typically around 90 minutes. There is currently no viable bus connectivity with train services at Dunbar.

5.5.7 Assuming that the new station at Reston would be served initially by the existing Perryman's service, as this currently routes via Coldingham, the journey time would be 16 minutes. In practice, as these two services will be in competition in some respects, there may be difficulties achieving good connections there.

5.5.8 The existing service could potentially be supplemented with a supported shuttle bus also calling at Ayton and Coldingham, specifically timed to tie in with train arrivals / departures. The location of these settlements would lend themselves to a circular bus service using the A1107 and the B6348. Even a 15 minute journey time from Eyemouth to Reston combined with a 50 minute train journey would **reduce travel times by 25 minutes** compared to travelling via Berwick and also reduce fares significantly as the overall journey would be around **15 miles shorter** than the Berwick option. Such a service would significantly improve public transport accessibility from Eyemouth which would be particularly important as it has been shown that household car availability levels in Eyemouth are relatively low.

### Car Travel

5.5.9 Residents of Eyemouth can currently access the rail network by driving to Berwick-upon-Tweed, Dunbar, stations on the North Berwick line, or Newcraighall. There are parking charges at Dunbar and Berwick-upon-Tweed and a very low charge at Newcraighall. Capacity is also constrained at Dunbar and Berwick meaning that being able to park and catch a given train reliably cannot be guaranteed unless extra time is built into the journey.

5.5.10 Reston station would however provide a free, unrestricted **park and ride** option for residents of Eyemouth. This would be a much more convenient option for Eyemouth residents providing access within around 50 minutes from Reston to Edinburgh, together with cheaper rail fares and free parking compared to Berwick.

5.5.11 Reston's proximity to Eyemouth would also make it much more suitable for '**kiss and ride**' ie drop off and pick up by Eyemouth residents. Dunbar is clearly too far away for this purpose and using Berwick station involves a trip into Berwick town centre via the A1, so both of these are much less suitable for kiss and ride. This is important as, in single car households, leaving a car parked at the station for the whole day is not always practical, ie the vehicle may well be required by other members of the household.

### Summary

5.5.12 Reston station would therefore provide a step change in access to the rail network for Eyemouth residents, for cyclists, public transport users and car drivers and passengers. This could in turn:

- bring Eyemouth into the Edinburgh travel to work area to a much larger extent;
- open up opportunities for education and training in Edinburgh and Musselburgh (QMU);
- improve access to specialist healthcare, culture and leisure in Edinburgh;
- overall provide many new opportunities for current and prospective Eyemouth residents;

## 5 Appraisal Against Transport Planning Objectives

- make Eyemouth a more attractive place for people to live in the future;
- potentially increase visitor numbers to the town's attractions;
- boost existing businesses in the town; and
- make the town a more attractive location for future investment.

### 5.6 Conclusion

- 5.6.1 As the bus-based and other options clearly do not meet the Transport Planning Objectives set, they can be sifted out at this stage.
- 5.6.2 The remaining chapters of this report are therefore focussed on further analysis of the rail options and the development of the previous business case determined previously in the 2011 Study.
- 5.6.3 Chapter 6 firstly considers the train path and timetabling aspects with a view to operating 'through' trains.

## 6 Business Case - Train Operations

### 6.1 Introduction

- 6.1.1 A key element of the business case for the new service is its relationship to ScotRail's other services and in particular how this relates to the requirement for rolling stock. As the Edinburgh to Berwick train journey time would be around one hour, in all probability three train sets would be required to provide the hourly service allowing for turnback, driver's hours and fit with the available train paths. This was explored fully during the 2011 Study.
- 6.1.2 If all three train sets were to be newly acquired for use on the route, then the lease and crew costs associated with this has to be accounted for in the economic appraisal of the new service. If however, the service could be provided in part with the use of *existing crew and rolling stock*, through eg a wider reorganisation of train operations, then incremental costs would fall and the business case would be improved.
- 6.1.3 One way of potentially reducing the requirement for new rolling stock would be to form the new service as an extension to existing services. This Chapter therefore places the train path analysis undertaken for the 2011 Study in the context of existing train services into and out of Edinburgh Waverley and also considers the identified paths in relation to potential through services operating via the Airdrie-Bathgate, Shotts and Carstairs lines.

### 6.2 The 2011 Study – Train Path Analysis

- 6.2.1 As noted previously, the 2011 Study used a RailSys model to identify potential train paths separately between Edinburgh–Dunbar, Edinburgh–Berwick and Edinburgh–Newcastle. The model used to undertake this analysis was based on the then new Eureka May 2011 timetable. The key assumptions underlying this analysis were as follows:
- Class 333 trains – used as the best proxy for Class 380 (data for a Class 380 was not available);
  - typical weekday freight services;
  - no modifications made to existing services;
  - terminal station platforms not worked up;
  - connecting return services not fully worked up;
  - 'Rules of the Plan' complied with (timetable was sourced from Network Rail) – with particular respect to Portobello junction; and
  - some minor alterations to Empty Coaching Stock and / or freight movements may be required.
- 6.2.2 Run time between Edinburgh and Berwick-upon-Tweed was estimated as 58-60 minutes. It was also determined that the potential extra stops at Reston and East Linton could generally be accommodated within the run time envelopes determined in RailSys. A full report of this process and the outputs determined can be found in the 2011 Study.

### 6.3 Current Train Services and 'Available' Paths

6.3.1 This section analyses the paths identified in the RailSys modelling during the 2011 Study in the context of existing train services at Edinburgh Waverley.

6.3.2 Current eastbound / southbound train services out of Waverley follow a fairly settled pattern across the day as follows:

- East Coast: broadly XX:00 and XX:30;
- XC: broadly XX:8-10;
- ScotRail North Berwick: XX:43;
- ScotRail Dunbar: broadly XX:11-13; and
- ScotRail Newcraighall: broadly XX:17 & 48 (it is assumed that these paths will be used for Borders Railway services in due course).

6.3.3 Table 6.1 below shows existing train departures east / south from Edinburgh Waverley (excluding Newcraighall services) between 0800 and 2200. It also shows in *red italics* the potential Edinburgh to Berwick path departure times identified in the 2011 Study – most of which it can be seen are in the XX:36-XX:39 slot. It can be assumed that in the hours when this path is not available, this is likely to be due to the presence of a freight path. As Dunbar and North Berwick services sometimes depart at irregular times these are shown in *blue* and *green* respectively. It should be noted that these paths reflect the present day situation. There is of course no guarantee that these paths will be available in the future should timetabling of other services change.

**Table 6.1 Train services and paths south / east out of Waverley**

East / Southbound Departures from Edinburgh Waverley						
Hour Starting	East Coast XX:00	Cross Country XX:08	ScotRail Dunbar XX:11	East Coast XX:30	Berwick Paths XX:36-39	ScotRail North Berwick XX:43
0800	0800	0810	0814*	0830	0838	0845
0900	0858	0908	-	0930	0936	0943
1000	1000	1010	1013	1030	-	1043
1100	1100	1105	-	1130	-	1143
1200	1200	1208	1211	1230	1239	1243
1300	-	1306	1311	1330	1335	1343
1400	1400	1408	1411	1430	1439	1443
1500	-	1508		1530	-	1543
1600	-	1605	1608	1630	1633**	1641
1700	1700	1708	1713*	1730	-	1748
1800	-	1804	1814*	1830	1835	1845
1900	-	1905	-	1918	1935	1942
2000	-	2005	-	-	-	2043
2100	2100	-	2111	-	-	2144

\* to North Berwick

\*\* to Dunbar

## 6 Business Case - Train Operations

6.3.4 Note also that it can be assumed that the existing Edinburgh-Dunbar-Edinburgh paths (departing Waverley 1013, 1211, 1411 and 1633) could potentially be suitable to be extended to Edinburgh-Berwick-Edinburgh services.

6.3.5 Available paths out of Waverley are therefore:

- broadly *XX:36-39*;
- *XX:00* when not taken by EC / XC; and
- *XX:11-13* when not taken by ScotRail North Berwick (evening peak, 1713, 1814).

6.3.6 It is clear that a regular 'clock face' service could not be provided from the identified train paths across the whole day. Also, a significant gap in available train paths exists out of Waverley in the PM peak. No new paths were identified between 1608 and 1835, ie the peak time for east / southbound travel out of Waverley. In this case, the 1713, 1748 or 1814 North Berwick service may have to be re-routed to Berwick-upon-Tweed. If this were to prove to be the case, the financial implications of a 'lost' North Berwick stop (all other stations on the line would be unaffected by re-routing) would have to be considered and weighed up against the additional revenue arising from new stops at East Linton, Dunbar, Reston and Berwick. Nevertheless, the identified paths do appear to form the basis for working up an operational service.

6.3.7 The analysis undertaken assumed no changes to existing services' timetables. In practice, existing services could be adjusted to some extent to accommodate the new service in future train planning.

### ScotRail Study

6.3.8 ScotRail independently looked at paths on the ECML between Edinburgh and Dunbar only in a study undertaken in 2011. However the focus of this work was relatively narrow with only Edinburgh departures at *XX:11* being considered. The outcome of that analysis is shown below:

- 0911 – possibly feasible – subject to Edinburgh docking;
- 1111 – not feasible;
- 1311 – possible;
- 1511 – not feasible;
- 1611 – not feasible;
- 1711 – not feasible; and
- 1811 – not feasible.

6.3.9 These findings broadly correlate with the 2011 MVA Study findings reported above.

6.3.10 Table 6.2 below now shows similar data for arrivals into Waverley from the south / east. Again the slots identified in the 2011 Study are shown in *red italic*.

**Table 6.2 Train services and paths from south / east into Waverley**

Arrivals from East / South into Edinburgh Waverley						
Hour Starting	Cross Country XX:05-10	East Coast XX:10-20	East Coast XX:20-25	ScotRail Dunbar	Berwick Paths	ScotRail North Berwick XX:00
0800		0810			0852	0822 / 0832
0900	0904		0924			0916
1000		1020			1014 / 1049	1000
1100	1105		1125	1115		1100
1200	1203	1215	1225		1249	1200
1300	1306		1325	1316	1355	1300
1400	1410	1418	1422		1449	1400
1500	1506		1525	1536	1552	1500
1600	1605	1617	1622			1600
1700	1706		1725	1728	1709	1700
1800	1807		1823		1809	1800 / 1818
1900	1906	1919			1952	1900 / 1934
2000	2009	2019	2022		2007	2000
2100	2111	2120	2127			2100

6.3.11 Again, note also that the existing Edinburgh-Dunbar-Edinburgh paths (arriving 1115, 1316, 1536 and 1728 arrivals) could potentially be suitable for Edinburgh-Berwick-Edinburgh services, as it can be assumed that these services would be incorporated in a Berwick service.

6.3.12 Available paths arriving into Waverley are therefore:

- broadly XX:05-10 and XX:49-55 although again not on a regular hourly basis.

6.3.13 Note that in this analysis, the first available train path arrives at Waverley at 0852. An earlier arrival would clearly be preferred and again, some amendment to North Berwick or other services could potentially be considered to accommodate this.

#### 6.4 Connecting the Paths Identified in RailSys

6.4.1 The RailSys modelling assumed the use of a single platform at Berwick-upon-Tweed. This means that any new southbound Edinburgh-Berwick trains were assumed to cross to the Down platform north of Berwick station. In practice the more likely solution would be for Edinburgh-Berwick trains to call at the Up platform before continuing through the station to turn back at the Tweedmouth Up Goods Loop, although turning may also be undertaken by use of the trailing crossover on the Royal Border Bridge, depending on path availability.

6.4.2 The Tweedmouth Up Goods Loop comprises three sidings which it is assumed would provide adequate capacity for Empty Coaching Stock (ECS) movements. In addition, there are Up and Down Goods loops to the north of Berwick-upon-Tweed station which could potentially be used for ECS movements. As such there are a number of options for accommodating turnaround of ECS at Berwick-upon-Tweed.

- 6.4.3 The paths identified in Section 6.3 above can be very broadly linked up allowing for a reasonable turnaround time at Berwick and Edinburgh, based on a three train service. Three train sets provides the flexibility for trains to wait in the Tweedmouth Up Goods Loop for available paths. It is conceivable that eg a two-hourly service could be provided by the use of only two train sets.
- 6.4.4 As noted above though, there is the potential to provide these services more efficiently by in full or in part making use of existing train sets and services. This is explored further below.

### 6.5 Potential Connectivity with Other Services

- 6.5.1 A further aspect of this study is to consider the benefits of running services to Berwick as an extension of an existing service rather than as a new stand-alone service. The candidate services are thought to be the Glasgow Central–Shotts–Edinburgh and the Airdrie–Bathgate services. The 'fit' of these services as currently timetabled with the paths discussed above is considered below.

#### Shotts Line

- 6.5.2 Since December 2009 two trains per hour have run on the Glasgow – Shotts – Edinburgh line. 'Slow' trains leave Glasgow Central XX:18 and call at all stations with the exception of Cambuslang and Breich which receive very few calls (typical journey time of 88 minutes). 'Fast' trains leave Glasgow Central at XX:05 calling only at Bellshill, Shotts, West Calder and Livingston South (typical journey time of 65 minutes).
- 6.5.3 Services arrive at Edinburgh Waverley XX:10 (fast) and XX:46-51 (slow). There may therefore be some scope to tie in fast hourly Glasgow Central services with eastbound departures to Berwick in the XX:11 path.
- 6.5.4 Fast trains leave Waverley at XX:56 with slow trains departing at XX:26. There is a less clear potential link with potential incoming services from Berwick.
- 6.5.5 This line is likely to be electrified as part of Network Rail's Strategic Business Plan 2014-19 (CP5) so would be suitable for Class 380 operation. If not, then this proposal would clearly require the use of diesel rolling stock.

#### Airdrie-Bathgate Services

- 6.5.6 Two trains per hour leave Helensburgh (XX:40 & XX:10) and Milngavie (XX:57 & XX:27) for Edinburgh Waverley:
- Helensburgh trains stop at all stations east of Glasgow and between Airdrie-Bathgate (GQS-EW 75 minutes):
    - Trains arrive at Waverley XX:43 & XX:13; and
    - Trains leave Waverley at XX:21 & XX:48.
  - Milngavie trains stop at fewer stations east of Glasgow and none between Airdrie-Bathgate (GQS-EW 64 minutes):
    - Trains arrive at Waverley XX:28 & XX:58; and

- Trains leave Waverley at *XX:07* & *XX:37*.

6.5.7 Note that the Airdrie-Bathgate services are operated on a driver-only basis. An extension of this service to Berwick may require additional investment in station and signalling infrastructure between Edinburgh and Berwick (as well as agreement with the relevant Union). The Class 334 units currently operating this service do however feature built in on train equipment, which will also be built into new units as standard.

### ScotRail Carstairs Services

6.5.8 The Winter 2012 ScotRail timetable saw the introduction of a new two-hourly service between Edinburgh and Glasgow Central via Carstairs and a number of Lanarkshire stations. This service is provided by Class 380 trains on this electrified line so offers further potential for through services to Berwick.

6.5.9 There are currently nine westbound trains which leave Edinburgh Waverley at 0754 (from North Berwick), 1012, 1148, 1351, 1548, 1718 (to Motherwell only), 1742 and 1824 (from North Berwick), and 2321 (to Motherwell only). As such these departures are not 'clockface' throughout the day although there is a cluster around the *XX:48-54* slot.

6.5.10 Trains from Glasgow Central via Carstairs arrive at Edinburgh Waverley at 0716 (from Motherwell) 0834 (continues to North Berwick), 1054, 1304, 1523, 1709 (continues to North Berwick) and 2059. There is a less regular pattern to these arrivals at Waverley than there is for departures.

6.5.11 As can be seen here though, the principal of through services between East Lothian and Glasgow is therefore already established.

### Summary

6.5.12 In summary Waverley **arrivals** from the west are:

- Shotts: *XX:10* and *XX:46-51*;
- Airdrie-Bathgate: *XX:13*, *XX:28*, *XX:43* & *XX:58*; and
- Carstairs: irregular.

6.5.13 Potential Waverley departures for a new Berwick service are:

- *XX:10* and *XX:40* – potential links to Shotts or Airdrie-Bathgate services.

6.5.14 Waverley **departures** to the west are:

- Shotts: *XX:26* and *XX:56*;
- Airdrie-Bathgate: *XX:07*, *XX:21*, *XX:37* & *XX:48*; and
- Carstairs: irregular but some around *XX:48-54*.

6.5.15 Potential Waverley arrivals from a new Berwick service are:

- *XX:10* and *XX:50* – potential links to Airdrie-Bathgate services, Shotts, or some Carstairs services.

- 6.5.16 Overall it would seem that links to either service could potentially be achieved although clearly some reworking of timetables would be required. Alternatively, linkages between all or some of these different services could be developed eg Berwick – Edinburgh – Shotts / Carstairs – Glasgow. In addition, the programmed electrification of the Stirling – Alloa / Dunblane line could open up further opportunities for through services.
- 6.5.17 If these linkages could be achieved, the requirement for new rolling stock and thus the costs attributed to the new services could be reduced, depending on the level of utilisation of the current rolling stock. The hypothetical benefits from this increased connectivity are being separately estimated (see Chapter 7).

### 6.6 Consultation

- 6.6.1 The above analysis formed the basis of a meeting held between MVA, SEStran, Network Rail and ScotRail on 18 January 2013. The purpose of the meeting was to obtain the views of ScotRail and Network Rail on the operational viability of a new Edinburgh-Berwick local service, and also ensure that any infrastructure issues were taken on board.
- 6.6.2 The above RailSys modelling exercise was undertaken on the basis of 'present day' services, ie post EUREKA timetable. The nature of train planning is such that detailed train path and timetabling data is not available for future years – this evolves on an annual basis. However if it was felt at the time of the 2011 Study that EUREKA represented a one off step change which would produce a relatively stable position for the medium term in which the potential for new paths could be identified.
- 6.6.3 However, it is now clear that there will be further significant revisions to timetables in the medium term which will impact on the rail path analysis undertaken to date, including:

- East Coast Mainline timetables will be revised in May 2014<sup>10</sup>;
- Network Rail are working on a 2018 timetable study which will include services between Edinburgh and Berwick, including revisions to freight paths; and
- Transport Scotland's Edinburgh Glasgow Improvement Programme (EGIP) / CP5 will lead to a major revision of train services through Edinburgh Waverley. This will affect docking arrangements at Waverley. Millerhill depot will also be used in future for storing some Airdrie-Bathgate line rolling stock in the off peak period (six car trains will reduce to three during this period). This will increase the number of trains using the section of line between Waverley and Portobello Junction.

#### Rolling Stock and Through Services

- 6.6.4 An opportunity is created however by the requirement noted above to run 'spare' rolling stock to Abbeyhill or Millerhill, as this rolling stock could conceivably be used for a Berwick service, at least at some points during the day.
- 6.6.5 From an operator's perspective, extending the physical distance that train services cover increases the operational risk associated with those services. This would seem to preclude

---

<sup>10</sup> Note though that at a subsequent meeting, Network Rail advised that there will be no significant changes to the EUREKA timetable in the foreseeable future and that many of the programmed improvements on the line have been factored into the timetable.

Airdrie-Bathgate line services running to Berwick as they start in Helensburgh / Milngavie and this would create a very long route with a high associated performance risk. It is suggested that Dunblane / Alloa and potentially Shotts or Carstairs line services (all post CP5 electrification) may be more suitable candidates to run through to Berwick.

- 6.6.6 A further complication will come with the introduction of Borders Rail services in terms of platform occupancy at Waverley. The running times on the route will mean that two platforms will be required to the east of Waverley to accommodate this service, further diminishing platform availability for any new services to and from the east. In general, any through running of services to Berwick could improve platform availability to the east of Waverley although clearly this would not remove pressure on platform availability elsewhere.
- 6.6.7 Also, in general, the post EGIP rolling stock situation means that train sets will actually be less interchangeable between routes, due to the range of train specifications and types. This clearly impacts on the scope for existing train sets to run on to Berwick, although the introduction of an entire fleet of Edinburgh based EMUs may create a new opportunity in this respect.
- 6.6.8 In summary, there are clearly a range of significant operational and infrastructure related measures which are due to come on stream in the medium term which could potentially impact on any new Berwick service. This means that there **remains uncertainty in terms of the operational practicalities of running a Berwick local service on the ECML**. These uncertainties cannot be resolved with any clarity until a clearer picture of post-EGIP train services and associated operational and rolling stock arrangements are known, in particular with respect to train operations at Edinburgh Waverley. It is suggested that proposals for the route continue to be developed in the knowledge that the operating environment may evolve over the development period, and contingency planning can be built in to the process.
- 6.6.9 What can be said is that the 2011 Study did suggest that such a service could potentially be delivered in outline terms. As such, unless there are major changes in the quantum of passenger and freight services on this stretch of line, **it would seem reasonable to assume that the basic potential for operational viability of an Edinburgh-Berwick service should hold** – albeit there would clearly have to be a detailed train planning exercise at a later stage to accommodate this. Alternatively, should a commitment to this service be made, it could be possible to provision for this in the detailed future planning of rail services on the ECML, and indeed through and at Edinburgh itself.

### Dunbar Station

- 6.6.10 Dunbar station is a single platform station with the platform located north of the up line. This means that northbound / westbound trains calling at Dunbar have to cross the up line to access the station platform and cross again having left the station. Although this manoeuvre does have the benefit of creating a passing loop (other local stations served by North Berwick trains stop on the main line), it clearly creates a conflict between northbound and southbound trains, ie in order for a northbound train to stop at Dunbar, there must be a safe path between southbound trains.
- 6.6.11 Any new platform which served the down line directly would clearly remove the need for this crossover and therefore remove this constraint. It would also lead to a journey time saving

of around two minutes. In the context of the RailSys work undertaken in the 2011 Study, this did not emerge as a major constraint on path identification. However, any new down line platform would clearly increase capacity and flexibility (assuming the platform is off the main line) which could only be beneficial. There may also be minor journey time savings as a result of a second platform.

- 6.6.12 Note though that there are number of residential properties in close proximity to the south of the railway line, although there is an area of green space to the north of the line west of the station. A detailed assessment would have to be undertaken to establish the practicality of this proposal as it may have an advantageous business case independent of the new service.

### 6.7 Summary

- 6.7.1 This Chapter has outlined the current position regarding the train paths identified in the 2011 Study and present day timetables, with a view to the potential running of through services. In addition, a number of uncertainties have been highlighted which could have an impact on the operational viability of a new Edinburgh – Berwick service. These issues will have to be taken into account in the future development of the new service.
- 6.7.2 Chapter 7 now details the modelling and appraisal work undertaken to develop the business case for a new Edinburgh-Berwick service.

# 7 Modelling and Appraisal of Services

## 7.1 Introduction

7.1.1 In the 2011 Study, patronage forecasts and benefits calculations for the proposed services considered were based in the main on the use of MOIRA / PDFH, supplemented by bespoke new station analysis derived by benchmarking against similar stations. This approach reflected the analysis previously undertaken as part of Network Rail's Route Utilisation Study (RUS) and was retained for consistency with this earlier work.

7.1.2 However, this (MOIRA) approach is most effective in estimating the impacts of service changes between destinations where there are already train services and where the changes are relatively modest, as it is based on a set of elasticities. MOIRA also does not deal with new stations being added to the network and takes no account of train capacities.

7.1.3 MOIRA also takes no specific account of the local context in terms of eg:

- the extent of new developments which could impact on rail demand;
- the nature of local inter-modal competition ie;
  - (i) bus versus rail competition or
  - (ii) car versus rail competition and the impact of traffic congestion; and
- the impact of P&R and local walk-in catchments.

7.1.4 In this case, we are also looking at introducing new services which would link stations across central Scotland directly, without interchange in Edinburgh – a step change beyond the normal applicability of MOIRA. In addition, a key aspect of this study is the requirement to assess the non-rail options on a like-for-like basis with the rail-based options for the corridor.

7.1.5 As such it was determined that the SEStran Regional Model (SRM)) was the most appropriate tool for this analysis. This multi-modal forecasting model provided a platform to test all the options for the corridor on an equal footing. The SRM forms part of Transport Scotland's national modelling hierarchy (LATIS) and is supported by SEStran and Transport Scotland. It comprises a public transport model (using CUBE Voyager software), and road model (using SATURN software) and a bespoke Demand model which uses the same structure as the national Transport Model for Scotland (TMfS:07). The model therefore represents the best available strategic multi modal modelling tool covering the SEStran area.

## 7.2 Model Enhancements

7.2.1 Any modelling exercise benefits for targeted model enhancements bespoke to the measures which are being assessed. An initial set of tests highlighted a number of areas where the modelling could be enhanced to provide a more robust platform for forecasting. In overview, the enhancements made were as follows:

- refinement of zone connector coding lengths – new bespoke zone connector lengths were coded for all zones of relevance to the East Lothian rail corridor (previously bus

and rail had a common connector distance based on the size of the zone). This created a more realistic representation of walk times to bus stops (shorter) and the railway station (longer) in each zone improving the modelling of bus – rail competition;

- ECML service coding was updated to the present day in terms of run times and stopping patterns;
- selected (aggregate) road links within Edinburgh were coded with increased capacities in the forecast year as congested travel time by bus was excessive which was affecting bus – rail competition in the corridor;
- the model's boundary is the Scotland-England border and Berwick-upon-Tweed is therefore 'external' to the model – coding was enhanced in this area to better represent connectivity from the west (eg Coldstream) via Berwick for the Berwickshire zone and P&R at Berwick was incorporated as an option;
- additional road network was coded in Berwickshire to improve detail and facilitate the accurate coding of bus routing between the settlements; and
- enhancements were made to the Demand Model to improve the representation of new P&R options in an area with no previous P&R provision.

7.2.2 The end result of this process was a model with significantly improved accuracy and functionality in the East Lothian and Berwickshire areas.

### 7.3 Testing Programme

7.3.1 A number of options were tests as follows:

- R1 – 'Core' hourly Edinburgh–Dunbar–Berwick service stopping at all existing stations plus new stations at East Linton and Reston; current North Berwick trains are unchanged. This test form the core of the reporting which follows;
- R2 – as R1 but with the Berwickshire station located at Burnmouth rather than Reston – the intention here is to test the *concept* of a station stop at Burnmouth compared to Reston – it should be noted that no engineering assessment has been made of this option at Burnmouth;
- R3 – as R1 but with the new service connected to Airdrie-Bathgate line services to provide illustrative direct connectivity between East Lothian and Berwickshire to west Edinburgh and beyond;
- B1 – New 'express' coach from a new Reston P&R site, running direct from Berwickshire to Edinburgh; and
- B2 – New coach from a new Reston P&R site, running from Berwickshire to Edinburgh via Haddington.

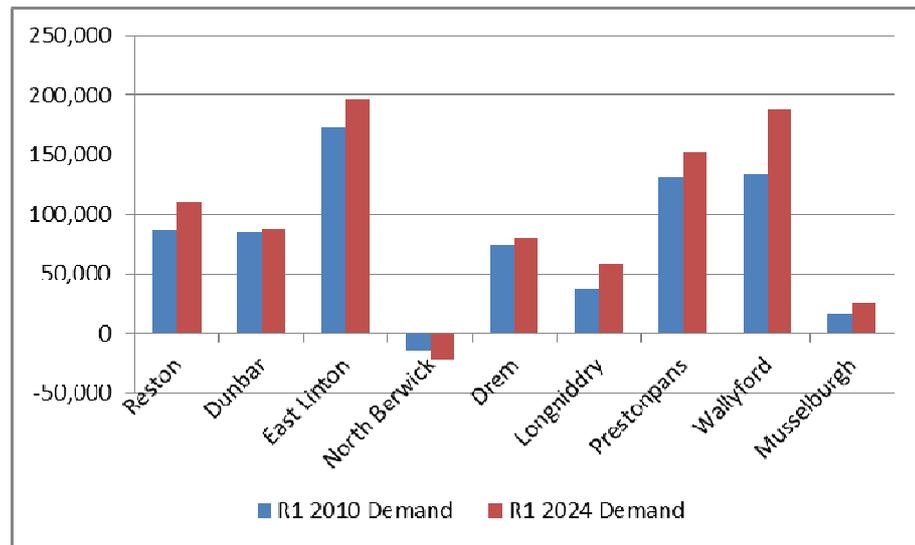
7.3.2 Each option was tested using a 2024 demand scenario. This demand scenario is based on the most up to date planning data scenario (ie land allocations) provided to SESplan and from the local authorities (including the emerging Scottish Borders Council Local Development Plan). As such it represents the best available data at the time, but it is recognised that this may change to some extent as the Strategic and subsequent Local Development Plans are finalised.

## 7 Modelling and Appraisal of Services

- 7.3.3 In addition each option was tested under a 2010 'present day' scenario. This can be broadly thought of as opening year demand, given the current economic situation.
- 7.3.4 The outputs from the 2010 and 2024 demand scenarios are used as inputs to the DfT's TUBA economic appraisal package. This in turn provides a 60 year estimate of the benefits associated with each option when compared to a Reference Case, in line with the requirements of STAG. The Reference Case used here reflects the current Transport Scotland LATIS Reference Case which contains only committed transport schemes such as Edinburgh Trams and the Borders Railway.
- 7.3.5 A new hourly Berwick service would significantly increase service frequency at the existing East Lothian stations. The SRM uses bespoke 'wait curves' to represent the impact of train frequencies on travel behaviour. A 60 minute headway (ie hourly service) equates to a 31 minutes perceived wait time, whilst a 30 minute headway (ie two trains per hour) reduces this perceived wait time to 23 minutes, a seven minute saving. This seven minutes represents a significant proportion of the total generalised time and we would expect this to have a significant impact on travel behaviour at these existing stations.
- 7.3.6 The public transport model also includes a 'crowding' functionality. When trains services approach their seated and 'crush' capacities the perceived cost of using these trains increases, thus altering the bus – train – car balance of costs and hence the modal share. An additional service increases capacity on the line so reducing or removing the crowding related costs. As such additional capacity releases suppressed demand where train services are operating at or near capacity.
- 7.3.7 Note that no Dunbar-only ScotRail services were included in the 'Reference Case'. It is assumed that the Berwick service would operate in place of the Dunbar only services, so it would not be meaningful to include this in the Reference Case.

### 7.4 Impact on Boardings

- 7.4.1 The SRM produces forecasts of the impact of the proposed Edinburgh-Berwick service at existing stations and also at the proposed new stations at East Linton and Reston.
- 7.4.2 For context, the 2001 Census data confirms that for commuting trips, despite the presence of North Berwick train services, bus is the overwhelming mode used in terms of public transport from East Lothian. For example, at Prestonpans of those who work in Edinburgh, 42% used public transport to work – comprising 38% using bus and only 4% using train. In Tranent, the equivalent figures were 26% bus and 2% train. A fairly small switch from bus to rail would therefore give rise to a large percentage change in rail boardings and this is evident in the forecasts obtained here.
- 7.4.3 Figure 7.1 below shows the forecast change in station boardings & alightings at all relevant stations relative to the Reference Case for both the 2010 and 2024 demand scenarios for R1 (ie the 'core' new service scenario). Note that for East Linton and Reston the change is of course from a zero starting point.

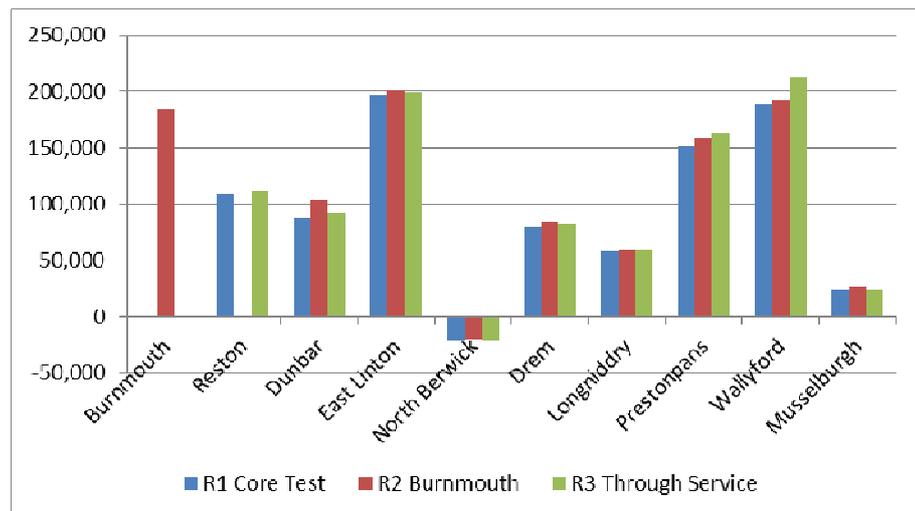


**Figure 7.1 R1 - Change in total boardings & alightings at existing and proposed stations (2010 & 2024)**

7.4.4 Overall, at existing stations, boardings are forecast to rise by 41% with 2010 demand and by 37% in 2024, relative to each’s Reference Case as a result of the introduction of the new Berwick local service. Wallyford is forecast to see significant growth as a result of the doubling of train frequency, as this site has abundant parking supply. A small transfer from North Berwick is forecast as a result of the increased train frequencies at eg Drem.

7.4.5 In terms of the absolute figures, the East Linton forecast would suggest a total level of usage between that of Prestonpans and Longniddry. For Reston, the forecast usage is closer to the level of Drem. These findings are broadly in line with expectations.

7.4.6 The overall boardings and alightings figures for tests R2 (Burnmouth) and R3 (through service) are very similar to those above. This is shown in Figure 7.2 below where additional station boardings and alightings are shown for the three tests in 2024.

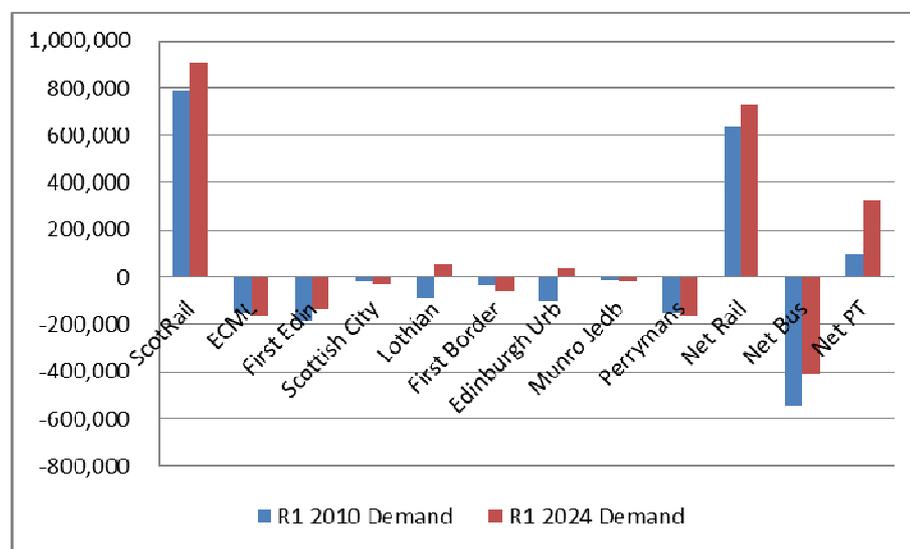


**Figure 7.2 Change in total boardings & alightings at existing and proposed stations (2024)**

7.4.7 The exception is Burnmouth (test R2) however where forecast boardings are significantly higher than at Reston, eg in 2024 forecast boardings and alightings are around 110,000 at Reston whereas the figure for Burnmouth is around 185,000. This is mainly due to fact that there are good existing bus links between Eyemouth and Burnmouth (eg five buses run between Eyemouth and Burnmouth between 0700 and 0900). Links between Eyemouth and Reston are much less good at present but could be enhanced were the station to be constructed at Reston (although this may require additional subsidy). Note that the model is not forecasting significant rail travel between Burnmouth and Berwick on the new service. In the main this is due to Berwick being external to the modelled area and therefore not modelled explicitly. Whilst there is the potential for some local rail travel from Burnmouth to Berwick, residents of Eyemouth would be unlikely to transfer from bus to rail at Burnmouth to travel on to Berwick by rail, if already on the bus. On the other hand some P&R use may be anticipated via Burnmouth from those without free parking in Berwick.

7.4.8 The forecast increase at Burnmouth relative to Reston should however be seen in the context of the whole route. Replacing Reston with Burnmouth in the test leads to an increase of 4% in total East Lothian / Scottish Borders station boardings and alightings, ie the impact of this change is small in the overall context of the scheme. In addition, the opening of Burnmouth is forecast to lead to a larger transfer from Berwick than would be the case with Reston. Note also that rail passengers switching from Berwick-Edinburgh to Burnmouth-Edinburgh would lead to a reduction in rail revenue.

7.4.9 In general, the increase in rail boardings comes from a number of sources but the main one is transfer from bus. Figure 7.3 below shows the forecast annual change in boardings associated with the Core R1 test by broad operator group, for both the 2010 demand and 2024 demand scenarios. It also shows the overall net change in boardings for all rail and all bus, together with the aggregate change in total public transport boardings.



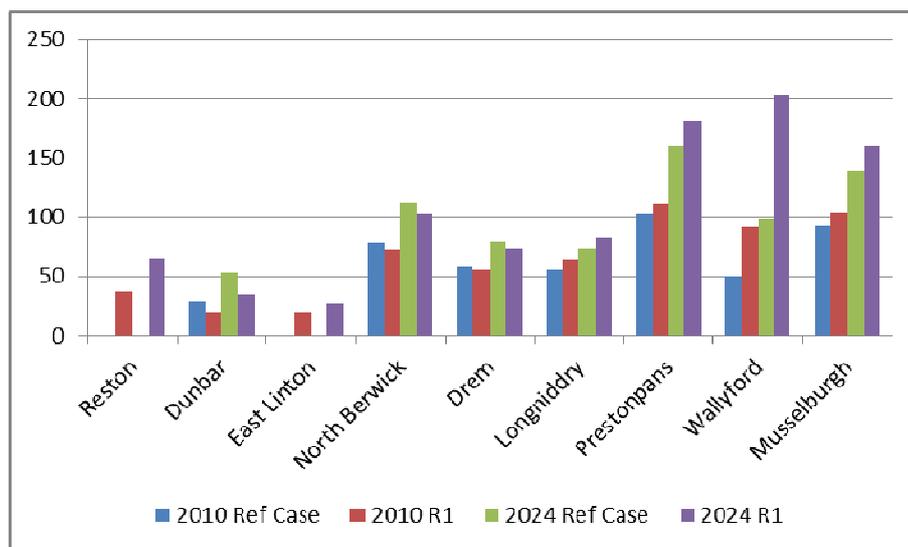
**Figure 7.3 R1 - Change in Rail and Bus Boardings by Operator (2010 & 2024)**

7.4.10 It can therefore be seen that the new ScotRail service is forecast to lead to a transfer from ECML trains (calling at Berwick and Dunbar (ie both East Coast and Cross Country)). There is also a transfer from the various bus operators who run services in the corridor, notably Perryman's. The pattern of these changes is the same in both scenarios with the scale of change being larger in 2024. In both years there is a rise in the overall use of public

transport and it can be seen that this increase is much more significant in 2024. This will be a reflection of increased traffic congestion changing the balance of costs between car and public transport in the later year. The increase in public transport will comprise an element of modal shift from car and also an element of changing destination choice, eg people now travelling to Edinburgh rather than locally.

**Park & Ride**

7.4.11 The service also has a significant impact on the volume and pattern of use of park and ride across East Lothian and Berwickshire, as can be seen in Figure 7.4 below. The figure shows modelled peak period park and ride use for the reference and test case (R1) for both modelled years. Note that the model allows for the release of suppressed demand for park and ride.



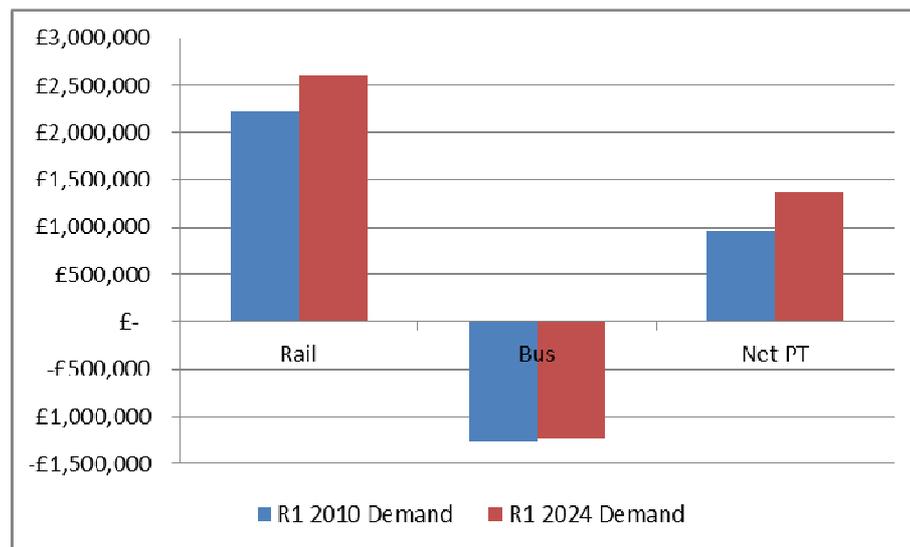
**Figure 7.4 R1 – Forecast AM peak period park and ride usage (2010 & 2024)**

7.4.12 Overall the demand for park and ride in the corridor is forecast to increase by 30% in 2024 as a result of the new train service. The biggest increase is seen at Wallyford where, as noted above there is plentiful spare parking capacity. Demand at Dunbar drops as a result of the measure with people transferring to Reston and East Linton. This would in all probability remove any requirement to increase parking capacity at Dunbar. These forecasts suggest that car parks of 50 spaces and 100 spaces would be sufficient at East Linton and Reston respectively.

**7.5 Revenue, Operating Costs and Subsidy**

**Revenue**

7.5.1 The forecast changes in rail boardings noted above clearly give rise to increased rail revenue and reduced bus revenue. The forecasts for the 2010 and 2024 demand scenarios are shown in Figure 7.5 below for the core test R1.



**Figure 7.5 R1 – Forecast annual revenue changes (2010 & 2024)**

- 7.5.2 The increase in net rail revenue therefore outweighs the reduction in bus revenues by some margin, resulting in net gains in public transport revenue. For the 2010 Scenario the net forecast net gain in rail revenue of £2.2m comprises an additional £3.1m in ScotRail revenue and a reduction of £0.9m to ECML operators.

### Operating Costs

- 7.5.3 Detailed operating cost data were obtained from ScotRail during the 2011 Study and this cost data has been carried over into this study. Train operating costs comprise:

- Variable operating costs – incurred per mile of operation;
  - Track access charges;
  - Fuel costs;
  - Maintenance costs;
- Wage Costs; and
- Lease Costs.

- 7.5.4 As discussed Chapter 6, we cannot at this stage be certain as to the number of new train sets which would be required to operate this service. The number of new train sets impacts on wage costs and lease costs but not the variable operating costs as noted above as these costs are incurred regardless of whether the rolling stock is new or already existing within the ScotRail fleet.

- 7.5.5 The following assumptions have been made in building up the operating costs:

- 18 return journeys per day (0600-2400) between Edinburgh & Berwick @ 52 miles each way, Monday-Saturday;
- 11 return journeys per day (0600-2400) between Edinburgh & Berwick @ 52 miles each way, Sunday (based on a comparison with North Berwick service patterns); and

- each additional train set comprises three vehicles<sup>11</sup>, two drivers and two guards to cover the operating day. Additional staff cover has been factored into the costs. Crew costs could potentially be reduced by using selective door operation.

7.5.6 This gives rise to the annual train operating costs for the Berwick service shown in Table 7.1 below. The table shows how these costs are heavily influenced by the number of new train sets required to operate the service. The full potential range of new train sets required, from zero to three are included here for completeness.

7.5.7 Note that we are assuming 2016 opening year for the purposes of appraisal, and the 2010 demand scenario has been taken as a proxy for this.

**Table 7.1 Estimated annual operating costs for Edinburgh-Berwick service**

Number of New Train Sets Required	Annual Operating Cost 2016 Opening Year (£m)	Annual Operating Cost 2024 (£m)
3	4.162	4.093
2	3.753	3.707
1	3.344	3.320
0	2.935	2.935

7.5.8 Following the assumptions previously made by Network Rail, track access charges, fuel costs and daily maintenance costs remain the same in real terms over time. Staff costs increase in line with GDP and lease costs are assumed fixed in nominal terms for 30 years and there is then an allowance for the purchase of new stock. Note the real terms reduction in lease costs offsets the increase in wage costs so that operating costs reduce over time. Lease costs increase again beyond 2039 and this is captured in the 60 year appraisal detailed below.

#### **Annual Subsidy Requirement**

7.5.9 The operating cost data and rail revenue forecasts can be used to estimate the annual operating subsidy required for the proposed new service.

7.5.10 The resulting figures are set out below in Figure 7.6 for the assumed 2016 opening year, and in Figure 7.7 for 2024.

<sup>11</sup> This assumption has been carried over from the 2011 Study. It is understood though that the current North Berwick service uses 4-carriage Class 380 trains, so this assumption may be an under-estimate.

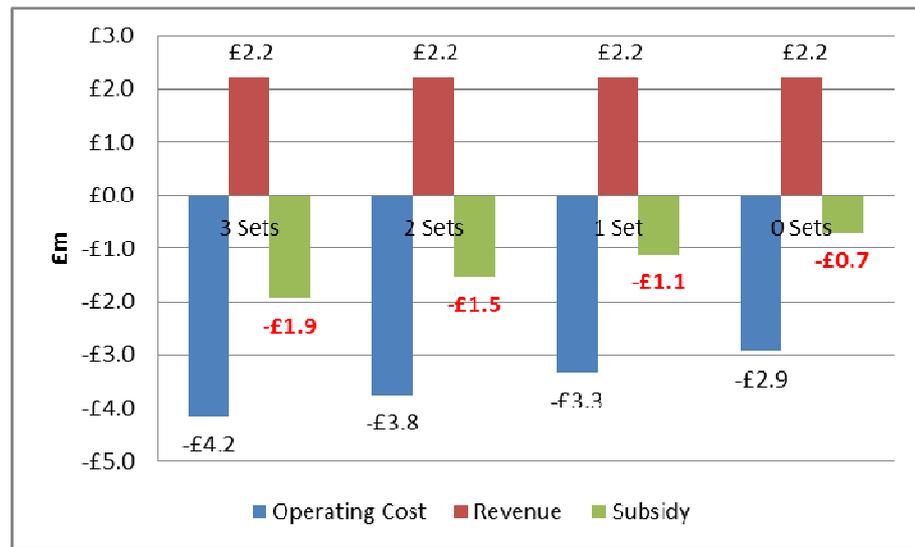


Figure 7.6 R1 – Annual rail operating cost, revenue & subsidy, 2016 opening year

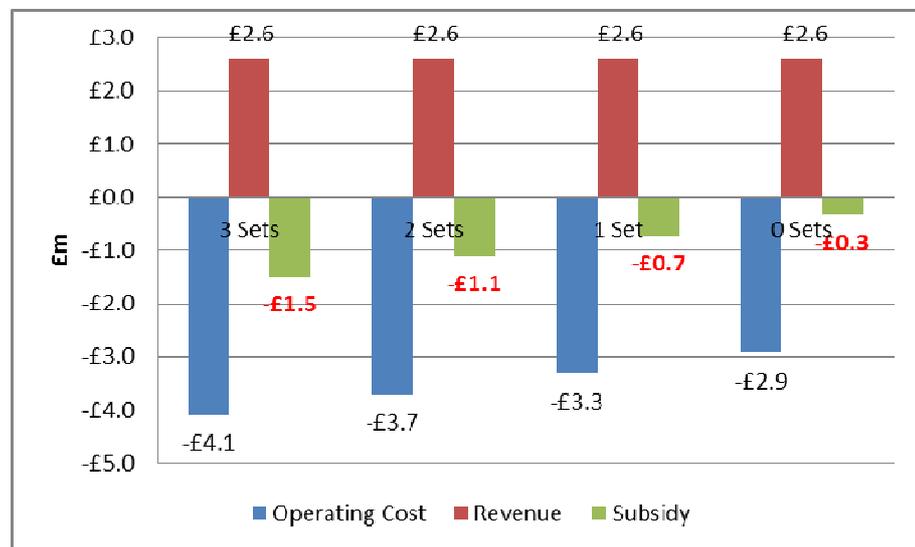


Figure 7.7 R1 – Annual rail operating cost, revenue & subsidy, 2024

7.5.11 It can therefore be seen that the annual rail subsidy depends heavily on the number of train sets required. In 2016, subsidy would range from £1.9m (three new trains) to £0.7m (zero new trains). In 2024 these figures are forecast to reduce to £1.5m and £0.3m respectively. The forecast reductions in bus-based revenue noted above should also be taken into account as this could lead to additional subsidy to support bus services (these are included in the 60 year appraisal figures which follow).

## 7.6 60 Year Appraisal

7.6.1 The DfT’s TUBA programme has been used to undertake a 60 year economic appraisal of each of the rail and bus options. This analysis is fully compliant with the STAG Transport Economic Efficiency (TEE) requirements.

## 7 Modelling and Appraisal of Services

- 7.6.2 In addition to the operating costs described above, the **construction costs** for East Linton and Reston stations were carried over from the 2011 Study. An earlier 2004 Study had estimated these costs at a total of £5.58m. This cost has been increased in line with construction sector inflation, optimism bias has been applied, and the costs have been discounted appropriately assuming a construction period of 2014-15, and an opening year of 2016.
- 7.6.3 The two coach tests B1 and B2 were also included in this TEE analysis for completeness. Operating costs for each bus service have been estimated at £625k per annum in today's prices based on an hourly service being provided by five buses (assumed cost of £220k each). These costs have been assumed to increase at 2.5% per annum and new buses have been assumed every 12 years.
- 7.6.4 A 60 year appraisal period of 2016-75 has been assumed and discount rates applied as per STAG. Table 5.2 below provides the TEE outputs for R1 (Core), R2 (Burnmouth), R3 (link to Airdrie-Bathgate services), B1 (Express coach) and B2 (Coach via Haddington). In Table 5.2, the costs associated with three new train sets have been assumed. Table 5.3 then shows the same results if only two, one or no new train sets are required to operate the service. The tables provide the standard TEE outputs as produced by TUBA.
- 7.6.5 Note that the key difference in the presentation of these results compared to the 2011 Study is in the treatment of Grant / Subsidy. Here the net cost to the private sector provider (ie rail and bus operators) is zero, ie the net operating loss (revenue – operating costs) is cancelled out by a Grant / Subsidy payment which appears here as a central government cost. Note also that the Grant / Subsidy covers all public transport, not just rail. Previously (in the 2011 Study) the Grant / Subsidy was not explicitly stated but was implicit, but the end result is the same in both cases.
- 7.6.6 The main aspects of Table 7.2 are as follows:

- consumer benefits – travel time and costs savings to commuters;
- consumer benefits – travel time and costs savings for other travel purposes;
- business benefits – travel time and costs savings to business travellers;
- *note that these three trip purposes are separately represented in the SEStran Regional Model*
- private sector provider impacts – as noted above, netted out to zero;
- local government funding – assumed zero but contributions to station construction can be added – note that this will not affect the overall BCR unless this cost is completely taken out of the equation;
- central government funding – station investment costs plus grant / subsidy payment;
- non user benefits – benefits accruing to other road users through reduced road congestion;
- Present Value of Benefits (PVB);
- Present Value of Costs (PVC);
- Net Present Value (NPV) = PVB – PVC;

## 7 Modelling and Appraisal of Services

- Benefit Cost Ratio (BCR) =  $PVB / PVC$ ; and
- all figures are discounted and presented in 2002 prices and values in line with TUBA. Note that additional tax and national insurance payable by extra staffing has not been included in this analysis.

Table 7.2 Summary of TEE Results (Three new train sets) (£'000)

Runs	Reston R1	Burnmouth R2	A2B R3	Exp Bus B1	Hadd Bus B2
<b>Consumer - Commuting user benefits-All Modes</b>					
Travel Time	£ 21,469	£ 22,498	£ 22,248	£ 1,238	£ 4,095
Vehicle operating costs	£ -	£ -	£ -	£ -	£ -
User charges	-£ 4,321	-£ 3,642	-£ 4,639	£ 228	-£ 1,197
During Construction & Maintenance	£ -	£ -	£ -	£ -	£ -
<b>NET CONSUMER - COMMUTING BENEFITS</b>	<b>£ 17,149</b>	<b>£ 18,856</b>	<b>£ 17,609</b>	<b>£ 1,466</b>	<b>£ 2,898</b>
<b>Consumer - Other user benefits - All Modes</b>					
Travel Time	£ 19,386	£ 24,104	£ 20,252	£ 12,673	£ 5,903
Vehicle operating costs	£ -	£ -	£ -	£ -	£ -
User charges	-£ 923	£ 2,464	-£ 925	-£ 850	-£ 704
During Construction & Maintenance	£ -	£ -	£ -	£ -	£ -
<b>NET CONSUMER - OTHER BENEFITS</b>	<b>£ 18,463</b>	<b>£ 26,568</b>	<b>£ 19,328</b>	<b>£ 11,823</b>	<b>£ 5,199</b>
<b>Business - All Modes</b>					
Travel Time	£ 37,141	£ 37,165	£ 37,905	-£ 2,246	-£ 1,440
Vehicle operating costs	£ -	£ -	£ -	£ -	£ -
User charges	-£ 130	£ 91	-£ 101	£ 99	-£ 135
During Construction & Maintenance	£ -	£ -	£ -	£ -	£ -
Subtotal	£ 37,011	£ 37,257	£ 37,804	-£ 2,147	-£ 1,575
<b>Private Sector Provider Impacts</b>					
Revenue	£ 15,958	£ 10,173	£ 18,377	£ 2,770	£ 3,852
Operating costs	-£ 65,703	-£ 65,703	-£ 65,703	-£ 13,006	-£ 13,006
Investment costs	£ -	£ -	£ -	£ -	£ -
Grant/subsidy	£ 49,745	£ 55,530	£ 47,326	£ 10,236	£ 9,154
Subtotal	£ -	£ -	£ -	£ -	£ -
<b>Other business Impacts</b>					
Developer contributions	£ -	£ -	£ -	£ -	£ -
<b>NET BUSINESS IMPACT</b>	<b>£ 37,011</b>	<b>£ 37,257</b>	<b>£ 37,804</b>	<b>-£ 2,147</b>	<b>-£ 1,575</b>
<b>TOTAL</b>					
Present Value of Transport Economic Efficiency Benefits (TEE)	£ 72,623	£ 82,681	£ 74,741	£ 11,142	£ 6,522
<b>Public Accounts</b>					
<b>Local Government Funding - All Modes</b>					
Revenue	£ -	£ -	£ -	£ -	£ -
Operating costs	£ -	£ -	£ -	£ -	£ -
Investment costs	£ -	£ -	£ -	£ -	£ -
Developer Contributions	£ -	£ -	£ -	£ -	£ -
Grant/subsidy payments	£ -	£ -	£ -	£ -	£ -
NET IMPACT	£ -	£ -	£ -	£ -	£ -
<b>Central Government Funding: Transport - All Modes</b>					
Revenue	£ -	£ -	£ -	£ -	£ -
Operating costs	£ -	£ -	£ -	£ -	£ -
Investment costs	£ 7,370	£ 7,370	£ 7,370	£ -	£ -
Developer Contributions	£ -	£ -	£ -	£ -	£ -
Grant/subsidy payments	£ 49,745	£ 55,530	£ 47,326	£ 10,236	£ 9,154
NET IMPACT	£ 57,115	£ 62,900	£ 54,696	£ 10,236	£ 9,154
<b>Central Government Funding: Non-Transport</b>					
Indirect Tax Revenues	-£ 2,432	-£ 1,567	-£ 2,832	£ 433	£ 580
<b>TOTALS</b>					
Broad Transport Budget	£ -	£ -	£ -	£ -	£ -
<b>Wider Public Finances</b>	<b>-£ 2,432</b>	<b>-£ 1,567</b>	<b>-£ 2,832</b>	<b>£ 433</b>	<b>£ 580</b>
<b>Analysis of Monetised Costs and Benefits</b>					
Greenhouse Gases	£ -	£ -	£ -	£ -	£ -
Economic Efficiency: Consumer Users (Commuting)	£ 17,149	£ 18,856	£ 17,609	£ 1,466	£ 2,898
Economic Efficiency: Consumer Users (Other)	£ 18,463	£ 26,568	£ 19,328	£ 11,823	£ 5,199
Economic Efficiency: Business Users and Providers	£ 37,011	£ 37,257	£ 37,804	-£ 2,147	-£ 1,575
Wider Public Finances (Indirect Taxation Revenues)	-£ 2,432	-£ 1,567	-£ 3,046	-£ 433	-£ 580
<i>non user benefits (TUBA road model run)</i>	£ 6,137	£ 8,886	£ 4,915	£ 1,206	£ 4,893
<b>Present Value of Benefits (PVB)</b>	<b>£ 76,329</b>	<b>£ 90,000</b>	<b>£ 76,610</b>	<b>£ 11,915</b>	<b>£ 10,835</b>
Broad Transport Budget	£ -	£ -	£ -	£ -	£ -
<b>Present Value of Costs (PVC)</b>	<b>£ 57,115</b>	<b>£ 62,900</b>	<b>£ 54,696</b>	<b>£ 10,236</b>	<b>£ 9,154</b>
<b>OVERALL IMPACTS</b>					
Net Present Value (NPV)	£ 19,214	£ 27,100	£ 21,913	£ 1,679	£ 1,681
Benefit to Cost Ratio (BCR)	1.34	1.43	1.40	1.16	1.18

7.6.7 Some of the key points to emerge from the above are as follows:

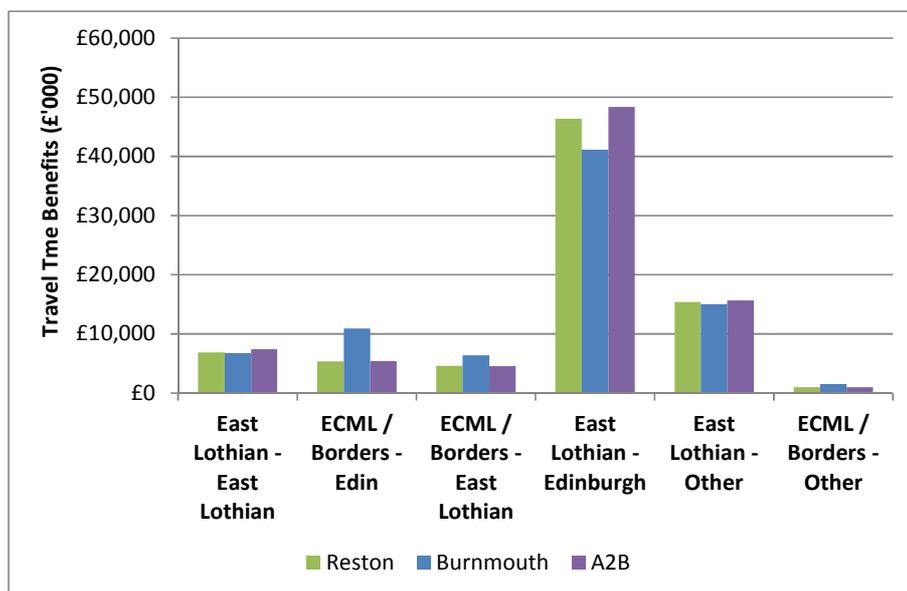
- the key outputs in general are broadly of a similar order of magnitude to those reported in the 2011 Study;
- in general, compared to the 2011 Study, costs are similar, user benefits are higher but net public transport revenues are lower (as this approach fully accounts for reductions in bus revenue, unlike the 2011 approach) – these two factors cancel out to some extent but we do see higher outturn BCRs in general;
- all five tests return a positive NPV and BCR and therefore represent value for money;
- however, although they produce a positive BCR, the benefits associated with the coach tests (PVB) are less than 15% of those for the rail-based options. This confirms the findings of Chapter 3 in that the coach-based options will not provide the quantum of benefits required or meet the transport planning objectives set;
- the Present Value of Benefits (PVB) for the three rail tests are in the range of £75m-£90m;
- the core test (R1) returns a BCR of 1.34, an increase from the 1.10 reported in the 2011 Study. However the sensitivity test reported in 2011 with respect to additional bus / rail revenue resulted in a BCR of only 0.78, and this is perhaps a more appropriate comparison. The NPV is also now more than double the previously reported value;
- locating the new station at Burnmouth rather than Reston improves the BCR to 1.43 (note that we have no data on potential construction costs at Burnmouth so have assumed the same costs as Reston). The increase in benefits relative to Reston is in line with the increase in passenger boardings, but note that the feasibility of locating a station at Burnmouth is not proven;
- extending the service to run on the Airdrie-Bathgate line increases the core BCR slightly to 1.40, but the operational practicality of this option cannot be established for certain at this stage as has been noted previously. It could be anticipated that linking the prospective Berwick service to a different service, eg Shotts would provide a similar result;
- it can be seen that the construction costs represent only a small proportion of total costs and as such funding contributions to this which reduce central government costs (eg from developer contributions or local government) would have only a relatively modest impact on the BCR – for example;

– excluding the capital costs from the core Reston test increases the BCR from 1.34 to 1.53. The equivalent figures for the Burnmouth and Airdrie-Bathgate tests are 1.62 in both cases.

7.6.8 The primary source of benefits is monetised travel time savings. Figure 7.8 below shows the distribution of the travel time benefits by broad movement for each of the three tests as follow:

- East Lothian to / from East Lothian;
- ECML external (ie Berwick and south) and Borders to / from Edinburgh;
- ECML external (ie Berwick and south) and Borders to / from East Lothian;

- East Lothian to / from Edinburgh;
- East Lothian to / from Other (ie rest of Scotland); and
- ECML external (ie Berwick and south) and Borders to / from Other (ie rest of Scotland).



**Figure 7.8 Distribution of Travel Time Benefits**

7.6.9 It can therefore be seen that the large majority of benefits are generated from travellers between Edinburgh and East Lothian. These benefits are associated with the higher frequency at existing stations as well as the benefits brought about by the re-opening of East Linton station. The travel volumes here are also the highest. Other points to note are:

- the Burnmouth test provides greater benefits for travel between ECML / Borders and Edinburgh, but benefits between East Lothian and Edinburgh are reduced (potentially due to the extra loading on the train from Burnmouth *vis a vis* Reston); and
- the through running to the Airdrie-Bathgate line provides slightly higher benefits to / from the rest of Scotland (other).

7.6.10 This figure underlines that although the potential service runs to Berwickshire, **the large majority of the benefits of the line are manifested in travel to and from East Lothian**. This underlines the case for stopping trains at as many East Lothian stations as possible. If this new train stopped only at eg Dunbar, East Linton and Musselburgh, many of these benefits would be lost.

7.6.11 As has been noted above, the number of new train sets required clearly has a major influence on the financial viability of the service. Table 7.2 showed the full TEE results assuming a 'worst case' of three new train sets being required.

7.6.12 Table 7.3 below now shows how the BCR of the three rail schemes varies with the new rolling stock requirement.

**Table 7.3 Rail Tests – BCRs by number of new train sets required**

Number of New Train Sets Required	R1 Core	R2 Burnmouth	R3 A2B
3	1.34	1.43	1.40
2	1.52	1.60	1.60
1	1.75	1.82	1.86
0	2.07	2.11	2.23

7.6.13 Any reduction in new rolling stock requirement from the core assumption of three therefore has a significant positive impact on the BCR.

#### **LDHS Dunbar Stops**

7.6.14 The introduction of a Berwick to Edinburgh stopping service could provide the opportunity to reduce LDHS service stops at Dunbar, thus potentially generating further benefits to long distance travellers and improving the 'case' for the new service to Berwick-upon-Tweed.

7.6.15 A sensitivity test was undertaken here to explore this further comprising the following:

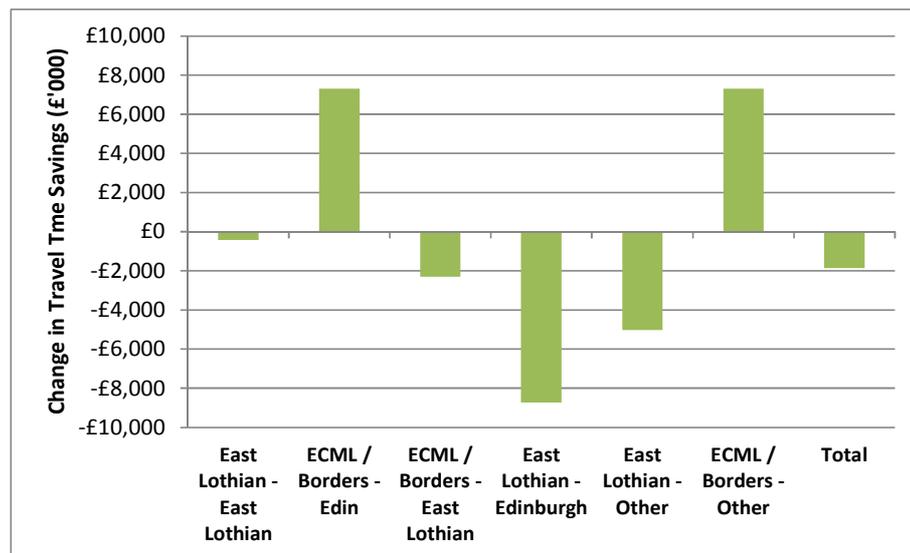
- all East Coast and Cross Country service stops at Dunbar were removed;
- a three minute journey time reduction was coded on these services between Edinburgh and Berwick-upon-Tweed; and
- the local stopping ScotRail service to Berwick is included.

7.6.16 The impacts of this test are therefore a combination of (i) reduced journey times for *some* LDHS passengers (ie only a proportion of current Cross Country / East Coast trains call at Dunbar); and (ii) increased journey times for those using Dunbar station.

7.6.17 At present the LDHS and 'direct' ScotRail infill services provide typical journey times of around 25 minutes from Dunbar to Edinburgh Waverley. Although the service pattern is irregular, there are for example 12 westbound services from Dunbar between 0630 and 1830, equating broadly to an hourly service.

7.6.18 In this sensitivity test these services are replaced by an hourly ScotRail 'stopping' service to Berwick with a journey time of around 35 minutes. So for users of Dunbar station, there is in effect a 10 minute increase in journey times and no improvement in service frequency. There is also a loss of direct southbound connectivity with train users now having to change at Berwick to continue southbound travel.

7.6.19 Figure 7.9 below shows how the balance of economic benefits (travel time) change with this test compared to the 'standard' Reston test (R1). It shows the change from the core R1 test to this No Dunbar LDHS stop sensitivity test.



**Figure 7.9 No Dunbar LDHS Test –Change in Travel Time Benefits from R1**

7.6.20 It can therefore be seen that:

- benefits increase relative to R1 for travel between ECML (England) / Borders and Edinburgh and the rest of Scotland (Other) – reflecting the reductions in journey time associated with not stopping at Dunbar;
- benefits reduce between East Lothian and Edinburgh / rest of Scotland, reflecting the deterioration in the level of service at Dunbar; and
- overall the net effect is a disbenefit in terms of travel time savings.

7.6.21 Table 7.4 below shows how results of the sensitivity test in terms of the key TEE parameters.

**Table 7.4 No Dunbar LDHS Test summary**

TEE Measure	Reston Core Test R1	No Dunbar LDHS Stops	Change
Present Value of Benefits	£76.3m	£71.6m	-£4.7m
Present Value of Benefits	£57.1m	£59.2m	+£2.6m
Net Present Value	£19.2m	£12.4m	-£6.8m
Benefit Cost Ratio	1.34	1.21	-0.13

7.6.22 The impact of this sensitivity test is therefore to reduce the benefit cost ratio on this basis – ie complete cessation of LDHS stops at Dunbar. It is however conceivable that a more selective approach to Dunbar LDHS stops could lead to a different outcome here.

## 7.7 Other STAG Criteria

7.7.1 The preceding sections in this chapter have focussed on the Economy criteria as this is overwhelmingly the key differentiating factor between the rail-based options, and this provides the focus for this study. This section briefly considers the other STAG criteria in the

context of the three main rail options: Edinburgh – Reston – Berwick rail; Edinburgh – Burnmouth – Berwick rail; and Glasgow – Bathgate – Edinburgh – Berwick.

### **Environment**

- 7.7.2 Each of the three rail options would require the construction of new railway stations in all cases at East Linton, and at either Reston or Burnmouth. Previous studies have identified the basic engineering viability of new stations at East Linton (two site options) and Reston (three site options) (see Edinburgh to Berwick Local Rail Study, 2004).
- 7.7.3 The STAG Part 1 Study noted that it is likely that a development of this type would have significant environmental effects. The construction effects associated with the new railway stations are likely to be noise and vibration intrusion, construction dust impacts and impacts related to temporary construction traffic, though the latter would be dependent on what haul routes are to be used. The requirement for haul roads, as well as any construction compounds, is likely to result in land take. As the location of the stations is not precisely known at this point, it is unclear what land use would be directly affected but there may be permanent land take. Biodiversity features including habitats, protected species and statutory designated sites could be affected depending on the exact station location. There are a number of designated cultural heritage sites in proximity to the railway line at East Linton and Reston, so there is a high probability that many will be affected either directly by the station developments, or have their setting affected. During operation, the new stations will create a permanent alteration of the landscape. However, through good design, the stations could be developed so that there are no, or negligible impacts on landscape or visual amenity.
- 7.7.4 Note that no new environmental appraisal work has been undertaken as part of this study. Once options have been developed for each station site, a series of ecological surveys will be required to be undertaken, in conjunction with requirements from the relevant statutory bodies.
- 7.7.5 As electric powered trains would in all probability operate the route, there would be zero environmental impact in terms of tail pipe emissions. The impact on greenhouse gas emissions would depend on the mix of electricity generation supplying the power.
- 7.7.6 In terms of potential benefits, a minor modal shift will occur from private car to public transport as a result of increased accessibility to rail services. This will result in a minor beneficial effect on local air quality and a reduction in CO<sub>2</sub> emissions. Overall the rail options are considered to have 'small negative impact'.
- 7.7.7 Coach-based options would involve increased tailpipe emissions which may be counteracted by any modal shift from car. The overall impact is considered to be neutral.

### **Safety**

- 7.7.8 The three options would reduce car kilometres somewhat and therefore give rise to a minor safety benefit. Railway stations in general also provide a safer and more secure environment for the travelling public compared to bus stops due to the presence of CCTV etc. The rail options therefore produce a minor benefit in this regard and the coach-based options would have no impact.

### Integration

- 7.7.9 All three rail options clearly provide improved transport integration with the rail network. Any train service which runs through Waverley station clearly provides an additional degree of integration.
- 7.7.10 The re-opened stations would also provide a new opportunity for future sustainable development in terms of land use planning and this also contribute to policy integration. Coach-based options would have no significant impact on integration.

### Accessibility and Social Inclusion

- 7.7.11 The Accessibility and Social Inclusion aspects of the proposed new train services and stations were outlined in Chapter 3. The new services could play a key role in the case of Berwickshire in particular in terms of improving access to the Edinburgh jobs market.
- 7.7.12 It is very unlikely that coach-based options would have a significant impact in terms of accessibility and social inclusion.
- 7.7.13 A summary of this brief appraisal against the STAG criteria is shown in Table 7.5 below, based on the seven point STAG scale.

**Table 7.5 Summary of appraisal against STAG criteria**

STAG Criteria	Edinburgh – Reston – Berwick	Edinburgh – Burnmouth – Berwick	Glasgow – Reston – Berwick	Coach Based P&R from Reston
Environment	x	x	x	0
Safety	✓	✓	✓	0
Economy	✓✓✓	✓✓✓	✓✓✓	✓
Integration	✓	✓	✓✓	0
Accessibility & Social Inclusion	✓✓	✓✓	✓✓	0

### 7.8 New Stations in Scotland

- 7.8.1 By way of further context with respect to new stations in Scotland, this section reports the usage levels of recently opened stations in Scotland. There are clearly a large number of factors which influence the usage of rail stations including catchment areas, proximity to local employment opportunities, and the level of congestion on the road network / parking availability etc.
- 7.8.2 Table 7.6 below shows the 13 stations in Scotland which have opened since 2000 and the total stations entries and exits for a number of years, as reported by the Office of Rail Regulation (ORR). Figures in purple relate to part years after station openings. This data provides a scale of the usage levels which have been seen at the new stations considered here.

7.8.3 Comparable figures are provided for the East Lothian stations for comparative purposes.

**Table 7.6 Recent Scottish station openings**

Opening Date		2010	Station Entries and Exits								
		Population	2002/03	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	
19/05/2008	Alloa	20,110							335,654	390,072	394,326
15/04/2002	Beaully	1,350	21,337	26,616	28,384	35,860	41,878	52,422	51,094	49,858	
02/06/2002	Brunstane		66,611	90,025	119,922	121,752	109,543	135,150	134,284	128,932	
11/12/2005	Chatelherault		-	-	3,763	17,268	23,480	40,958	49,830	57,116	
25/01/2000	Dunfermline Queen Margaret		131,103	195,495	206,434	211,074	202,477	214,664	205,330	199,722	
08/12/2003	Edinburgh Park		-	295,263	353,322	367,585	382,644	434,244	451,790	518,878	
09/05/2005	Gartcosh	2,170	-	-	59,959	99,585	110,967	124,314	131,666	134,408	
12/03/2001	Howwood	1,620	23,859	35,711	32,657	38,532	48,277	42,866	41,452	41,442	
26/09/2005	Kelvindale		-	-	-	94,970	107,723	109,534	109,726	90,476	
11/12/2005	Larkhall	15,510	-	-	-	268,707	307,910	334,308	323,080	317,462	
11/05/2009	Laurencekirk	2,650	-	-	-	-	-	-	56,496	73,594	
11/12/2005	Merryton		-	-	-	81,114	97,588	99,506	103,972	102,650	
02/06/2002	Newcraighall		79,617	137,389	159,789	176,933	190,027	182,890	194,184	182,802	
	Musselburgh		161,121	170,852	193,386	202,895	306,185	385,274	389,240	364,690	
	Wallyford		90,351	110,686	126,719	135,819	159,949	209,260	227,874	221,772	
	Prestonpans		91,789	108,398	129,192	142,604	170,388	192,574	202,296	206,808	
	Longniddry		117,121	122,678	135,040	140,490	161,410	165,716	157,908	154,040	
	Drem		73,871	78,009	80,563	84,905	99,735	109,418	107,844	100,208	
	North Berwick		333,444	362,006	379,898	398,056	422,681	434,718	444,276	452,856	
	Dunbar		224,552	266,142	288,282	299,172	332,377	339,094	318,976	333,916	

7.8.4 To gauge the change in travel behaviour of the residents of the areas affected by the new station openings, the 2001 and 2011 catchment area Census travel to work data should be examined for each of the new stations listed above when the 2011 data becomes available.

7.8.5 This would provide hard evidence for the typical scale of increase in rail mode share associated with the new station openings. It would also provide an indication of the shift from car to rail and also the shift from bus to rail. This data could also be used to look at the change in commuting destinations, pre and post station openings.

## 8 Option Summary Tables

8.1.1 STAG Option Summary Tables for the three rail-based options are included below.

# Option Summary Table

Rail

Edinburgh-Dunbar-Berwick Study

Edinburgh-Reston-Berwick

**Option description:** New rail services between Edinburgh and Berwick-upon-Tweed stopping at all stations including new stations at East Linton and Reston

*Capital Costs/grant (2002 Prices)* £7.3m  
*Revenue Support (2002 Prices)* £49.7m  
*Present Value (PV) of Cost to Government* £57.1m

Summary of impact on the five STAG criteria

Impacts (Monetary and Non-Monetary)							
---	--	-	0	+	++	+++	
Accessibility and Social Inclusion							
					✓		
Environment							
		✓					
Integration							
				✓			
Safety							
				✓			
Economy							
						✓	

Monetary only (£m)
76.3
<b>NPV: 19.2</b>
<b>NPV(WEB): -</b>

Monetary impact ratio (if relevant)
<b>BCR: 1.34</b>
<b>BCR(WEB): -</b>

Including Wider Economic Benefits

NPV: 19.2      BCR: 1.34  
 NPV(WEB): -      BCR(WEB): -

Assessment against Transport Planning Objectives

	---	--	-	0	+	++	+++
TPO Target 1:							✓
TPO Target 2:							✓
TPO Target 3:							✓
TPO Target 4:							✓

**Contribution toward the Government Purpose:**  
 A new train service between Edinburgh and Berwick-upon-Tweed including new stations at East Linton in East Lothian and Reston in the Scottish Borders has two main purposes (i) to accommodate sustainable development in the rapidly growing area of East Lothian and (ii) to bring a step change in public transport based accessibility for the east Berwickshire area in terms of access to Edinburgh. In the latter case, more residents of east Berwickshire would be able to take up employment and educational opportunities in Edinburgh as a result of this measure.

STAG Criteria		Implementability Appraisal	
Criterion:	Supporting Information	Criterion:	Supporting Information
<b>Accessibility &amp; Social Inclusion</b>	The new train service would provide a step change in accessibility in east Berwickshire which has been shown to lag behind both the Scottish Borders and Scotland, in terms of many socio economic indicators.	<b>Technical</b>	<b>No significant technical issues have been identified.</b>
<b>Safety</b>	Road safety would be improved due to a modal shift from road to rail. Personal security would be improved due to the higher levels of security provided by railway stations relative to bus stops.	<b>Operational</b>	<b>There are some operational uncertainties regarding the availability of train paths and platforms at Waverley due to the ongoing works associated with Borders Rail and EGIP.</b>
<b>Economy</b>	The proposed service provides a positive benefit cost ratio.	<b>Financial</b>	<b>An ongoing subsidy would be required to operate the service but this is forecast to decline over time.</b>
<b>Integration</b>	The level of integration with the rail network for east Berwickshire residents would be markedly improved. The measure is supported by a wide range of transport and planning policies and documents.	<b>Public Acceptability</b>	<b>There is very strong support for the proposals locally from the public and local businesses, and there is also political support from local elected representatives.</b>
<b>Environment</b>	<b><i>This section identifies key impacts and tensions across the sub-criteria</i></b>		
	<p><b>There would be local environmental impacts associated with the construction and operation of the new stations. No detailed environmental appraisal of the station sites has been undertaken to date.</b></p> <p><b>There would however be zero tailpipe emissions from the new train services and modal shift from car (or shorter car legs of park and ride journeys) would lead to a reduction in CO2 emissions.</b></p>		
Transport Planning Objectives			
Objective:	Description of Objective	Objective:	Description of Objective
<b>TPO 1:</b>	<b>Improve the generalised cost of travelling to Edinburgh by public transport / park and ride by a meaningful amount in the corridor:</b>	<b>TPO 3:</b>	<b>Address known or foreseen public transport capacity issues in the corridor</b>
<b>TPO 2:</b>	<b>Improve accessibility and connectivity between Berwickshire and Edinburgh</b>	<b>TPO 4:</b>	<b>Improve the reliability of public transport journey travel times from Berwickshire to Edinburgh:</b>

# Option Summary Table

Rail

Edinburgh-Dunbar-Berwick Study

Edinburgh-Burnmouth-Berwick

**Option description:** New rail services between Edinburgh and Berwick-upon-Tweed stopping at all stations including new stations at East Linton and Burnmouth

*Capital Costs/grant (2002 Prices)*  
*Revenue Support (2002 Prices)*  
*Present Value (PV) of Cost to Government*

£7.3m  
 £55.5m  
 £62.9m

Summary of impact on the five STAG criteria

Impacts (Monetary and Non-Monetary)							
---	--	-	0	+	++	+++	
Accessibility and Social Inclusion					✓		
Environment		✓					
Integration				✓			
Safety				✓			
Economy						✓	
Including Wider Economic Benefits							

Monetary only (£m)
90.0
<b>NPV: 27.1</b>
<b>NPV(WEB): -</b>

Monetary impact ratio (if relevant)
BCR: 1.43
<b>BCR(WEB): -</b>

Assessment against Transport Planning Objectives

	---	--	-	0	+	++	+++
TPO Target 1:							✓
TPO Target 2:							✓
TPO Target 3:							✓
TPO Target 4:							✓

**Contribution toward the Government Purpose:**

A new train service between Edinburgh and Berwick-upon-Tweed including new stations at East Linton in East Lothian and Burnmouth in the Scottish Borders has two main purposes (i) to accommodate sustainable development in the rapidly growing area of East Lothian and (ii) to bring a step change in public transport based accessibility for the east Berwickshire area in terms of access to Edinburgh. In the latter case, more residents of east Berwickshire would be able to take up employment and educational opportunities in Edinburgh as a result of this measure.

STAG Criteria		Implementability Appraisal	
Criterion:	Supporting Information	Criterion:	Supporting Information
<b>Accessibility &amp; Social Inclusion</b>	The new train service would provide a step change in accessibility in east Berwickshire which has been shown to lag behind both the Scottish Borders and Scotland, in terms of many socio economic indicators.	<b>Technical</b>	<b>No analysis has been undertaken to establish the technical feasibility of a station at Burnmouth.</b>
<b>Safety</b>	Road safety would be improved due to a modal shift from road to rail. Personal security would be improved due to the higher levels of security provided by railway stations relative to bus stops.	<b>Operational</b>	<b>There are some operational uncertainties regarding the availability of train paths and platforms at Waverley due to the ongoing works associated with Borders Rail and EGIP.</b>
<b>Economy</b>	The proposed service provides a positive benefit cost ratio.	<b>Financial</b>	<b>An ongoing subsidy would be required to operate the service but this is forecast to decline over time.</b>
<b>Integration</b>	The level of integration with the rail network for east Berwickshire residents would be markedly improved. The measure is supported by a wide range of transport and planning policies and documents.	<b>Public Acceptability</b>	<b>There is very strong support for the proposals locally from the public and local businesses, and there is also political support from local elected representatives.</b>
<b>Environment</b>	<b><i>This section identifies key impacts and tensions across the sub-criteria</i></b>		
	<p><b>There would be local environmental impacts associated with the construction and operation of the new stations. No detailed environmental appraisal of the station sites has been undertaken to date.</b></p> <p><b>There would however be zero tailpipe emissions from the new train services and modal shift from car (or shorter car legs of park and ride journeys) would lead to a reduction in CO2 emissions.</b></p>		
Transport Planning Objectives			
Objective:	Description of Objective	Objective:	Description of Objective
<b>TPO 1:</b>	<b>Improve the generalised cost of travelling to Edinburgh by public transport / park and ride by a meaningful amount in the corridor:</b>	<b>TPO 3:</b>	<b>Address known or foreseen public transport capacity issues in the corridor</b>
<b>TPO 2:</b>	<b>Improve accessibility and connectivity between Berwickshire and Edinburgh</b>	<b>TPO 4:</b>	<b>Improve the reliability of public transport journey travel times from Berwickshire to Edinburgh:</b>



STAG Criteria		Implementability Appraisal	
Criterion:	Supporting Information	Criterion:	Supporting Information
<b>Accessibility &amp; Social Inclusion</b>	The new train service would provide a step change in accessibility in east Berwickshire which has been shown to lag behind both the Scottish Borders and Scotland, in terms of many socio economic indicators.	<b>Technical</b>	<b>No significant technical issues have been identified.</b>
<b>Safety</b>	Road safety would be improved due to a modal shift from road to rail. Personal security would be improved due to the higher levels of security provided by railway stations relative to bus stops.	<b>Operational</b>	<b>There are some operational uncertainties regarding the availability of train paths and platforms at Waverley due to the ongoing works associated with Borders Rail and EGIP.</b>
<b>Economy</b>	The proposed service provides a positive benefit cost ratio.	<b>Financial</b>	<b>An ongoing subsidy would be required to operate the service but this is forecast to decline over time.</b>
<b>Integration</b>	The level of integration with the rail network for east Berwickshire residents would be markedly improved. The measure is supported by a wide range of transport and planning policies and documents. Running through services provides a further positive impact on integration.	<b>Public Acceptability</b>	<b>There is very strong support for the proposals locally from the public and local businesses, and there is also political support from local elected representatives.</b>
	<b><i>This section identifies key impacts and tensions across the sub-criteria</i></b>		
<b>Environment</b>	<p><b>There would be local environmental impacts associated with the construction and operation of the new stations. No detailed environmental appraisal of the station sites has been undertaken to date.</b></p> <p><b>There would however be zero tailpipe emissions from the new train services and modal shift from car (or shorter car legs of park and ride journeys) would lead to a reduction in CO2 emissions.</b></p>		
Transport Planning Objectives			
Objective:	Description of Objective	Objective:	Description of Objective
<b>TPO 1:</b>	<b>Improve the generalised cost of travelling to Edinburgh by public transport / park and ride by a meaningful amount in the corridor:</b>	<b>TPO 3:</b>	<b>Address known or foreseen public transport capacity issues in the corridor</b>
<b>TPO 2:</b>	<b>Improve accessibility and connectivity between Berwickshire and Edinburgh</b>	<b>TPO 4:</b>	<b>Improve the reliability of public transport journey travel times from Berwickshire to Edinburgh:</b>

## 9 Summary and Conclusions

9.1.1 This study has addressed two key questions:

- could coach-based solutions provide a similar level of benefits to the rail-based options considered in the 2011 Study?; and
- can the business case for a new Edinburgh-Berwick service be improved from that reported in the 2011 Study?.

9.1.2 In addition to these two questions, this study has considered the wider socio-economic picture to provide a wider rationale for the introduction of the new train service. It is clear that in general the rationale for **Berwickshire** is one of **regeneration** and the long term sustainability of the community. In the case of **East Lothian**, the picture is more one of **accommodating growth** in a sustainable way.

9.1.3 Chapter 5 comprehensively showed why coach / bus-based solutions will not address the problems identified in Chapter 3 and the objectives set in Chapter 4. Improved coach / bus links from Berwickshire would simply not provide the step change in connectivity with Edinburgh which is required for the area to operate effectively and sustainably, particularly in terms of access to the Edinburgh employment market.

9.1.4 The overall business case for the core Edinburgh-Berwick service has shown an improvement compared to the 2011 Study both in the case of the Benefit Cost Ratio and the annual operating subsidy.

9.1.5 It is not possible at this stage to determine many of the detailed operational aspects of the service at this stage, given the level of change on the rail network in the coming years around Edinburgh Waverley, particularly associated with EGIP and Borders Rail (both infrastructure and service / timetable related). However, the basic operational potential of the service has been demonstrated in the 2011 Study and the new services to Berwick could be 'planned in' to future rail planning if the commitment was made to run these services.

9.1.6 There is therefore now a good business case for the introduction of Edinburgh to Berwick local services. These services should stop throughout East Lothian to maximise the benefits of the service – we have shown here how important this is as significant revenue is generated from the improved frequency between Musselburgh and Drem. Connecting the new service to through services to the west has also been shown to improve the business case, but introducing the new service at the expense of LDHS stops at Dunbar has been shown to weaken the case. This suggests that at least some LDHS stops should be retained at Dunbar.

9.1.7 The concept of a new station at Burnmouth instead of Reston also improves the case, but there is no certainty that such a site is deliverable in engineering and operational terms at this stage, and the advantages of this site could be replicated at Reston if bus links there were to be improved from surrounding settlements.

9.1.8 Overall there is a strong socio-economic case and a good benefit cost ratio to support these proposals. This will provide the platform to take the proposals forward to the next stage.



**MVA Consultancy provides advice on transport, to central, regional and local government, agencies, developers, operators and financiers.**  
**A diverse group of results-oriented people, we are part of a strong team of professionals worldwide. Through client business planning, customer research and strategy development we create solutions that work for real people in the real world.**

**For more information visit [www.mvaconsultancy.com](http://www.mvaconsultancy.com)**

**Abu Dhabi**

AS Business Centre, Suite 201, Al Ain Road, Umm al Nar, P.O. Box 129865, Abu Dhabi, UAE  
T: +971 2 510 2402 F: +971 2 510 2403

**Birmingham**

Second Floor, 37a Waterloo Street  
Birmingham B2 5TJ United Kingdom  
T: +44 (0)121 233 7680 F: +44 (0)121 233 7681

**Dublin**

First Floor, 12/13 Exchange Place  
Custom House Docks, IFSC, Dublin 1, Ireland  
T: +353 (0)1 542 6000 F: +353 (0)1 542 6001

**Edinburgh**

Second Floor, Prospect House, 5 Thistle Street,  
Edinburgh EH2 1DF United Kingdom  
T: +44 (0)131 220 6966

**Glasgow**

Seventh Floor, 78 St Vincent Street  
Glasgow G2 5UB United Kingdom  
T: +44 (0)141 225 4400 F: +44 (0)141 225 4401

**London**

Second Floor, 17 Hanover Square  
London W1S 1HU United Kingdom  
T: +44 (0)20 7529 6500 F: +44 (0)20 7529 6556

11, rue de la République, 69001 Lyon, France  
T: +33 (0)4 72 10 29 29 F: +33 (0)4 72 10 29 28

**Manchester**

25th Floor, City Tower, Piccadilly Plaza  
Manchester M1 4BT United Kingdom  
T: +44 (0)161 236 0282 F: +44 (0)161 236 0095

**Marseille**

76, rue de la République, 13002 Marseille, France  
T: +33 (0)4 91 37 35 15 F: +33 (0)4 91 91 90 14

**Paris**

12-14, rue Jules César, 75012 Paris, France  
T: +33 (0)1 53 17 36 00 F: +33 (0)1 53 17 36 01

**Woking**

Dukes Court, Duke Street, Woking  
Surrey GU21 5BH United Kingdom  
T: +44 (0)1483 728051 F: +44 (0)1483 755207

**Email: [info@mvaconsultancy.com](mailto:info@mvaconsultancy.com)**

**Offices also in**

Bangkok, Beijing, Hong Kong, Shenzhen and Singapore

**mvaconsultancy**