LEVENMOUTH SUSTAINABLE TRANSPORT STUDY - STAG REPORT
# LEVENMOUTH STAG UPDATE

## LEVENMOUTH SUSTAINABLE TRANSPORT STUDY - STAG REPORT

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TABLE OF CONTENTS

EXECUTIVE SUMMARY 10

INTRODUCTION 10
RECOMMENDATION 10
THE STUDY AREA 10
PROBLEMS, OPPORTUNITIES, ISSUES AND CONSTRAINTS 11
TRANSPORT PLANNING OBJECTIVES 14
OPTION GENERATION AND SIFTING 15
DETAILED (PART 2) APPRAISAL 16
COST TO GOVERNMENT 21
COST-BENEFIT ANALYSIS 23
IMPLEMENTABILITY 23
ASSESSMENT OF KEY RISKS 25
MONITORING AND EVALUATION 25
CONCLUSIONS 25

1. INTRODUCTION 27

1.1 OVERVIEW 27
1.2 STRUCTURE OF THIS REPORT 29

2. STUDY AREA OVERVIEW 31

2.1 THE STUDY AREA 31
2.2 SOCIO-ECONOMIC SETTING 32
2.3 TRANSPORT NETWORK 34

3. PROBLEMS, OPPORTUNITIES, ISSUES AND CONSTRAINTS 40

3.1 INTRODUCTION 40
3.2 PROBLEMS 40
3.3 OPPORTUNITIES 52
3.4 ISSUES 56
3.5 CONSTRAINTS 58
3.6 SUMMARY 61

4. POLICY CONTEXT 66

4.1 INTRODUCTION 66
4.2 NATIONAL POLICY 66
### 10.4 Determining the Forecasting Parameters – Rail Services

### 10.5 Bus and Rail Fares

### 10.6 Public Transport Demand Forecasts

### 10.7 Public Transport Operating Surplus (per annum)

### 10.8 Total Net Benefit per Annum Generated by the Public Passenger Services

### 10.9 Rail Freight Demand

### 10.10 Summary

### 11. Part 2 Appraisal

#### 11.1 Introduction

#### 11.2 Options

#### 11.3 Smartening of the Objectives

#### 11.4 Appraisal of the Options

#### 11.5 Environmental Appraisal

#### 11.6 Safety Appraisal

#### 11.7 Economy

#### 11.8 Integration Appraisal

#### 11.9 Accessibility and Social Inclusion Appraisal

#### 11.10 Transport Planning Objectives Appraisal

### 12. Cost to Government

#### 12.1 Introduction

#### 12.2 Investment Costs

#### 12.3 Operating and Maintenance Costs

#### 12.4 Revenue

#### 12.5 Grant and Subsidy Payments

#### 12.6 Cost-Benefit Analysis

#### 12.7 Implementability and Public Acceptability

### 13. Risk and Uncertainty

#### 13.1 Introduction

#### 13.2 Risk Management Process

#### 13.3 Optimism Bias

#### 13.4 Project Risk Register

#### 13.5 Sensitivity Testing

### 14. Monitoring and Evaluation

#### 14.1 Introduction
14.2 Monitoring Framework 218
14.3 Evaluation Framework 219
15. Summary and Conclusions 221
15.1 Summary of Appraisal 221
15.2 Conclusions 231
LIST OF FIGURES

Levenmouth Study Area – Study Brief
Problems, Opportunities and Transport Planning Objectives Linkage
Figure 1. STAG Process (Transport Scotland, 2008) 11
Figure 2. Levenmouth Study Area 15
Figure 3. Social Deprivation Across South Fife (Census 2011) 28
Figure 4. Levenmouth Stagecoach Services (Stagecoach, 2015) 31
Figure 5. Cycle Network within Central Levenmouth (Sustrans, 2015) 33
Figure 6. Non-Car Owning Household Proportions (2011) 36
Figure 7. Comparative Rail Travel Costs to Edinburgh/Glasgow, day fare (Fife Council, 2016) 38
Figure 8. Comparison of 2016 Ticket Prices and Mileages for Fife and Central Scotland (Fife Council, 2016) 41
Figure 9. Annual Average Daily Traffic Flow in the Levenmouth Area: 2010 to 2015 44
Figure 10. Significant Areas of Congestion and key schemes (Fife Council Local Transport Strategy, 2006) 45
Figure 11. Cluster Crash Sites 2011 to 2013 49
Figure 12. Annual Average Daily Traffic Flows – % HGV Total Vehicles (2014) 50
Figure 13. Levenmouth Strategic Development Area – Development Framework (Levenmouth Strategic Framework, 2013) 51
Figure 14. Levenmouth Strategic Development Area – Access Proposals (Levenmouth Strategic Framework, 2013) 56
Figure 15. Bawbee Bridge and Leven Railway Bridge (Fife Council, 2015) 57
Figure 16. Key Environmental Designations 58
Figure 17. Problems, Opportunities, Issues and Constraints Overview 61
Figure 18. Problems, Opportunities and Transport Planning Objectives Linkages 65
Figure 19. Option 1 Maintain existing bus services to Kirkcaldy and beyond while improving public transport facilities and information. 75
Figure 20. Option 2 Integration of bus services at Levenmouth and existing rail provision at Markinch 82
Figure 21. Option 3 Out-of-Use Existing Rail Alignment 83
Figure 22. Option 4 Out-of-Use Existing Rail Alignment 86
Figure 23. Option 5 Potential New Rail Alignment 88
Figure 24. Option 6 Potential New Rail Alignment 89
Figure 25. Option 7 Potential New BRT Alignment 90
Figure 26. Option 8 Potential Hovercraft between Levenmouth, Kirkcaldy, and Edinburgh 91
Figure 27. Leven Bus Station Public Consultation Display 133
Figure 28. Integration of Levenmouth Area Bus Services with Markinch Rail Services 137
Figure 29. Out-of-Use Existing Rail Alignment 139
Figure 30. Pattern of AM Peak Demand (Commute) – 2012 Model vs 2011 Census Travel to Work 141
Figure 31. Increase in the Number of Commuters Return Trips by Public Transport per day 148
Figure 32. Public Transport Operating Surplus 2022 – Worst Case 150
Figure 33. Public Transport Operating Surplus 2022 – Best Case 151
Figure 34. 2022 Net Benefits – Worst Case 152
Figure 35. 2022 Net Benefits – Best Case 153
Figure 36. Option B Environmental Constraints 163
Figure 37. Partially Straightened Alignment of the Out-of-Use Existing Rail Link 217
LIST OF TABLES

Table 1. Summary of Bus Services from Leven Bus Station (Stagecoach, July 2015) 34
Table 2. Summary of Passenger Rail Services (ScotRail, 2015) 36
Table 3. Modal split for inward commuting to the Levenmouth area (excluding working from home) (Census 2011) 39
Table 4. Modal split for outward commuting by Levenmouth residents (excluding working from home) (Census 2011) 39
Table 5. Health and Economic Activity (2011 Census) 41
Table 6. TRACC Accessibility Results – Journey Times by Public Transport (mins) 43
Table 7. Settlement Comparison of Work Patterns (Census 2011) and Public Transport Services to Edinburgh 46
Table 8. Transport Planning Objectives and Policy Linkages 76
Table 9. TPOs – Outline KPIs 78
Table 10. Environmental Appraisal Summary 95
Table 11. Summary of Safety Appraisal 99
Table 12. Economy Appraisal Summary 104
Table 13. Transport Integration Sub-Category Appraisal 107
Table 14. Integration Appraisal Summary 111
Table 15. Accessibility and Social Inclusion Appraisal Summary 115
Table 16. Transport Planning Objectives Appraisal Summary 118
Table 17. Feasibility, Affordability and Public Acceptability Appraisal 124
Table 18. Summary of Part 1 Appraisal 127
Table 19. Rail Service – Summary 143
Table 20. Rail Service Test Summary 146
Table 21. Predicted Change in Mode Share 147
Table 22. Public Transport Operating Surplus 2022 – Worst Case 149
Table 23. Public Transport Operating Surplus 2022 – Best Case 150
Table 24. 2022 Net Benefits – Worst Case 152
Table 25. 2022 Net Benefits – Best Case 153
Table 26. Diageo Road Freight Distribution Assumptions 154
Table 27. Transport Planning Objectives 159
Table 28. Environmental Appraisal Summary 176
Table 29. Monetised Accident Benefits (2010 Prices) 177
Table 30. Summary of Safety Appraisal 178
Table 31. Option A Benefits (2010 Prices) 180
Table 32. Option B Benefits (2010 Prices) 180
Table 33. EALI Overview 185
Table 34. Economy Appraisal Summary 188
Table 35. Transport Integration Sub-Category Appraisal 189
Table 36. Integration Appraisal Summary 196
Table 37. Accessibility and Social Inclusion Appraisal Summary 200
Table 38. Transport Planning Objectives Appraisal Summary 201
Table 39. Investment Costs (2010 prices, undiscounted) 204
Table 40. Option B – Summary of Investment Costs (2015 prices, undiscounted) 205
Table 41. Option B – Operating Cost Breakdown 206
Table 42. Annual Operating and Maintenance Costs (2010 Prices, undiscounted) 206
Table 43. Revenue Estimate (2010 Prices) 207
Table 44. Option A Cost-Benefit Analysis (2010 Prices, discounted) 207
Table 45. Option B Cost-Benefit Analysis (2010 Prices, discounted)  208
Table 46. Risk Register  212
Table 47. Monitoring Framework  219
Table 48. Option Summary Table – Option A  222
Table 49. Option Summary Table – Option B  224
EXECl"IVE SUMMaRY

Introduction

In May 2015, Fife Council commissioned SYSTRA to undertake an appraisal to determine measures to improve sustainable transport options for the Levenmouth area of Fife, with a view to improving its economic vitality. The area is within the top 20% of most deprived communities in Scotland, with several areas within the top 5%, as set out in the most recent SIMD data. However, it has the potential to regenerate through business and tourist development opportunities in the area and its hinterland as well as provide transport opportunities for 1,650 new houses, 15ha of business land, Fife Energy Park, as well as community and educational facilities.

The study was to be undertaken in accordance with the Scottish Transport Appraisal Guidance (STAG).

Recommendation

The preferred option (Option B) is to re-open the existing rail line to Levenmouth. The scheme has an estimated cost benefit ratio of 1.31 and net present value benefits of £79.8m (at 2010 prices), excluding the likely wider economic benefits, which could be significant, given that the scheme has the potential to provide a step change in the economic performance of a large population area. As well as helping to regenerate economic activity this will provide a gateway to significantly boost tourism and the visitor experience in Levenmouth and North East Fife.

A secondary component (Option A) of enhanced, supported bus services to improve accessibility in the local area and encourage modal shift is identified as a potential ‘quick-win’ measure and would provide some additional long-term benefits, including improvements to some local public transport journeys not directly served by the rail option. This option should therefore be viewed as complementary in supporting the main preferred option to re-open the rail line.

The Study Area

The Levenmouth area has a population of around 38,000, which makes it the 25th largest settlement in Scotland1. It comprises an amalgamation of coastal and inland settlements centred on the core urban centre of Leven and the surrounding settlements of Methil, Buckhaven, Methilhill, Windygates and Kennoway, as shown in the Figure below.

The area provides a gateway to a large part of the East Neuk in north-east Fife, whose residents are therefore also affected by any transport issues which affect the Levenmouth area.

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A wide range of consultation was undertaken throughout the appraisal process, including:

- engagement with key stakeholders via a half-day ‘Problems and Opportunities’ workshop with Fife Council, Transport Scotland and SEStran;
- one-to-one meetings, phone discussions and/or written correspondence with representatives from key stakeholder groups including Transport Scotland, Network Rail, Savills, Wemyss Estates Management, Stagecoach, Levenmouth Rail Campaign, Abellio (ScotRail) and statutory environmental consultees (Scottish Natural Heritage (SNH), Scottish Environmental Protection Agency (SEPA) and Historic Scotland);
- Engagement with the local business community via an online questionnaire and liaison with Fife Chamber of Commerce; and
- Engagement with the general public via an online questionnaire and drop-in events in the local community.

Problems, Opportunities, Issues and Constraints

The key problems, opportunities, issues and constraints within the study area can be summarised as follows:

### Problems

- Need for economic development to attract businesses and new residents: The levels of deprivation and unemployment within Levenmouth are above the national average and greater than most other areas of Fife; The area remains
within the top 20% of most deprived communities in Scotland, with several areas within the top 5% most deprived, as set out in the most recent SIMD data.

- Fife Council and many of the stakeholders consulted as part of this Study believe that the difficulties accessing the area from Edinburgh and beyond is creating a barrier to attracting inward investment to the area;
- The large journey times to central Edinburgh (typically well in excess of 1½ hours) by public transport and/or the need to interchange, limits the attractiveness of the area to attracting new residents who need to make regular trips to the Central Belt.

Access to services by public transport:

- Car ownership is lower than the Scottish average with 38% households in Leven, Methil, Methilhill and Buckhaven not having access to a car compared to a national average of 31%, while almost a half of Levenmouth’s datazones zones are among the 20% most deprived in Scotland and several are in the 5% most-deprived. As a result, there is a particular dependence on affordable public transport within the Levenmouth area;
- Approximately 50% respondents to the public consultation reported dissatisfaction with the ability of current public transport services to provide access to employment, education and other opportunities; and
- Inward and outward commuting is predominantly undertaken by private car, suggesting that those without access to a private car are being disadvantaged in the local job market.

Unattractive public transport leading to “unsustainable” travel choices:

- Access to the rail network from the Levenmouth area currently involves interchange, primarily at Markinch or Kirkcaldy stations. The lack of a direct service to these more-distant locations, the lack of integration between bus and rail services at the interchange stations and the higher cost of the separate bus + rail tickets is contributing to a high car mode share for these long-distance journeys; and
- Current rail fares between the area and Edinburgh are much higher (£/mile) than the Scottish average, particularly to/from Markinch station³.

Significant HGV traffic to/from the area, particularly the movement of whisky and whisky-related products to the Diageo distillery at Cameron Bridge and bottling plant in Leven;

Opportunities

Bus service enhancements:

- Stagecoach has provided investment in the bus network within Levenmouth. This includes the upgrade of vehicles and roll-out of measures

³ The current standard return fare to Edinburgh is £5 more expensive than expected, based on other Central Belt stations and this excess fare is greater than any of the 94 stations included in our analysis
to improve facilities and journey experience, including the introduction of journey planning/information apps and one-ticketing arrangements.

- **Increasing public transport choice:**
  - There is an existing, but largely out-of-use, rail line between Thornton North Junction and Leven. The line is operational at present between Thornton North Junction and Earseat to support coal extraction activity. The non-operational section includes track-bed as well as available land for a station at Leven and potentially Cameron Bridge. The line is safeguarded in the Mid-Fife Local Plan. Re-instating the full operation of the rail line would require consideration of the structural integrity of existing assets such, as the Leven Railway Bridge, along the line.

- **Rail freight:**
  - Freight in the Levenmouth area is accounted for almost entirely by road, with some waterborne freight transportation taking place. Freight options are particularly important for the Levenmouth area as the economy is based predominantly on industry and manufacturing activities that, by their nature, involve long-distance import/export activities to/from the area. Diageo is a key employer in the area, employing over 1,200 individuals. Discussions with Diageo and their haulier WH Malcolm noted previous interest and ongoing activity to investigate rail freight opportunities to support site operations at Cameron Bridge and Leven.

- **Low Carbon Investment Park:**
  - Investment proposals for a Low Carbon Investment Park, located in Buckhaven, form part of the Levenmouth Strategic Development Area and include allocations for industrial and commercial land. The site would be funded under the Scottish Government’s Tax Incremental Financing (TIF) initiative.

- **Active Travel and Leisure Tourism:**
  - The location of Levenmouth presents the opportunity to harness the coastal setting. In particular, the proximity of the area to the Fife Coastal Path, as well as local golf courses, could be capitalised upon better in order to help raise the profile of the area in terms of attractiveness to visitors from wider Fife and further afield. National Cycle Network (NCN) routes 76 and 1 serve Markinch and offer the scope to provide a link from the Levenmouth area to the NCN, supporting initiatives to attract visitors. Proposals for a new long distance walking route, the Fife Pilgrim Way, are also under development and provide a further attraction in close proximity to the study area.
Levenmouth Strategic Development Area:

- There are major future land-use proposals for the area. This includes the Levenmouth Strategic Development Area, which comprises proposals for 1,650 new houses, 15ha business land, a new link road between the A915 and Fife Energy Park, as well as community and educational facilities. An increase in population would place additional demand on the existing road and public transport networks in the Levenmouth area, the wider Fife area, and the city-region beyond.

Leven to Thornton Rail Line:

- The integrity of the track bed and structures along the existing but-largely-out-of-use rail line between Thornton and Leven would need to be checked (e.g., as part of a GRIP3 process), before the costs of re-instating passenger rail services can be estimated accurately.

Constraints

Bawbee Bridge and Leven Railway Bridge:

- There is currently an 18 tonne weight restriction on Leven Railway Bridge, which has an impact on the routing of HGVs and heavier buses in the area – this constraint needs to be borne in mind when considering HGV routing strategies and/or the introduction of heavier buses to the services which operate across this bridge.

Environmental:

- The environmental component on the STAG Study identified a number of minor constraints which would need to be taken into consideration when considering any additional transport infrastructure between Leven and Kirkcaldy, but none of these are sufficient to influence the choice of solution to the identified problems.

Transport Planning Objectives

The analysis of the problems, opportunities, issues and constraints, public and stakeholder consultation activities and consideration of the wider national, regional and local policy setting informed the development of the following study objectives:

- TPO 1 – Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area;
- TPO 2 – Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area;
TPO 3 – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area; and

TPO 4 – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk.

**Option Generation and Sifting**

Eight separate options to improve sustainable transport access to and from the Levenmouth area and a number of variants of these were identified and appraised at the Initial Appraisal Stage. The options considered bus, rail and water based interventions to improve the transport offering to and from the area.

Options were appraised in terms of their performance in relation to:

- the study Transport Planning Objectives (TPOs) listed above;
- the main STAG criteria (Environment, Safety, Economy, Accessibility and Social Inclusion and Integration); and
- deliverability (in terms of technical & operational deliverability) and public acceptability.
The Initial Appraisal recommended two Options should be taken forward to the Detailed Appraisal (in addition to the Do Minimum option of retaining the existing public transport services). A significant number of variants of these two core options were tested, particularly for Option B, before finalising these specifications. The key features of these two options are summarised in Table E1.

Table E1: Option Development Summary

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<thead>
<tr>
<th>OPTION</th>
<th>OPTION DEVELOPMENT SUMMARY</th>
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<td>A – Bus Enhancement</td>
<td>Three additional buses purchased and used to improve the bus connections between the Buckhaven and Methil area and Markinch Station and Glenrothes. Markinch rail fares adjusted by £1 one-way (£2 return) to address some of the ‘excess rail fare’ problem and encourage increased use of Markinch Station.</td>
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<tr>
<td>B – Rail Provision</td>
<td>Re-opening of the rail line between Thornton North Junction and Leven; Passenger stations at Leven and Cameron Bridge. Freight provision at Cameron Bridge. Hourly rail service based on the diversion of the existing Edinburgh to Glenrothes with Thornton terminating service to Levenmouth. Operating costs assumes an extended layover at Leven can be addressed through timetable changes and thereby negate the requirement for additional rolling stock and cost implications. Fare structure as per the current Markinch rail fare.</td>
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Options were tested against a Do Minimum scenario, including:

- Queensferry Crossing;
- Signalisation of Redhouse (A92/A921) and Gallatown (A915/A921) roundabouts;
- Standingstane Road/Windygates Road Junction Signalisation; and
- Kirkcaldy and Dysart - Redhouse roundabout to Standing Stane Road Link.

Detailed (Part 2) Appraisal

Each option was assessed against:

- the four TPOs
- The standard STAG criteria (Environment, Safety, Economy, Integration, and Accessibility and Social Inclusion);
- Implementability - technical, operational, financial and public acceptability;
- Cost to Government; and

Note that this would require Transport Scotland involvement to make the relevant changes to the ScotRail franchise.
Table E2 summarises the outcome of the Detailed Appraisal. This illustrates that, with the exception of the environment sub-criteria, both options have either neutral or positive impact on the TPOs and STAG Criteria. In all cases (apart from Environment), Option B is predicted to have a greater benefit than Option A.

A summary of the performance of each option is discussed further in the section below.

**Table E2: Summary of Detailed (Part 2) Appraisal**

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<td>✔✔</td>
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<tr>
<td>TPO 2 – Sustainable Travel</td>
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<td>TPO 3 – Investment</td>
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<td>✔✔</td>
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<td>TPO 4 – Tourism</td>
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<td>Safety</td>
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<td>✔✔</td>
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<tr>
<td>Economy</td>
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<td>✔✔✔</td>
</tr>
<tr>
<td>Integration</td>
<td>✔✔</td>
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<tr>
<td>Accessibility &amp; Social Incl</td>
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<td>✔✔</td>
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Key:
- ✔ – Minor Positive Impact
- ✔✔ – Moderate Positive Impact
- ✔✔✔ – Major Positive Impact
- X – Minor Negative Impact
- xx – Moderate Negative Impact
- xxx – Major Negative Impact

**Summary of Environmental Appraisal**

The findings of the environmental appraisal indicate that Option A has the least potential for significant adverse environmental impacts, since it does not involve any new development work and the changes in bus services associated with the option are not predicted to have significant net effects on traffic-related environmental effects such as traffic noise and air quality.

Option B involves more significant railway development proposals, but this is based almost entirely on re-opening of a former rail line and is generally not predicted to have significant environmental effects. Option B has potential for significant adverse noise impacts from construction and operation on receptors adjacent to the railway line, the extent of which would depend on the frequency and timing of passenger and freight rail operations. However, with mitigation, it is predicted that these effects would be unlikely to be significant.

The outputs of demand forecasting indicate that Option B has greater potential compared to Option A to remove freight and car traffic from the road network as a result of modal shift. This option therefore has greater potential for beneficial impacts on roadside noise, local air quality and
greenhouse gas emissions, depending on the degree to which modal shift is achieved and the nature and frequency of the rail operations.

Overall, **Option A** is predicted to result in neutral environmental impact and **Option B** to result in a Minor Negative Impact on the Environment, taking account of all the aspects that have been assessed.

**Summary of Safety Appraisal**

Both options show benefits to safety in terms of accidents and security considerations. The benefits for **Option A** are relatively minor. In comparison, **Option B** scores a moderate benefit due to both the greater car-km and HGV-km removed from the roads for the accidents appraisal, as well as the security benefits brought about by the provision of new rail stations, which will be required to provide minimum (or better) standards of security measures as part of their design.

**Summary of Economy Appraisal**

*Transport Economic Efficiency (TEE)*

The TEE analysis, includes consideration of the net benefit to transport users. The analysis captures benefits to the operator through increased fares and indirect tax revenues resulting from, for example, fuel sales, and monetised carbon and accident savings associated with a change in veh-km.

**Option A** and **Option B** have a positive impact in terms of benefits as shown in Tables E3 and E4 respectively. The benefits associated with Option B would however be more than double those of Option A.

<table>
<thead>
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<th>Table E3: Option A Benefits (2010 Prices, discounted)</th>
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<td>BENEFITS</td>
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<td>Consumer</td>
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<td>Operator</td>
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<tr>
<td>Accidents</td>
</tr>
<tr>
<td>Greenhouse Gases</td>
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<tr>
<td>Indirect taxation</td>
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<td><strong>Present Value Benefits (PVB)</strong></td>
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Note: $^*$Total value correct. Small differences due to rounding.

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$^5$ Benefit calculation assumes a grant subsidy payment designed to cover the gap between the increased bus operating costs and the additional fare-box revenue.
Table E4: Option B Benefits (2010 Prices, discounted)

<table>
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<tr>
<th>BENEFITS</th>
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<tr>
<td>Consumer</td>
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<td>Operator</td>
<td>£10.2M</td>
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<td>Accidents</td>
<td>£4.1M</td>
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<td>Greenhouse Gases</td>
<td>£7.4M</td>
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<td>Indirect taxation</td>
<td>-£24.1M</td>
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**Present Value Benefits (PVB)**  
£79.8M*

*Total value correct. Small differences due to rounding.

**EALI**

Investment in the local transport infrastructure and services to improve access to employment, markets, and supply chains provides the opportunity to increase the attractiveness of the Levenmouth area for business activity, investment and employment opportunities. The Economic Activity and Location Impact (EALI) considers the net national and local impact of options on the economy, taking into account gainers and losers across different aspects.

**Option A** offers specific improvements in access to some of the most deprived areas of Levenmouth, including settlements south of the River Leven. It strengthens links to key employment sites at Cameron Bridge, Fife Energy Park, and the Levenmouth Strategic Development Area, including housing and new educational facilities. The score for this option is a moderate positive, based on the expected impact on economic activity and looking at locational impacts.

**Option B** offers potential benefits related to enhanced connectivity with a number of areas across Levenmouth. Particular benefit is produced by improving links to Edinburgh. Linkages between the national rail network and the local area may have a wider strategic benefit, as well as the immediate local and wider economy in Fife. Key considerations in terms of rail freight include the provision of benefits to large-scale industry in the area, in particular Diageo operations. The addition of a rail freight link for the area may open up the type and scale of industry that can operate in the Levenmouth area potentially impacting on inward and external investment levels. Furthermore, while consultation with Abellio ScotRail noted that there are no current plans to provide a Fife-based train crew/stabling facility, if a Fife-based rail depot was reconsidered in the future, the branch line to Leven could provide a potential location in close proximity to the main line. A depot in the area could be expected to generate local employment opportunities and would provide potential additional timetable-related benefits, both to existing Fife rail services and the additional rail services being appraised here.

Fife Council have subsequently produced a report entitled ‘The Levenmouth Railway – Economic Vision’ which includes their estimates of a number of wider economic benefits which were not quantified within the STAG appraisal being reported here. This Fife Council report has been attached as Appendix N of the main STAG report.
Overall, the predicted benefits of Option A are scored as ‘Moderate’ while the predicted benefits of Option B are scored as ‘Major’.

**Summary of Integration Appraisal**

Overall, the options positively contribute to integration across transport, land use, and policy. Options A and B are scored to offer moderate benefits overall.

Benefits are likely to be associated with service and ticketing integration, especially for Option A, which improves existing bus/rail connections by timetable enhancements and branding, with further integration of ticketing and information. Option B benefits from direct access to the rail network, simplification of ticketing requirements compared to multiple modes, and improved infrastructure and information from new stations. Furthermore, inclusion of a station situated within walking distance of the existing Leven Bus Station would improve integration between modes.

For Land Use Integration, Option A, which includes improvements to integration of bus and rail from Leven town centre, with a branded bus service, as well as the areas of Methil, Methilhill, Buckhaven, and Windygates, would provide improved access to the Energy Park and the Cameron Bridge (Distillery and Hospital) employment areas. There is no new infrastructure associated with this option and, as such, there is no associated land-take that requires consideration. The service could be routed to serve future development at the Levenmouth SDA.

Option B integrates well with the existing land use and future development proposals identified in the area. Land has been safeguarded for the re-opening of the rail line, which would help to mitigate the travel demand impact of future development proposals in the area.

In relation to Policy Integration, Option A and B would promote and encourage sustainable travel and align with national, regional and local transport policy as well as wider policy drivers such as movement towards a lower carbon transport network. The options, would support wider policy drivers. For example, the Options would support social and economic prosperity and Option B would provide added benefit of helping to support inward investment and job creation in the local area as well as the transfer of road based freight to other modes.

**Summary of Accessibility and Social Inclusion Appraisal**

The options score well across the Accessibility and Social Inclusion appraisal criteria, each achieving a moderate positive scoring.

Option A would enhance connections to Methil, Windygates and Buckhaven, while boosting access to the rail network at Markinch and to Glenrothes town centre. The local routing of this service maximises its accessibility, helping to facilitate non-car access to key services and facilities. Option A improves access to areas with some of the highest levels of the problems noted above, such as Methil and Buckhaven. Fare re-balancing at Markinch as part of this option may improve improved access to the wider rail network for proportions of the community, in terms of affordability.

Option B would help improve accessibility, providing a direct link to the wider rail network from the Levenmouth area at Cameron Bridge and Leven and increasing the catchment area within commuting distance. It can be expected that commuters from the wider area, including the East Neuk, would be attracted to use the rail services with stations incorporating Park and Ride facilities. Interchange at Inverkeithing would provide connection with Fife Circle services to access Dunfermline and other...
destinations in west Fife. Services to the north, including Aberdeen, Dundee and Perth would be achieved via Kirkcaldy.

**Summary of Transport Planning Objectives Appraisal**

For TPO 1, which centred on improving access to employment, education, health and leisure, **Option B** offers moderate benefit while **Option A** shows minor benefit. Similar impacts are expected in relation to TPO 2 with regard to promoting mode shift towards sustainable mode share. The difference in scoring reflects the expected wider catchment of rail supported by Park and Ride facilities at Cameron Bridge, in particular.

In relation to TPO 3, **Option A** scores a minor impact in terms of attracting inward investment. **Option B** is expected to have a large benefit in terms of attracting inward investment, primarily as a consequence of the rail-freight potential this option would bring to the area and support to current and new business activity.

In relation to the tourism TPO 4, **Option A** scores a minor benefit as it offers a longer distance connectivity benefit to the central Levenmouth area. **Option B**, as well as supporting local and regional access, provides the opportunity for a direct rail link from the area to Edinburgh, including the airport (via the Edinburgh Gateway Station on opening) and therefore scores a moderate benefit in terms of attracting tourists to the area. Tourism marketing initiatives would serve to help encourage tourist travel to the Levenmouth/East Neuk area and complement investment in the local transport network.

**Cost to Government**

**Option Costs**

Investment costs include all infrastructure and other capital costs incurred by public sector operators that are in addition to the Do Minimum. In line with the remit of this study, the scheme costs reported in the Levenmouth Sustainable Transport Study (Scott Wilson, 2008) provide the basis for the development of the rail option costings for this study. There was no bus option included within the previous Detailed Appraisal study and, therefore, these have been developed specifically for this appraisal.

Investment costs for **Option A** are based on industry standards set out in the *Bus Industry Monitor Report: Bus Industry Performance 2014* (TAS Publications). The investment costs are based on up to three additional vehicles operating throughout the day in order to cover additional services, including three extra peak hour services to ‘meet’ all peak period rail services to the south (towards Edinburgh) and north (towards Perth and Dundee). During the off-peak, an hourly service frequency is proposed.

The investment costs for **Option B** were developed on the following basis:

- Consistency check of Scott Wilson costs reported in the 2008 study with the scope of Option B;
- Application of Retail Price Indices (215.3 at 2008 Q2 and 259.8 at 2015 Aug) to core capital cost, plus an assessment based on current delivery experience;
- Risks added to core capital cost;
- Application of Network Rail design management fee at 12.5% of total capital cost; and

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6 Costs in Fife are considered to be similar to the ‘shire’ operator category (Table 7).
Inclusion of rail construction inflation (estimated at 1.3% per annum) over and above base inflation.

The costs associated with each Option are outlined in Table E5. The capital costs include optimism bias at 44% and 50% for Option A and Option B, respectively. A renewal cost based on vehicle replacement every 12 years is reflected in the costs for Option A. Option B would be delivered through the leasing of rolling stock, with related costs captured in the annual operating cost.

1.6% increase per annum has been applied to the operating and maintenance costs of the bus and rail services and the new stations, to represent the optimism bias in these operating cost assumptions.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>CAPITAL (2010 Prices, undiscounted)</th>
<th>OPERATING &amp; MAINTENANCE (PER ANNUM)</th>
<th>ASSUMED YEAR OF OPENING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>£2.9M</td>
<td>£257,000</td>
<td>2017</td>
</tr>
<tr>
<td>Option B</td>
<td>£78.4M</td>
<td>£404,000</td>
<td>2022</td>
</tr>
</tbody>
</table>

The equivalent current (2015) capital cost for Option A is £3.4M assuming a 2017 year of opening, and £91.1M for Option B assuming a 2022 year of opening.

A summary of the costs for Option B, in relation to the cost development steps outlined above, is shown in Table E6.

<table>
<thead>
<tr>
<th>COST ELEMENT</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Cost</td>
<td>£42.2M</td>
</tr>
<tr>
<td>Base Cost + Risk</td>
<td>£49.9M</td>
</tr>
<tr>
<td>Base Cost + Risk + Optimism Bias</td>
<td>£74.9M</td>
</tr>
<tr>
<td>Base Cost + Risk + Optimism Bias + Network Rail Design Management Fee</td>
<td>£84.3M</td>
</tr>
<tr>
<td><strong>Total Cost</strong> (inclusive of additional rail inflation)</td>
<td>£91.1M</td>
</tr>
</tbody>
</table>

**Grant and Subsidy Payments**

Grant and subsidy payments can be made by the Government to private sector operators when revenues do not cover investment and operating costs. As operational costs for Option A exceed the expected revenue, this option would require subsidy of £100k per annum (2010 prices, undiscounted), amounting to £3.8M (2010 prices, discounted) in total over the 60-year appraisal period. There would be no grant or subsidy payments required for Option B as the additional public transport revenue exceeds the assumed operating cost.
Cost-Benefit Analysis
The economic appraisal has been based on a 60-year appraisal period from the year of opening (2017 for Option A and 2022 for Option B) and all benefits are expressed in 2010 prices. Monetary values have been discounted to 2010 at 3.5% for 30 years and 3.0% for the remainder of the evaluation period.

Option A and Option B would achieve a Benefit-Cost Ratio (BCR) to Government greater than one. The BCR of 5.19 for Option A (Table E7) is higher reflecting the low investment and maintenance costs. Option A would, however, require ongoing subsidy for the extra operating costs in excess of the additional revenue generated. Option B has a lower BCR at 1.31 as shown in Table E8. However, its impacts are greater (Table E4) and the smaller ratio reflects the higher investment, maintenance, and operating costs and the high (50%) optimism bias factor applied to the rail-related costs.

| Table E7: Option A Cost-Benefit Analysis (2010 Prices, discounted) |
|---|---|
| BENEFIT | TOTAL |
| Present Value of Transport Benefits (PVB) | £31.7M |
| Present Value of Costs to Government (PVC) | -£6.1M |
| Net Present Value (NPV) | £25.6M |
| Benefit-Cost to Government (BCR = PVB/PVC) | 5.19 |

| Table E8: Option B Cost-Benefit Analysis (2010 Prices, discounted) |
|---|---|
| BENEFIT | VALUE |
| Present Value of Transport Benefits (PVB) | £79.8M |
| Present Value of Costs to Government (PVC) | -£61.0M |
| Net Present Value (NPV) | £18.8M |
| Benefit-Cost to Government (BCR = PVB/PVC) | 1.31 |

A sensitivity test was undertaken to assess the impact of enhancing the public transport network by investment in bus and rail i.e. taking forward Option A and B in combination. The sensitivity test reported a BCR of 1.48. The option would serve to provide further increased choice into the public transport network and strengthen access across communities in the Levenmouth area to employment, education, health and leisure opportunities and further build up demand for public transport.

Implementability

Technical Feasibility

Option A is expected to be technically feasible, however, it would require discussion with public transport operators regarding provision of the services. Fare re-balancing at Markinch for this option,
while not representing technical feasibility issues, will also require significant effort in terms of negotiation and agreement and may not be possible within the current ScotRail franchise.

Option B would require re-design and construction of the line to bring it up to passenger rail standard. While this is a major undertaking, the option is technically feasible with a live line having operated previously and known circumstances (subject to full detailed investigation of the existing line were this option taken forward).

Existing maintenance budgets for Leven Railway Bridge involve the propping of the structure, however, the re-instatement of the rail track (as per Option B) would preclude this action. In Option B, consideration of the structure would form part of the detailed design work undertaken, as would the consideration of all structures along the extent of the rail line. For the purpose of this appraisal, deck replacement has been assumed as required at Leven Railway Bridge. Any future decking proposals taken forward independent of Option B should be progressed with due account of the specification of the new rail line. This should ensure that any future changes to the bridge are aligned to these specifications and provide appropriate flexibility, for example with regard to clearance and headroom.

Operational Feasibility

Option A would be delivered by the existing bus fleet supplemented by new vehicles to serve the additional 44B equivalent services. At present, the X4 vehicles are used across multiple routes. As such, there may be a requirement to review the fleet scheduling so branded vehicles were to operate only on their dedicated route. Continued collaborative working would be required between Fife Council and Stagecoach in the provision of bus services to and from the Levenmouth area.

In terms Option B, diversion of the Edinburgh to Glenrothes with Thornton terminating service could require an extended layover at Leven and potentially affect the service frequency at Glenrothes with Thornton. One alternative to overcoming the extended layover would be the removal of a call from an intermediate station. The introduction of this change may not be without challenge and may require a review of the Fife Circle to provide sufficient capacity and suitable evening peak operations. If a rail option were progressed, detailed timetabling would be required in consultation with Abellio and Network Rail in order to understand the resilience within the network to accommodate a rail operation to Leven. If a rail option were progressed, operational considerations and future timetables would need to be advanced in the context of wider changes that would have a direct impact on the operation of a rail service for Levenmouth.

Financial Feasibility

Option A would be relatively low-cost, but the requirement for additional subsidy of the extra buses would be an issue for Fife Council, particularly given the current financial constraints affecting the Council. Rail fare balancing at Markinch would require negotiation with the train operators, to agree the level of reimbursement within the current ScotRail franchise and may have to wait until the relevant franchises come up for renewal.

Option B has significant costs associated with maintenance and operation of the line and changes to rail franchise agreements would need to be considered. Provision of rail freight facilities may incur ongoing associated costs. Maximising the number of freight users would support the viability of the line in terms of costs and benefit from the level of freight movement occurring. Depending on the type of service introduced, operating costs may require subsidy.
Public Acceptability

In terms of public acceptability, **Option A** is expected to receive public support, but **only if** it is integrated with **Option B**. **Option B** is safeguarded in local development plans, negating much of the additional land take that would be required with the opening of a completely new rail line. Within the local community, comment forms and verbal feedback received at the consultation undertaken in October 2015, noted that there was support for the re-opening of the rail line. The associated connectivity enhancements were viewed to provide benefit in terms of access to employment, education, health, and leisure facilities, as well as stimulating business activity and investment in what is a deprived area. The higher cost of rail fares was raised by some at the public consultation drop-in events as a potential barrier, especially for parts of the study area where levels of deprivation are particularly high.

Assessment of Key Risks

Risk and uncertainty has been taken into consideration as part of the appraisal process. This has been informed by the preparation of an initial Risk Register highlighting key risks that could impact on option delivery and operation. The register identifies the probability of risks occurring and their level of impact. The register should be updated as options are progressed.

Monitoring and Evaluation

A monitoring and evaluation framework should be constructed and utilised for any options implemented. This is important in order to understand the impacts of options as well as their delivery context. An initial framework is presented for further refinement where options are progressed to detailed design and implementation.

Conclusions

This report has presented the findings of the Levenmouth Sustainable Transport Study undertaken in accordance with STAG.

**Option A - Integration of bus services in the Levenmouth Area with existing rail provision at Markinch.**

**Option A** performs positively across the different STAG criteria, showing a moderate benefit to integration and accessibility and social inclusion as outlined above. However, in relation to safety and each of the four Transport Planning Objectives of the study, this option only represents a minor benefit. It is expected to have a neutral environmental impact.

In relation to **Option A**’s economy scoring and its value for money, the positive BCR reflects the associated low investment and operating costs of this option. However, it should be noted that the economic benefits and monetised benefits of the option are significantly lower than **Option B**. This option would require an annual subsidy to offset the additional operating costs not covered by revenue generated.
While **Option A** would be positive for Levenmouth area, the scale of these benefits are unlikely to be sufficient to have a major, or even a moderate, impact on achieving the objectives set in this study and tackling the significant problems of the Levenmouth area.

**Option B - Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Leven.**

**Option B** performs well across the different STAG criteria, showing a moderate benefit to integration, safety, and accessibility and social inclusion as outlined above. It also scores a moderate benefit to each of the four Transport Planning Objectives of the study. It is expected to have a minor negative environmental impact overall.

The higher investment costs in **Option B** result in the scheme providing a lower, yet positive, benefit-cost ratio than **Option A** at this stage. The scheme also scores as being of major positive economic benefit to the Levenmouth area, with the potential to significantly benefit users and enhance business activity, investment and employment opportunities.

**Option B** would have a significant positive impact on the Levenmouth area, including tackling the significant problems faced by the area and the delivery of the objectives identified by this study.

In summary, while either option could be progressed independently to the benefit of the Levenmouth area, only **Option B** offers the potential to deliver the study’s Transport Planning Objectives to a significant degree. Therefore, if a single Option was to be chosen to help deliver the TPOs identified for this Study, then we would recommend the rail option (Option B).

However, it should be noted that neither of these two Options preclude the other, so that both could be progressed in parallel. Bus services play an important role in the transport network, particularly in areas of deprivation, and rail would expand the public transport offering and freight connections to markets and suppliers. This would provide additional bus services south of Levenmouth to access local destinations as well as strengthen the bus-rail integration at Markinch to bring forward a ‘quick win’ in the short-term, followed by the more-expansion of the public transport offering to/from Levenmouth through the re-opening of the rail line in the longer-term.

We would strongly recommend that Transport Scotland and Fife Council work together to commission a Level 3 Governance for Railway Investment Projects (GRIP3) design as soon as possible, to address the uncertainties over the timetabling and the costs of the rail infrastructure and to enable the level of optimism bias uplift which is applied to these costs to be reduced (from 50% to 18%).
1. INTRODUCTION

1.1 Overview

1.1.1 In May 2015, Fife Council commissioned SYSTRA to undertake a study to identify options to improve sustainable transport connectivity for the area of Levenmouth in Fife. The study has been undertaken in accordance with the Scottish Transport Appraisal Guidance (STAG) which provides a framework to assess the performance of different transport options to address identified problems and present the results in a consistent manner to inform decision makers.

1.1.2 The STAG process comprises four stages as outlined below and summarised in Figure 1.

- **Pre-Appraisal**: where the problems, opportunities, issues and constraints are identified and scoped. Study-specific Transport Planning Objectives (TPOs) are then identified and an ‘optoneering’ and sifting process undertaken to provide a list of possible options to address the problems;
- **Initial (Part 1) Appraisal**: potential options are appraised against the TPOs, five STAG criteria and factors concerning deliverability, to ensure that they are likely to fulfil the study’s requirements;
- **Detailed (Part 2) Appraisal**: involving more detailed consideration of potential options taken forward following the Initial Appraisal, and presenting the outcomes to inform investment decision makers; and
- **Post-Appraisal**: key elements of this stage involve the application of the monitoring and evaluation proposals developed as part of the appraisal.
1.1.3 In line with STAG, the study has been undertaken with consideration of different modes and in the context of the wider policy setting. Cognisance has also been taken of previous studies where appropriate.

1.1.4 A programme of consultation activities was undertaken to discuss and provide the opportunity for different stakeholders to inform and directly contribute to the identification of problems, opportunities, issues and constraints as well as the setting of objectives and ‘optioneering’ steps. For Pre-appraisal and Part 1 Appraisal the consultation included:

- **Stakeholder workshops** with representatives from Fife Council, Transport Scotland and SEStran as well as Fife Council attendees, including representatives from Economic Programmes and Policy, Town Centre Development, Area Services, Structures Asset Management, and Transport;

- **One-to-one meetings/discussions** with representatives from stakeholders, including Transport Scotland, Network Rail, Savills - Wemyss Estates Management, Stagecoach, Fife Chamber of Commerce, the Levenmouth Rail Campaign, ScotRail
Abellio and statutory environmental consultees (Scottish Natural Heritage (SNH), Scottish Environmental Protection Agency (SEPA) and Historic Scotland);

- **A Business Survey** distributed via Fife Council and Fife Chamber of Commerce and targeted at businesses in the Levenmouth and East Neuk area. A total of 22 businesses responded with 65% based in Leven or Methil, and the other 35% located in Lundin Links/Lower Largo/Upper Largo and wider Fife area. The businesses covered a wide range of activities including finance, retail, training, education and transport. 96% (n=21) of respondents represented businesses with fewer than 50 employees; and
- **A Public Survey** distributed through Fife Direct and the Fife Council’s People’s Panel. Paper. Hard copies were also made available on request. 76 responses were received.

1.1.5 A full consultation report for Part 1 is presented in Appendix A. Pertinent points to the identification of problems, opportunities, issues and constraints alongside setting objectives and the identification and sifting of options are presented in the relevant sections of this report.

1.1.6 Consultation was also carried out during Part 2; this is described in Section 9.2 of this report. This included:

- **Public Consultation** drop-in sessions held at Leven Bus Station, Kirkland High School Community Use, and Methil Library.
- Further engagement with **Key Stakeholders**.

### 1.2 Structure of this Report

1.2.1 Following this introductory chapter, the report is structured as follows:

- Chapter 2 – An overview of the study area, including the socio-economic context and existing transport network.
- Chapter 3 – Analysis of the problems, opportunities, issues and constraints for transport in the study area.
- Chapter 4 – Overview of the national, regional and local policy context of pertinence to the study.
- Chapter 5 – An outline of the Transport Planning Objectives (TPOs) developed for the study and their relationship with the problems and opportunities as well as the wider policy context.
- Chapter 6 – An outline of the option generation, including an overview of the options to be taken forward for Part 1 Appraisal.
- Chapter 7 – Reports the findings of the Part 1 Appraisal.
- Chapter 8 – Summarises the findings of the study and the recommendations for options to be further considered in the Part 2 Detailed Appraisal.
- Chapter 9 – Introduces the Part 2 study, and details the Part 2 consultation process and further development of the options.
- Chapter 10 – Explains the approach to demand forecasting for the study, which has been used to estimate the additional public transport use and benefits generated by the options.
Chapter 11 – Outlines the Part 2 appraisal of the options.
Chapter 12 – Considers the Cost to Government of the Part 2 Options.
Chapter 13 – Summarises the study’s management process for risk and uncertainty, and includes the risk register for the Part 2 options.
Chapter 14 – Outlines the study’s monitoring and evaluation frameworks.
Chapter 15 – Summarises the conclusions of the study.
2. STUDY AREA OVERVIEW

2.1 The Study Area

2.1.1 The Levenmouth area has a population of around 38,000, which makes it the 25th largest settlement in Scotland\(^7\). It comprises an amalgamation of coastal and inland settlements centred on the core urban centre of Leven and the surrounding settlements of Methil, Buckhaven, Methilhill, Windygates and Kennoway, as shown in Figure 2 below.

2.1.2 The area provides a gateway to a large part of the East Neuk in north-east Fife, whose residents are therefore also affected by any transport issues which affect the Levenmouth area.

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Figure 2. Levenmouth Study Area
2.2 Socio-Economic Setting

2.2.1 An appreciation of the social and economic context of the study area is of importance to provide insight to the function of the transport network and how it is used at present by residents, commuters, businesses and visitors to the area. This is pertinent to provide a wider context and understanding to the identification of subsequent transport related problems and opportunities and their significance in the context of the needs of the local population.

2.2.2 Population in the Levenmouth area grew from 2003 to 2008 (1.6%), however a fall in population from 2008 onwards balanced this out to show no overall change from 2003 to 2012. This is in contrast to the total Fife estimated growth of 4.2%, and Scottish growth of 4.8%, across the period between 2003 and 2012. There is generally limited inward movement of population to housing within Levenmouth and changes in residence largely accounted for by people already living in the area.

2.2.3 While the Levenmouth area has pockets of relative wealth, and has seen significant commercial investment by Diageo and in the Fife Energy Park in recent years, poverty and inequality is persistent and severe in some neighbourhoods. Based on to the current (31 August 2016) Scottish Index of Multiple Deprivation, 23 (=44%) of the 52 datazones in Levenmouth’s area are currently among the 20% most-deprived in Scotland, twelve (=23%) of these are in the 10% most deprived and six (=12%) of these are among the 5% most-deprived datazones in Scotland.

2.2.4 Figure 3 also highlights social deprivation (based on the Census 2011 social deprivation definition of employment, education, health/disability and housing) across South Fife, and shows the Levenmouth area’s high levels of deprivation classification in relation to neighbouring settlements. Notably the Lundin Links and Lower Largo area show low levels of deprivation in contrast to Methil, Buckhaven and Kennoway.

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8 NRS mid-year population estimates.
9 http://www.gov.scot/Topics/Statistics/SIMD
2.2.5 The local economy in Levenmouth was traditionally focussed on mining and heavy industry and the area has struggled economically since the decline of these sectors. Major employers in the area include Fife Council, Diageo and Sainsbury’s. Most local amenities are provided in Leven, serving a catchment population of approximately 38,000 in the Levenmouth area plus a large part of the Eat Neuk in north-east Fife.

2.2.6 Diageo has two sites within the Levenmouth area comprising distillery facilities at Cameron Bridge and a bottling plant at Leven. Employing over 1,200 permanent members of staff, Diageo is a key employer in the area and also operates an apprenticeship system. Diageo’s logistical operations have recently transferred to WH Malcolm at the Banbeath site in Leven. Fife Energy Park is another notable development, which encompasses 54Ha and includes manufacturing and business park activities at Methil Docks. The Sainsbury’s store within Leven generates a significant local spend and accounts for 76% of convenience turnover in the wider Leven town centre area.

2.2.7 Traditionally Leven town centre has a low vacancy rate for commercial space, however there has been a recent increase in vacant space in the area and Fife Council’s Town Centre Development Unit noted during the consultation that independent retailers have moved from the area. Leven town centre has experienced a rising trend in empty retail units with the vacancy rate increasing from 8.8% in April 2010 to 13% in April 2014. Within the neighbourhood centres of Methil and Buckhaven the vacancy rate is estimated at more than 20%.

2.2.8 In terms of the leisure economy:

- the Fife Coastal Path (from Kincardine to Newburgh) passes through the south side of the area;
- The Fife Pilgrim Way\textsuperscript{10} (from Culross or North Queensferry to St Andrews) will pass through the north side of the area;
- Leven currently has two golf courses - Scoonie and Leven Links, with the latter used as a qualifying course when The Open takes places at the Old Course in St Andrews; and
- The Kingdom of Fife Railway Preservation Society is working towards creating a Fife railway heritage centre on the Kirkland Sidings in Methil.

2.3 Transport Network

Road Network

2.3.1 The road network in the Levenmouth area is characterised by a number of main routes connecting the principal towns as shown in Figure 2 (see page 9). This includes the A915 Standing Stane Road which links Leven to Kirkcaldy and A955 which connects Levenmouth with Kirkcaldy to the south-west and Lower Largo and St Andrews to the east and north-east. In addition, the A911 connects Levenmouth to Glenrothes and the A916 to Cupar and further north. Connections to the trunk road network are primarily via the A955 and A911 to the A92.

Bus Services

2.3.2 Public transport in the area is provided largely by bus, comprising a mixture of local services within the Levenmouth area, longer distance connections and express services. The majority of services are provided via Leven Bus Station. A summary of service provision is provided in Table 1 and illustrated in Figure 4. All services shown are operated by Stagecoach.

2.3.3 Unlike other areas in East Scotland, the Levenmouth area has not experienced a recent decline in patronage on local services. The local number 7 service, which routes through Levenmouth and onwards to Dunfermline via Kirkcaldy, is a particularly popular service with growing patronage. Similarly, the express services routing through Levenmouth are also reported to show strong growth, particularly to Edinburgh.

Table 1. Summary of Bus Services from Leven Bus Station (Stagecoach, July 2015)

<table>
<thead>
<tr>
<th>DESTINATION</th>
<th>KEY SERVICES</th>
<th>PEAK HOUR FREQUENCY</th>
<th>OFF-PEAK WEEKDAY FREQUENCY</th>
<th>JOURNEY TIME (STANDARD)</th>
<th>JOURNEY TIME (EXPRESS SERVICES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cupar</td>
<td>41B</td>
<td>2 hourly</td>
<td>2 hourly</td>
<td>38 minutes</td>
<td></td>
</tr>
<tr>
<td>Dundee</td>
<td>No direct services – variety of connections available</td>
<td>5-30 minute</td>
<td>5-30 minutes</td>
<td>65-100 minutes</td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{10} http://fifecoastandcountrysidetrust.co.uk/Fife-Pilgrim-Way\_68.html, Fife Coast & Countryside Trust, accessed on 12/09/2016.
<table>
<thead>
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<tbody>
<tr>
<td>Dunfermline</td>
<td>X27 and 7</td>
<td>Hourly</td>
<td>Hourly</td>
<td>120-125 minutes</td>
<td>70-75 minutes</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>X58, X60, X62</td>
<td>20-40 minute</td>
<td>20-40 minutes</td>
<td></td>
<td>90-115 minutes</td>
</tr>
<tr>
<td>Glasgow</td>
<td>X27</td>
<td>Hourly</td>
<td>Hourly</td>
<td></td>
<td>150 minutes</td>
</tr>
<tr>
<td>Glenrothes Bus Station</td>
<td>44A/B, X4A, 43, 46A</td>
<td>5-30 minutes</td>
<td>11-31 minutes</td>
<td>32-38 minutes</td>
<td>22-24 minutes</td>
</tr>
<tr>
<td>Kirkcaldy Bus Station</td>
<td>7A/B/C, X27, X58, X60, X62</td>
<td>5-25 minutes</td>
<td>5-25 minutes</td>
<td>38-45 minutes</td>
<td>26-30 minutes</td>
</tr>
<tr>
<td>Markinch Rail Station</td>
<td>44B, X4/A, 43, 46/A</td>
<td>5-25 minutes</td>
<td>10-25 minutes</td>
<td>24-30 minutes</td>
<td>14 minutes</td>
</tr>
<tr>
<td>Glenrothes with Thornton Rail Station</td>
<td>No direct services—variety of connections available</td>
<td>5-30 minutes</td>
<td>10 minutes</td>
<td>40-60 minutes</td>
<td>40-60 minutes</td>
</tr>
</tbody>
</table>
2.3.4 The nearest rail station is located at Markinch, just under 6 miles from Leven bus station and served by the X4 express service to Glenrothes from Leven bus station with a journey time of 14 minutes and an interchange of 5 minutes. There are also rail stations at Kirkcaldy and Glenrothes with Thornton as shown in Figure 2. Kirkcaldy rail station is accessed by local bus service number 7 and the express services, X58, X60 and X62. All these services route through Methil, Methilhill and Buckhaven as well as Leven providing access for all areas of Levenmouth. The corresponding journey time ranges from 28 to 47 minutes depending on the service with a walk of approximately 250 to 600m from Kirkcaldy bus station or Wemyssfield to Kirkcaldy rail station. There is no direct bus service to Glenrothes with Thornton station, but connections are available. The bus services connecting with the rail stations are as shown in Table 1.

2.3.5 Table 2 provides a summary of the rail connections available at these stations. For those with access to a car, free parking (143 spaces) is available at Markinch station and also at Kirkcaldy (625 spaces).

### Table 2. Summary of Passenger Rail Services (ScotRail, 2015)

<table>
<thead>
<tr>
<th>STATION</th>
<th>DISTANCE FROM LEVEN</th>
<th>DESTINATION</th>
<th>PEAK HOUR FREQUENCY</th>
<th>OFF-PEAK FREQUENCY</th>
<th>ANYTIME DAY RETURN TICKET PRICE</th>
<th>JOURNEY TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirkcaldy</td>
<td>10 miles</td>
<td>Edinburgh Waverley</td>
<td>10 minute or less</td>
<td>10-20 minute</td>
<td>£13.90</td>
<td>36 - 53 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dundee</td>
<td>30 minute</td>
<td>30 minute to hourly</td>
<td>£22.60</td>
<td>39 - 48 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perth</td>
<td>Hourly</td>
<td>Hourly</td>
<td>£15.30</td>
<td>39 - 45 minutes</td>
</tr>
<tr>
<td>Markinch</td>
<td>6 miles</td>
<td>Edinburgh Waverley</td>
<td>10-30 minute</td>
<td>30 minute</td>
<td>£19.40</td>
<td>46 - 63 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dundee</td>
<td>30-60 minute</td>
<td>Hourly</td>
<td>£17.40</td>
<td>36 - 39 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perth</td>
<td>Hourly</td>
<td>Hourly</td>
<td>£15.00</td>
<td>30 - 34 minutes</td>
</tr>
<tr>
<td>STATION</td>
<td>DISTANCE FROM LEVEN</td>
<td>DESTINATION</td>
<td>PEAK HOUR FREQUENCY</td>
<td>OFF-PEAK FREQUENCY</td>
<td>ANYTIME DAY RETURN TICKET PRICE</td>
<td>JOURNEY TIME</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------</td>
<td>------------------------------</td>
<td>---------------------</td>
<td>-------------------</td>
<td>---------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Glenrothes with Thornton</td>
<td>9 miles</td>
<td>Edinburgh Waverley</td>
<td>20-30 minute</td>
<td>20-30 minute</td>
<td>£15.30</td>
<td>58 - 70 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dundee (indirect via Kirkcaldy)</td>
<td>30-60 minute</td>
<td>30 minute to hourly</td>
<td>£23.70</td>
<td>59-89 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perth (via Inverkeithing and Kirkcaldy)</td>
<td>Hourly</td>
<td>Hourly</td>
<td>£22.80 (two singles)</td>
<td>87-104 minutes</td>
</tr>
</tbody>
</table>
Active Travel

2.3.6 As shown in Figure 5, Levenmouth has a cycle network consisting of a mixture of on-street (purple highlighted routes) and off-street provision (green highlighted routes) through its core. East Wemyss, Coaltown of Wemyss, Lundin Links and Upper Largo are not connected to the cycle network. While the area does not lie directly on the National Cycle Network (NCN), it is joined to NCN routes 76 and 1 to the west at Markinch. This route also connects to Markinch rail station, which has 10 cycle lockers and a cycle rack for 12 bikes. Sustrans are investigating a further cycle link between Leven and Cameron Bridge along the riverside.

![Figure 5. Cycle Network within Central Levenmouth (Sustrans, 2015)](image)

Current Trip Patterns and Mode Share

2.3.7 An effective transport network is integral to the operation and success of an area. The Levenmouth area is within ten miles of the two major settlements in Fife of Kirkcaldy and Glenrothes, to the south-west and west respectively. While internal trips make up the highest proportion of journeys produced from Levenmouth (30%), trips to Kirkcaldy and Glenrothes each account for 12% of trips. Approximately 13 miles to the north lies Cupar, which operates as one of the service centres for the north of Fife, and attracts the next highest percentage of trips at 3%. Edinburgh accounts for 3% (413 trips) and Dundee, the closest city to Levenmouth, currently attracts 2% (239 trips).

2.3.8 Census 2011 Travel to Work data provides a breakdown of transport mode for origin to destination movements. Table 3 and 0 show the modal split for the main inward and outward commuting movements as well as internal trips within the Levenmouth area. For inward commuting from all origins, car driver/passenger is the dominant mode followed by bus/coach. For outward commuting there is a greater reliance on public transport, in particular for movements to Edinburgh where train (22%/91 trips) and bus (10%/43 trips) is used and to Kirkcaldy where bus represents (13%/240 trips) of the mode share. For internal movements, while car driver/passenger still accounts for the majority of trips, a larger number (22%) of trips are attributed to walking.
### Table 3. Modal split for inward commuting to the Levenmouth area (excluding working from home) (Census 2011)

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>TOTAL</th>
<th>TRAIN/UNDERGROUND/TRAM</th>
<th>BUS/MINIBUS/COACH</th>
<th>CAR/VAN DRIVER OR PASSENGER</th>
<th>BICYCLE</th>
<th>FOOT</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirkcaldy</td>
<td>692</td>
<td>0%</td>
<td>6%</td>
<td>90%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Glenrothes</td>
<td>618</td>
<td>0%</td>
<td>6%</td>
<td>91%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Levenmouth</td>
<td>4641</td>
<td>0%</td>
<td>7%</td>
<td>68%</td>
<td>2%</td>
<td>22%</td>
<td>1%</td>
</tr>
<tr>
<td>Cupar</td>
<td>127</td>
<td>0%</td>
<td>0%</td>
<td>98%</td>
<td>1%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>City of Edinburgh</td>
<td>70</td>
<td>1%</td>
<td>1%</td>
<td>97%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Dundee City</td>
<td>36</td>
<td>0%</td>
<td>8%</td>
<td>92%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

### Table 4. Modal split for outward commuting by Levenmouth residents (excluding working from home) (Census 2011)

<table>
<thead>
<tr>
<th>DESTINATION</th>
<th>TOTAL</th>
<th>TRAIN/UNDERGROUND/TRAM</th>
<th>BUS/MINIBUS/COACH</th>
<th>CAR/VAN DRIVER OR PASSENGER</th>
<th>BICYCLE</th>
<th>FOOT</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirkcaldy</td>
<td>1857</td>
<td>0%</td>
<td>13%</td>
<td>85%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Glenrothes</td>
<td>1849</td>
<td>0%</td>
<td>6%</td>
<td>90%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Levenmouth</td>
<td>4641</td>
<td>0%</td>
<td>7%</td>
<td>68%</td>
<td>2%</td>
<td>22%</td>
<td>1%</td>
</tr>
<tr>
<td>Cupar</td>
<td>503</td>
<td>0%</td>
<td>7%</td>
<td>91%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>City of Edinburgh</td>
<td>413</td>
<td>22%</td>
<td>10%</td>
<td>65%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Dundee City</td>
<td>239</td>
<td>6%</td>
<td>5%</td>
<td>87%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>
3. PROBLEMS, OPPORTUNITIES, ISSUES AND CONSTRAINTS

3.1 Introduction

3.1.1 The identification of actual and perceived problems and opportunities form the starting point and ultimately the rationale for a STAG study. It is important for problems and opportunities to be considered in the wider context, and issues and constraints therefore also taken into consideration.

3.1.2 Problems, Opportunities, Issues and Constraints, as defined by the STAG guidance, are:

- **Problems**: existing and future problems with the transport system which result in a shortfall in meeting objectives, e.g. lengthy journey times, poor transport access to services;
- **Opportunities**: possibilities to improve the transport system and the way it is used, e.g. improve journey times;
- **Issues**: uncertainties that the study may not be in a position to resolve, but must work in the context of, e.g. impact of new developments; and
- **Constraints**: the bounds within which the study is being undertaken, e.g. available funding, policy or environmental designations.

3.2 Problems

**Access to Services by Public Transport**

**Access to Employment and Services**

3.2.1 Levels of deprivation and unemployment within the Levenmouth area are currently above the national average. Consequently, access to educational opportunities is particularly important for building a locally based skilled workforce that would, in turn, provide an attractive offering to future inward investment from existing or new industries and employers in the area.

3.2.2 Analysis of economic activity, drawing on 2011 Census data, shows that Buckhaven, Methil, Methilhill and Leven report a level of unemployment 3% greater than the Scottish average of 5% and four times the Lower Largo and Lundin Links rate of unemployment. Participation in further education is lower than the Scottish average of 9% by approximately 3%. These patterns support the suggestion that employment and educational skills in the area are declining coupled with high youth unemployment rates.

3.2.3 Analysis of the latest Census statistics (2011) presented in Table 5 shows that the proportion of the population describing their health as good or very good in Levenmouth is 76% and unemployment is 8% compared to the Scottish average of 82% good/very good health and 5% unemployment. This also supports comments made during the consultation regarding the ties between health and economic activity.
**Table 5. Health and Economic Activity (2011 Census)**

<table>
<thead>
<tr>
<th></th>
<th>BUCKHAVEN, METHIL, METHILHILL AND LEVEN</th>
<th>KENNOWAY AND WINDYGATES</th>
<th>LOWER LARGO AND LUNDIN LINKS</th>
<th>FIFE</th>
<th>SCOTLAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of economically inactive people aged 16 to 74 who are long-term sick or disabled (of 16-74 population)</td>
<td>8%</td>
<td>7%</td>
<td>3%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Unemployed people aged 16 to 74 who are unemployed (of 16-74 population)</td>
<td>8%</td>
<td>6%</td>
<td>2%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Percentage Good or Very Good Health (of total population)</td>
<td>75%</td>
<td>78%</td>
<td>83%</td>
<td>82%</td>
<td>82%</td>
</tr>
<tr>
<td>Number of Good or Very Good Health</td>
<td>18,451</td>
<td>5,072</td>
<td>1,569</td>
<td>298,891</td>
<td>4,353,481</td>
</tr>
</tbody>
</table>

3.2.4 Figure 6 shows the current (2011 Census) proportions of non-car-owning households in some of the relevant areas, relative to the Scottish average.

![Non-Car Owning Household Proportions (2011)](image)

3.2.5 36% of households in Buckhaven, Methil, Methilhill and Leven do not have access to a car, compared to the Scottish average of 31% and 14% in Lundin Links and Lower Largo.
3.2.6 As a result, the residents of Levenmouth are more reliant than those in an ‘average’ Scottish location on public transport services to access work, education, leisure and other activities. Comments made within consultation responses to the public survey highlighted the need to improve public transport services to specifically enhance access for non-car owning residents.

3.2.7 Above average levels of deprivation and unemployment within the Levenmouth area, compounded by lower levels of car ownership, heighten the importance of access by public transport to employment as well as education opportunities to establish a locally based skilled workforce that will in turn provide an attractive offering to future inward investment from existing and new industries and employers in the area. Access by public transport is also pertinent in terms of encouraging sustainable travel choices for commuter trips into Levenmouth as well as increasing the attractiveness of the area as a place to live and work.

Lengthy Public Transport Journeys

3.2.8 Analysis of accessibility by public transport identified varying levels of accessibility from the study area to key destinations. For the analysis, TRACC (accessibility software which calculates the route options and journey times for a large number of origins to a specific or multiple destinations) was run to calculate the route options and journey times for access from within the Levenmouth area to health (hospitals including Victoria Hospital), education services (colleges and universities), town centres (including Leven), employment centres (including Edinburgh Park, Central Edinburgh, Dundee, Kirkcaldy, Dunfermline) and to the Fife Energy Park from all residential areas in Scotland. The following accessibility runs were undertaken for access via rail, bus, coach (or a combination of these modes) and the walking connections to reach these services in the following travel time periods:

- Education: 07:00 – 09:00.
- Health: 09:00 – 16:00.
- Town centres: 09:00 – 16:00.
- Employment: 07:00 – 09:00.

3.2.9 Table 6 presents the TRACC results. Analysis of current access highlights the varying levels of accessibility from across different parts of Levenmouth, for example access to Victoria Hospital from Leven is 44 minutes compared to 29 minutes from Windygates. In addition, the analysis also reinforces comments made in consultation regarding lengthy commuting times by public transport to large labour markets, such as Edinburgh and Dundee.
Table 6. TRACC Accessibility Results – Journey Times by Public Transport (mins)

<table>
<thead>
<tr>
<th>LOCALITY</th>
<th>HOSPITAL</th>
<th>NEAREST TOWN CENTRE</th>
<th>EDUCATION</th>
<th>KIRKCALDY</th>
<th>DUNDEE CITY CENTRE</th>
<th>EDINBURGH PARK/SOUTH GYLE</th>
<th>DUNFERMLINE</th>
<th>CENTRAL EDINBURGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methil</td>
<td>36</td>
<td>12</td>
<td>15</td>
<td>39</td>
<td>83</td>
<td>87</td>
<td>87</td>
<td>108</td>
</tr>
<tr>
<td>Windygates</td>
<td>29</td>
<td>19</td>
<td>21</td>
<td>39</td>
<td>73</td>
<td>80</td>
<td>81</td>
<td>102</td>
</tr>
<tr>
<td>Buckhaven</td>
<td>31</td>
<td>15</td>
<td>18</td>
<td>32</td>
<td>81</td>
<td>79</td>
<td>80</td>
<td>105</td>
</tr>
<tr>
<td>Kennoway</td>
<td>35</td>
<td>17</td>
<td>18</td>
<td>45</td>
<td>99</td>
<td>83</td>
<td>107</td>
<td>N/A(^{14})</td>
</tr>
<tr>
<td>Leven</td>
<td>44</td>
<td>10</td>
<td>7</td>
<td>43</td>
<td>84</td>
<td>88</td>
<td>89</td>
<td>95</td>
</tr>
</tbody>
</table>

3.2.10 In summary, access to services varies across the study area and public transport journey times can be lengthy. Therefore, while bus services are available the journey times are not attractive and those with an alternative will often opt to drive. This is supported by the public consultation which found that existing public transport services were considered to provide inadequate competition compared to the car by 57% (n=43) of respondents to the public survey.

**Above Average Rail Fares from Markinch to Edinburgh**

3.2.11 Analysis by Fife Council, summarised in Figure 7 and Appendix B, reveals that the price of a standard day return from Markinch to Edinburgh (£19.60 in 2016) is much higher than would be predicted by the current (2016) Scottish average £/mile cost of travel to Edinburgh or Glasgow.

\(^{14}\) Journeys greater than 120 minutes are classed as inaccessible in TRACC.
3.2.12 This analysis suggests that the current (2016) £19.60 fare for the 33½ mile round trip from Markinch to Edinburgh is £5.41 higher than predicted by the average cost of a standard day return to/from Edinburgh or Glasgow from the 94 Scottish central-belt stations included in this analysis (£3.22 plus 0.33p/mile = £14.19). This £5.41 ‘excess’ is higher for Markinch than any of the other 93 Scottish central belt stations included in this analysis.

3.2.13 Figure 8 shows that the current (2016) standard return fares between all Fife stations and Edinburgh are also higher than the Central Belt average, with the relevant average Fife to Edinburgh fare approximated by £2.88 + 0.44p/mile. However, the Markinch to Edinburgh £19.60 journey is still £2.09 higher than the £17.51 predicted by this higher-than-average ‘Fife Station to Edinburgh’ relationship.
3.2.14 This higher-than-average fare will serve to reduce the attractiveness of rail travel between the Levenmouth area and Edinburgh via Markinch station, particularly for those on low incomes.

Perceived Ability of Public Transport to Meet Needs

3.2.15 The public survey undertaken as part of the consultation sought to establish how useful the current public transport services are at meeting everyday transport needs. For the majority of journey purposes (all excluding entertainment trips) over 50% of respondents disagreed that the existing public transport services meet their needs. Accessing medical care and entertainment show the highest levels of satisfaction relating to public transport services with approximately 25% of respondents agreeing that public transport meets their needs.

3.2.16 The survey also asked respondents to rate their agreement on a selection of statements relating to choice of workplace, views on frequency and safety. The responses showed a negative view of public transport within the area, particularly in relation to access to employment opportunities with only 19% (n=14) of respondents agreeing that the current public transport network provides adequate access to their work.

3.2.17 In terms of where improvements to the public transport network should be focused, enhancement of services to the rest of Fife and Edinburgh were considered most important by respondents to the business survey and local Levenmouth services and access to other cities beyond Edinburgh less pressing. Of those who did rank services to other cities as important, connections to Glasgow, Perth, Dundee and Aberdeen for Levenmouth residents were highlighted. Respondents ranked specific improvements as follows (from most to least important):
Services which do not require you to change vehicles to get to your destination;
The cost of the service compared to other options; and
More frequent services.

Public Transport Services to Edinburgh

3.2.18 The proportion of commuters travelling to Edinburgh has been reviewed for settlements of a similar road distance from Edinburgh. Table 7 presents the road distance, bus and rail provision and percentage of workers travelling to Edinburgh for a number of locations which are a comparable distance from Edinburgh in Fife, East Lothian and the Borders.

Table 7. Settlement Comparison of Work Patterns (Census 2011) and Public Transport Services to Edinburgh\(^{15}\)

<table>
<thead>
<tr>
<th>SETTLEMENT</th>
<th>APPROXIMATE ROAD MILEAGE</th>
<th>TOTAL WORKING POPULATION</th>
<th>% WORKING IN EDINBURGH</th>
<th>AM BUS FREQUENCY</th>
<th>AM BUS AVERAGE JOURNEY TIME</th>
<th>AM RAIL FREQUENCY</th>
<th>AM RAIL AVERAGE JOURNEY TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levenmouth</td>
<td>36</td>
<td>15,441</td>
<td>413</td>
<td>3%</td>
<td>4</td>
<td>119</td>
<td>-</td>
</tr>
<tr>
<td>Galashiels</td>
<td>33</td>
<td>5,107</td>
<td>265</td>
<td>5%</td>
<td>4</td>
<td>93</td>
<td>4</td>
</tr>
<tr>
<td>Glenrothes</td>
<td>31</td>
<td>16,848</td>
<td>528</td>
<td>3%</td>
<td>6</td>
<td>81</td>
<td>0/5(^{16})</td>
</tr>
<tr>
<td>Dunbar</td>
<td>30</td>
<td>4,119</td>
<td>869</td>
<td>21%</td>
<td>7</td>
<td>65</td>
<td>2</td>
</tr>
<tr>
<td>Kirkcaldy</td>
<td>29</td>
<td>21,131</td>
<td>1,301</td>
<td>6%</td>
<td>6</td>
<td>84</td>
<td>7</td>
</tr>
</tbody>
</table>

3.2.19 The table shows a pattern of correlation between good public transport provision and the proportion of workers commuting to Edinburgh. For example, Dunbar is located 30 miles from central Edinburgh yet benefits from a 24-minute rail journey time to central Edinburgh and 21% of workers commute to Edinburgh. By contrast, the relatively infrequent buses, no direct rail services and almost 2-hour bus journey times from Levenmouth to Edinburgh is matched by only 3% of Levenmouth workers commuting to Edinburgh, despite the very similar distances involved.

3.2.20 It should be noted that the Census 2011 data pre-dates the opening of Borders Rail in August 2015, so the proportion of Galashiels workers commuting to Edinburgh may now be higher than the 5% recorded in 2011.

\(^{15}\) Frequencies and average journey times are for direct journeys arriving in Edinburgh city centre between 7am and 9am sourced via Traveline Scotland. Census 2011 Travel to Work data - percentages exclude working from home, no fixed place of work and working offshore. For the purposes of this analysis the following Intermediate Zones have been included as Levenmouth: Wemyss, Windygates and Coaltown, Buckhaven, Denbeath and Muiredge, Methil and Methilhill, Methil West, Methil East, Leven East, Leven West, Leven North and Kennaoway and Bonnybank.

\(^{16}\) Value depends on whether or not Glenrothes with Thornton is considered to serve Glenrothes residents.
3.2.21 This pattern suggests that the lack of a train service, limited number of direct bus services and high bus journey times is making the job market in Edinburgh relatively inaccessible to Levenmouth residents.

### Unattractive Public Transport Leading to ‘Unsustainable’ Travel Choices

#### Bus-Rail Interchange

3.2.22 The rail stations at Markinch and Kirkcaldy are directly connected by bus services from Leven bus station. However, there is incomplete integration between the relevant timetables, with some trains not being met by an appropriate bus and some bus arrival times at these stations followed by a long wait for the relevant southbound train.

3.2.23 Bus services to the nearest station at Markinch currently route along the A915 and therefore do not serve the Methil, Methilhill and Buckhaven areas. Residents in these areas wishing to catch a train from Markinch are therefore required to interchange twice, first at Leven Bus Station and then on to the train at Markinch.

#### Above Average Fares (Particularly to Edinburgh)

3.2.24 The absence of discounted inter-modal ticketing means that the combined fares for these bus/rail journeys are higher than comparable fares on direct services of a similar length.

3.2.25 This is exacerbated by the higher-than-average rail fares between Markinch and Edinburgh (and to a lesser-extent between Kirkcaldy and Edinburgh) highlighted previously in Section 3.2.11.

3.2.26 The cost of existing public transport was also noted in the public, with over half (57%) of respondents disagreeing with the claim that public transport currently offers a competitive/affordable alternative to the car.

#### Perception of Car Park Capacity Issues at Kirkcaldy Rail Station

3.2.27 Both Markinch and Kirkcaldy rail stations offer free parking. The number of spaces at Markinch is generally sufficient to meet current demand. Availability of parking spaces at Kirkcaldy was identified during the consultation as a factor resulting in the need to park on surrounding streets some of which operate limited stay parking restrictions. Parking survey information provided by Fife Council indicates that Kirkcaldy station car park (north side) has occupancy levels ranging from 70% to 98% (Fife Council 2015 monthly counts). It is possible that this variation is causing the perception of capacity problems among those searching for a space on the ‘98% utilisation’ days. It is not clear whether some of real-time information provision could assist in increasing utilisation of the available spaces at Kirkcaldy station.

#### Perception of Unreliable Bus Services

3.2.28 Consultees highlighted a lack of real-time information regarding bus arrival times and lack of information and integration reducing the potential use of interchange opportunities. This ‘information gap’ will be addressed by further investment in the local public transport network including the forthcoming launch of a new Stagecoach website followed by an app which will provide real time information, journey times, bus arrivals and the ability to buy
tickets through the app. This is closely linked to concerns over journey time reliability, especially where journeys are dependent on connections, however Stagecoach suggested that there are currently few journey time reliability issues on their Levenmouth routes, suggesting that the public perception of unreliability is more ‘perceived’ than actual.

**Operation of the Road Network**

**Congestion**

3.2.29 Figure 9 shows Annual Average Daily Traffic flows for count sites in the study area for the period between 2010 and 2015. In summary, this shows a steady increase in traffic on the A911 and flows being relatively static on the A955 with the exception of the site to the east of Dysart which reports a 25% fall in traffic over the period. The A915 has experienced a rise in traffic at Earleseat Farm but a decline at Cameron Bridge.

![Figure 9. Annual Average Daily Traffic Flow in the Levenmouth Area: 2010 to 2015](image)

3.2.30 Fife Council’s Local Transport Strategy (LTS) highlights areas of congestion as shown in Figure 10. This includes the A915 between Main Street and the A911 and the A915 immediately north of Kirkcaldy. While the LTS is from 2006, consultation identified that problems remain at these locations in the meantime. Consultation with Fife Council also highlighted that access points to the A92 and the A915 are congestion problem areas.

3.2.31 The LTS identifies short term planned mitigation schemes for these hot spots, including signalisation of the Redhouse and Gallatown roundabout. Signalisation of Standingstane Road/Windygates junction, a long term development led improvement, is also noted. While
these measures are in place to mitigate development-led traffic, HGV traffic in the area continues to increase year on year. While it is noted below (p50) that the HGV levels observed are not considered to be high, they are

![Significant Areas of Congestion and key schemes (Fife Council Local Transport Strategy, 2006)](image)

3.2.32 Future development proposals, including the Levenmouth Strategic Development Area, and associated trips will increase demand across the road and public transport network.

Road Accidents

3.2.33 Annually a list of ‘worst’ road crash sites is produced by Fife Council to identify the locations where high road crash numbers have been recorded. There are a number of high accident locations identified within the Levenmouth area (Figure 11). The A915 has a number of accident black spots. As a result of this concentration of accidents, Fife Council initiated a Route Accident Reduction Plan for the A915 Kirkcaldy to Windygates (Standing Stane Road).

3.2.34 The Route Accident Reduction Plan identified three locations where there is a recurring crash problem in need of layout change/improvement and other sections of the route where general signing/lining improvements are required.

3.2.35 While these improvements have been identified to improve safety on this route, any reduction in traffic (car and HGV) along this route would provide benefit.
3.2.36 Traffic counts in the Levenmouth area have been analysed to highlight HGV levels in the surrounding area and Figure 12 shows HGVs as a percentage of AADT flows. Although consultation suggested there were high levels of HGVs in the area linked to the local industry, actual traffic count data does not support this perception and suggests HGV levels in Levenmouth are similar or lower than many sections of the surrounding road network. It can be seen from Figure 12 that HGV levels are of a similar level on the A911 as the A915, with HGVs making up 5.4% of all traffic. This equates to approximately 800 HGV movements on the A911, compared to between 800 and 900 movements on the A915.

3.2.37 The perception of high HGV flows could be related to the road network, and in particular, the A915 single carriageway between Windygates and Kirkcaldy which has few overtaking opportunities potentially resulting in the platooning of vehicles and associated reduced speeds and driver frustration. This perception could also be related to the relatively low HGV flows on other routes within Levenmouth, which heighten the ’higher’ HGV flows experienced on the A911 and A915.

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17 A915 Kirkcaldy to Windygates Route Action Reduction Plan, Fife Council, December 2014
Need for Economic Development to Attract Businesses and New Residents

Attracting Investment

3.2.38 Consultation with Fife Council and other stakeholders, including Fife Chamber of Commerce, suggested that there is a problem of perceived lack of investment and willingness to invest in the area, and viewed as ‘out of the way’ by residents and businesses despite being situated within 7 miles and 10 miles from Glenrothes and Kirkcaldy town centres respectively.
3.2.39 It was noted during the stakeholder workshop that Diageo expanded its bonded warehouse/distribution provision off the A92 north of Kirkcaldy with the creation of approximately 40 jobs rather than further expansion of the Levenmouth site. The reasoning, however, behind this decision would require further understanding and so this example should be considered with caution.

**Above Average Rail Fares from Markinch to Edinburgh**

3.2.40 The higher-than-average rail fares between Markinch to Edinburgh highlighted previously in Section 3.2.11 may be adding slightly to the perception that Levenmouth is ‘hard to get to’ from Edinburgh. As a result, there may be a corresponding (slight) impact on the attractiveness of the area as a location for business or residents who need to make regular trips to Edinburgh.

**Access to Skilled Workforce**

3.2.41 Levenmouth is an economic driver for the local community and according to the 2011 Census there were 7,934 persons working in Levenmouth, with 58% from the area. Similar to the inward commuting pattern, Kirkcaldy (9%) and Glenrothes (8%) are the top trip origins of commuters travelling into the Levenmouth area.

3.2.42 Feedback from the stakeholder workshop suggested that current skills of the labour market in Levenmouth are not suitable for the Energy Park, leading to an influx of skilled professionals working but not living in the area. It was noted that due to the nature of the businesses at the Energy Park it often has a transient workforce commuting into the area by car for short periods of time. Fife College is currently offering courses designed to match some of the skill requirements of the Energy Park, however, Fife Chamber of Commerce were keen to note in the consultation that it is important for the area to also seek to diversify the economic opportunities for local residents rather than centring training only on certain jobs.

3.2.43 Furthermore, over 70% of the respondents to the public survey disagreed that public transport services positively impacted on their decision to live and work in the Levenmouth area.

3.3 **Opportunities**

**Bus Service Enhancements**

3.3.1 Stagecoach has committed to future investment in the bus network within Levenmouth. This includes the upgrade of vehicles and roll-out of measures to improve facilities and journey experience, including the introduction of journey planning/information apps and one-ticketing arrangements.

3.3.2 Stagecoach East Scotland\(^{18}\) announced the investment of £3.12m in a fleet of new coaches for the St Andrews to Edinburgh express service. The 12 new vehicles were introduced to X58 and X60 routes in late 2015 serving St Andrews, Leven, Kirkcaldy, Dalgety Bay, Ferrytoll Park & Ride and Edinburgh.

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3.3.3 Further investment in the bus network will help improve the quality of service, however the lengthy journey times to destinations such as Dunfermline, Edinburgh and Dundee will remain. This can be expected to continue to preclude the level of attractiveness of services to users and competitiveness compared to other modes, in particular the car.

### Increasing Public Transport Choice

3.3.4 Opportunities exist to expand the public transport offering in the local area. This relates to an existing, but currently largely out-of-use, rail line between Thornton and Leven. Reopening of the rail line has been highlighted as an area for further investigation in the Local Transport Strategy and the line has been safeguarded in the Mid-Fife Local Plan (2012) and FIFEplan (proposed, 2014). The line is operational at present between Thornton and Earlsheat to support coal mining activity. The non-operational section includes track-bed as well as a station at Cameron Bridge and available land for a station at Leven. The line is currently designed and built to standard for freight traffic only, allowing for a single train at 20mph.

3.3.5 Network Rail have stated that line would need to be re-built to allow passenger traffic to run. Signalling is currently only provided at the connection to the main line at Thornton, and would require expansion towards Levenmouth along with a structural assessment of the integrity of existing assets, such as the Leven Railway Bridge, along the line. The line is currently subject to a Short Term Network Change order which allows Network Rail to propose to maintain any part of the network at less than the published capability for a specified period.

3.3.6 Exploring the potential for re-opening the rail line was also raised frequently throughout initial consultation at the stakeholder workshop and in responses received to the public and business surveys. A Levenmouth Rail Campaign lobbying group exists, and a number of Fife Councillors have also publicly expressed support for the re-opening of the line.

3.3.7 Expanding the public transport offering is of significance as the re-opening of the Leven to Thornton rail line would potentially reduce journey times to key employment destinations in Fife and beyond. A re-opened rail line would provide additional choice and capacity into the transport network to support the future development of the Levenmouth area. A re-opened rail line would also support the operations of Diageo and in particular the efficiencies of their operation through facilitating the opportunity to transfer freight from road to rail. Diageo is a key employer in the local area and also of importance to the wider regional economy as well as bringing international distribution links to the national economy.

### Rail Freight

3.3.8 Linked to the opportunity for expanding the public transport offering through rail passengers services, is the opportunity also afforded from a freight perspective. A rail freight line was reinstated in 2012 from Thornton to as far as the Earlsheat Coal facility. No other rail freight provision exists in the study area, although as noted, the line has been safeguarded in the Mid-Fife Local Plan (2012) and FIFEplan (proposed, 2014).

3.3.9 The largest identified opportunity for rail freight transport lies with Diageo operations in the area. The discontinued Thornton to Levenmouth line passes adjacent to Diageo land. There are historical disused sidings at the Cameron Bridge Distillery location. There exist significant Diageo warehousing facilities on the north side of the A915 in Leven, with all freight
movement currently being carried out by road from this site. Operations at Diageo mean that there is the potential for two-way freight movement in terms of materials in, and product out. However, while having benefits for line utilisation potential, the load requirements for these movements may be different, making it likely that the same vehicle cannot be used.

3.3.10 WH Malcolm, a logistics provider for Diageo, has previously engaged in rail freight discussions regarding the Branch, and currently use rail for their other logistical operations. Previous discussions on rail freight between WH Malcolm and Network Rail ended due to combination of costs associated with the provision of terminal facilities and the need to fully resolve the train operations to achieve financial viability. There is ongoing work taking place to deliver that resolution. Freight opportunities for other businesses in the area, such as Fife Energy Park, are also an important consideration to help maximise benefits as far as possible.

3.3.11 This opportunity is of significance as discussions with Diageo and their haulier WH Malcolm noted previous interest and ongoing activity to investigate rail freight opportunities to support site operations at Cameron Bridge and Leven. This Diageo site is both strategically and locally important and continued investment from Diageo and WH Malcolm into the community is key for the economic success of the area and also of significance to the wider economy through the international distribution links.

### Proximity to Methil Docks

3.3.12 Methil Docks are operated by Forth Ports and can accommodate vessels up to 3,000 Deadweight Tonnage (DWT). The port acts as a timber, aggregate and general bulk commodity distribution centre and provides facilities to accommodate the repair, maintenance and supply of off-shore drilling rigs and tankers.

3.3.13 The Mid-Fife Local Plan, which was adopted in 2012, highlights Methil Docks as a Local Development Plan allocation. It notes the importance of this site to the development of the Energy Park and its supporting role in the development of the off-shore wind sector in Fife. This is of significance in terms of access provision and connectivity to attract new investment to diversity the economy of the area into strong growth sectors.

### Low Carbon Investment Park

3.3.14 Investment proposals for a Low Carbon Investment Park, located in Buckhaven, form part of the Levenmouth Strategic Development Area and include allocations for industrial and commercial land. The site would be funded under the Scottish Government’s Tax Incremental Financing (TIF) initiative with funds from the European Regional Development Fund. Work started on the Park in 2015 and when complete it will offer 10ha of industrial and commercial land. The development will offer businesses with the energy sector the opportunity to locate beside one another and attract larger business investments.

3.3.15 This is of significance as proximity to complementary businesses within the park is a key driver and selling point, however, transport connections to Edinburgh Airport and other energy centres including Aberdeen are important for attracting investment to the area. Connections to the East Coast Mainline and Edinburgh Gateway station could further help to attract and boost investment in the park.
Active Travel

3.3.16 Travel distances across Levenmouth are conducive to cycling given effective provision of active transport infrastructure and information. The core urban area of central Levenmouth stretches approximately 3 miles from the edge of Buckhaven to the edge of Leven, and from the centre of Leven to the extent of Kennoway. Based on a 10mph ‘gentle’ cycle speed, this makes the majority of the Levenmouth urban area accessible within 20 minutes by bike. For walking, this would equate to approximately 60 minutes at 3mph, with travel times for trips to Leven town centre much lower than for most urban areas.

3.3.17 The Fife Coastal Path, which carries over half a million people each year, passes through the Levenmouth area. Consultation responses highlighted the potential to establish resources at Silverburn Park, on the edge of Leven, to provide a comfort stop on this route. The Fife Pilgrim Way, further discussed below, also presents an active travel opportunity.

3.3.18 This is of significance as opportunities exist to encourage cycling and walking locally, while also promoting the area as a destination for walkers and cyclists to visit. This requires support of the wider public transport network to provide visitors with access to destinations and routes within the area.

Leisure Tourism

3.3.19 The location of Levenmouth presents opportunity to harness the coastal setting of the area. In particular, the proximity of the area to the Fife Coastal Path and wider East Neuk, as well as local golf courses, creates opportunities for opening up tourism benefits which could be further capitalised in order to help raise the profile of the area in terms of attractiveness to visitors from wider Fife and further afield.

3.3.20 Although Levenmouth benefits from large scale events in Fife, such as the golf Open at St Andrews, the area does not yet have a big enough tourist attraction to attract tourists to the area according to consultees. Opportunities do exist for capitalising on tourism within the Levenmouth area, including improving links to the East Neuk, local golf courses, Edinburgh Airport and both the coast and inland routes of the core path network within the area. In addition, the power station site offers long-term potential as a recreation/activity site (although this is currently contaminated land).

3.3.21 A study on the Assessment of Golf Tourism’s Future Growth Potential to 2020\(^{19}\) (SQW, 2011) identified Golf tourism to be a major contributor to Scotland’s economy and the overall forecast generated by visitors and events is estimated at £261 million in 2016, increasing to £300m by 2020. The report also noted the opportunity presented by more low cost flights to Edinburgh and Inverness providing wider options for European golfers in particular and growth in the low cost airline sector expected to facilitate more point to point routes using regional airports with courses in Fife highlighted as a potential beneficiary. While St Andrews would continue as the prominent attraction, other quality courses in the area offer cheaper alternatives which may also be attractive to visitors.

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3.3.22 National Cycle Network (NCN) routes 76 and 1 serve Markinch and offer the scope to provide a link from the Levenmouth area to the NCN, supporting initiatives to attract visitors. Also, the Fife Pilgrim Way is currently under development after obtaining funding from the Heritage Lottery Fund in September 2015. The route will extend for 70 miles through the heart of Fife linking together many of Fife’s medieval and pilgrim heritage, passing landmarks including the Inverkeithing Hospitium, Markinch Church, Ceres and the Waterless Way, and ending at St Andrews Cathedral. The intention is the route will use Fife’s existing network of rights of way, paths and tracks to offer varied opportunities for long distance, multi-day walking supplemented by shorter walks and circular routes. The route passes to the north of the study area and provides the opportunity to attract visitors, connecting to Levenmouth at Kennoway, and also to Ceres in the north.

3.4 Issues

Levenmouth Strategic Development Area

3.4.1 The Mid-Fife Local Plan includes a focus on growing the economy within Levenmouth placing an emphasis on attracting inward investment and supporting existing businesses. Recent and planned investment in the area is evidence of these ambitious plans for the area.

3.4.2 Central to the future development of the area is the Levenmouth Strategic Development Area (SDA). This includes proposals for 1,650 houses to be delivered over a period of 15 years, 15ha of business land as well as schools and local amenities. The proposals and access plans are shown in Figure 13 and Figure 14 respectively.
3.4.3 Following on from the Energy Park development, there are further plans included in the Mid-Fife Local Plan to develop a Low Carbon Investment Park. This investment site would be located in Buckhaven, offering industrial and commercial land as part of the Levenmouth SDA funded under the Scottish Government’s Tax Incremental Financing initiative.²⁰

3.4.4 Further development also includes the new joint Levenmouth High School and Fife College campus to replace Buckhaven and Kirkland High School. Although development in the area is encouraged, it should be noted that related impacts in terms of growing demand on the road and public transport networks together with associated impacts on local congestion, air quality and road accidents require consideration as proposals progress.

3.4.5 This development is of significance within the context of the study as the Levenmouth Strategic Framework report produced by Savills in 2012 Land Allocation anticipates the population of the development could reach 3,647 which could see Levenmouth’s population increasing by over 10%. This development could invigorate the local area and attract new residents and businesses to the area. Conversely, the attractiveness of the area as an investment opportunity will also depend on labour availability and transport links. An increase in population and workforce associated with this development would place additional demand on the existing road and public transport networks in the Levenmouth area with investment required to support future travel demand and movement.

²⁰ Follow-on research found that this will offer 15ha of industrial and commercial land. Funded by Fife Council, Scottish Enterprise, and the European Regional Development Fund.
3.4.6 The existing line currently supports only one working train per day to Earlsheat and signalling only provided at the mainline connection.

3.4.7 Network Rail noted during the consultation that for both passenger rail and freight uses, there are a number of structures on the route that would require to be assessed if the line was to be re-opened in full. Therefore, while the line presents an opportunity, potential issues regarding the integrity of structures as well as the track-bed would require further consideration.

3.5 Constraints

Bawbee Bridge and Leven Railway Bridge

3.5.1 Bawbee Bridge and Leven Railway Bridge form part of the A955 crossing over the River Leven between Leven and Methil. The crossing comprises two elements. The Bawbee Bridge section crosses the River Leven and the Leven Railway section extends from the end of the out-of-use rail line as shown in Figure 15. The Leven Railway Bridge is owned by Network Rail.

![Bawbee Bridge and Leven Railway Bridge](image)

Figure 15. Bawbee Bridge and Leven Railway Bridge (Fife Council, 2015)

3.5.2 Both sections have maintenance needs and in recent years the structural integrity of the bridge has been subject to review. There is currently an 18 tonne weight restriction in place on the Leven Railway Bridge along with lane narrowing and edge protection bollards.

3.5.3 In July 2015 Fife Council’s Structures and Assets Team undertook an assessment of the bridges for any further degradation in standard. The investigation found the condition of the bridge to be deteriorating and failure of the concrete repairs undertaken in the past year. The
investigation concluded that the Leven Railway Bridge can, however, still carry up to 18t and this restriction could only be removed if the bridge is strengthened or replaced. Any redevelopment of the rail line would necessitate the bridge to be upgraded. Upgrade or replacement of the bridge, it is recognised, would bring significant cost considerations. Any works would require discussion and agreement with Network Rail.

3.5.4 The 18 tonne weight restriction on Leven Railway Bridge means that heavier vehicles, including HGVs and some express bus services, are currently unable to cross the Bawbee/Leven Railway Bridge, and have to route via the A915 between Leven and south Levenmouth. Future proposals by Stagecoach to upgrade express services to use heavier vehicles would result in further services having to be re-routed which would directly impact on the service offering to the communities of Methil, Buckhaven and Methilhill. The weight restriction therefore poses routing considerations with an impact on public transport and business operations. The weight restriction was raised in the consultation as an issue for local businesses moving freight from Methil Docks in particular.

Environmental

3.5.5 An environmental baseline report was produced, and has been included as Appendix C. The key environmental designations are shown in Figure 16 and summarised as follows:

- **Noise and Vibration**
  - Transport options for the study should consider the potential to affect Candidate Noise Management Areas identified in the Noise Action Plan within this part of Fife.
  - Future revisions to the noise mapping and analysis process to comply with the Environmental Noise Directive may need to be taken into account in the future development and appraisal of transport options.

- **Global Air Quality**
  - Public bodies are required under the Climate Change (Scotland) Act 2009 to reduce emissions by 42% by 2020, 50% by 2030 and 80% by 2050, based on 1990 levels.

- **Local Air Quality**
  - The future growth in business and industry at development sites in the Levenmouth area may present constraints on traffic related options for the study as a result of changes in local emissions depending on their effects on traffic distribution and emissions.

- **Water Quality, Drainage and Flood Defence**
  - The Water Framework Directive as implemented through Scottish legislation sets important standards and requirements relating to the water environment which future development will be required to comply with.
  - There are sensitive watercourses, catchments and water bodies within the study area indicating that water quality will be an important issue for the environmental appraisal of options.

- **Geology, Soils and Agriculture**
  - Prime agricultural land is extensive in the corridor and agriculture is an important part of the land use economy which may constrain development proposals in some locations.
Landscape and Visual Amenity
- Retention of woodlands and green spaces have been identified as particularly important aspects of the landscape and as areas important for community wellbeing which need to be protected as far as possible.
- Local landscape designations and other important sites such as Gardens and Designed Landscapes are important constraints to be taken into account in the development of new transport infrastructure.

Biodiversity and Habitats
- The designated SPA/Ramsar site and SSSIs could impose constraints on construction of new infrastructure depending on proximity and connectivity to these sensitive areas.
- Declining natural and semi-natural habitats and species are a concern for local authorities and nature conservation agencies and it will be important to ensure options for the study avoid adverse effects on biodiversity wherever possible and takes opportunities for enhancement.

Cultural Heritage
- There is an extensive distribution of important cultural heritage designations across the study area including scheduled monuments, listed buildings, GDLs and conservation areas which may act to constrain transport proposals in some areas.

Physical Fitness
- A key constraint will be crossings and other accommodation works for transport measures which affect core paths, long distance routes such as the Fife Coastal Path and other routes used for walking, cycling and horse riding.
- An important aspect in the design stage will be to mitigate the effects of crossing such facilities for pedestrians, cyclists and equestrians or make other provision and take opportunities to improve access.
3.6 Summary

3.6.1 The key problems, opportunities, issues and constraints within the study area can be summarised as follows:

### Problems

- Need for economic development to attract businesses and new residents:
  - The levels of deprivation and unemployment within Levenmouth are above the national average and greater than most other areas of Fife; The area remains within the top 20% of most deprived communities in Scotland, with several areas within the top 5% most deprived, as set out in the most recent SIMD data.
  - Fife Council and many of the stakeholders consulted as part of this Study believe that the difficulties accessing the area from Edinburgh and beyond is creating a barrier to attracting inward investment to the area;
  - The large journey times to central Edinburgh (typically well in excess of 1½ hours) by public transport and/or the need to interchange, limits the attractiveness of the area to attracting new residents who need to make regular trips to the Central Belt.
Access to services by public transport:

- **Car ownership is lower than the Scottish average** with 38% households in Leven, Methil, Methilhill and Buckhaven not having access to a car compared to a national average of 31%, while almost a half of Levenmouth’s datazones zones are among the 20% most deprived in Scotland and several are in the 5% most-deprived. As a result, there is a **particular dependence on affordable public transport** within the Levenmouth area;
- Approximately 50% respondents to the public consultation reported dissatisfaction with the ability of current public transport services to provide **access to employment, education and other opportunities**; and
- Inward and outward commuting is predominantly undertaken by **private car**, suggesting that those without access to a private car are being disadvantaged in the local job market.

Unattractive public transport leading to “unsustainable” travel choices:

- Access to the rail network from the Levenmouth area currently involves interchange, primarily at Markinch or Kirkcaldy stations. The lack of a direct service to these more-distant locations, the lack of integration between bus and rail services at the interchange stations and the higher cost of the separate bus + rail tickets is contributing to a high car mode share for these long-distance journeys; and
- Current rail fares between the area and Edinburgh are much higher (£/mile) than the Scottish average, particularly to/from Markinch station.

Significant HGV traffic to/from the area, particularly the movement of whisky and whisky-related products to the Diageo distillery at Cameron Bridge and bottling plant in Leven;

Opportunities

- **Bus service enhancements:**
  - Stagecoach has provided **investment in the bus network** within Levenmouth. This includes the upgrade of vehicles and roll-out of measures to improve facilities and journey experience, including the introduction of journey planning/information apps and one-ticketing arrangements.

- **Increasing public transport choice:**
  - There is an **existing, but largely out-of-use, rail line** between Thornton North Junction and Leven. The line is operational at present between Thornton North Junction and Earseat to support coal extraction activity. The non-operational section includes track-bed as well as available land for a station at Leven and potentially Cameron Bridge. The line is safeguarded in the Mid-Fife Local Plan. Re-instating the full operation of the rail line would require

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21 The current standard return fare to Edinburgh is £5 more expensive than expected, based on other Central Belt stations and this excess fare is greater than any of the 94 stations included in our analysis.
consideration of the structural integrity of existing assets such, as the Leven Railway Bridge, along the line.

- **Rail freight:**
  - **Freight** in the Levenmouth area is accounted for almost entirely by road, with some waterborne freight transportation taking place. Freight options are particularly important for the Levenmouth area as the economy is based predominantly on industry and manufacturing activities that, by their nature, involve long-distance import/export activities to/from the area. Diageo is a key employer in the area, employing over 1,200 individuals. Discussions with Diageo and their haulier WH Malcolm noted previous interest and ongoing activity to investigate rail freight opportunities to support site operations at Cameron Bridge and Leven.

- **Low Carbon Investment Park:**
  - Investment proposals for a Low Carbon Investment Park, located in Buckhaven, form part of the Levenmouth Strategic Development Area and include allocations for industrial and commercial land. The site would be funded under the Scottish Government’s Tax Incremental Financing (TIF) initiative.

- **Active Travel and Leisure Tourism:**
  - The location of Levenmouth presents the opportunity to harness the coastal setting. In particular, the proximity of the area to the Fife Coastal Path, as well as local golf courses, could be capitalised upon better in order to help raise the profile of the area in terms of attractiveness to visitors from wider Fife and further afield. National Cycle Network (NCN) routes 76 and 1 serve Markinch and offer the scope to provide a link from the Levenmouth area to the NCN, supporting initiatives to attract visitors. Proposals for a new long distance walking route, the Fife Pilgrim Way, are also under development and provide a further attraction in close proximity to the study area.

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**Issues**

- **Levenmouth Strategic Development Area:**
  - There are major future land-use proposals for the area. This includes the Levenmouth Strategic Development Area, which comprises proposals for 1,650 new houses, 15ha business land, a new link road between the A915 and Fife Energy Park, as well as community and educational facilities. An increase in population would place additional demand on the existing road and public transport networks in the Levenmouth area, the wider Fife area, and the city-region beyond.
Leven to Thornton Rail Line:

- The integrity of the track bed and structures along the existing but largely out-of-use rail line between Thornton and Leven would need to be checked (eg as part of a GRIP3 process), before the costs of re-instating passenger rail services can be estimated accurately.

Constraints

Bawbee Bridge and Leven Railway Bridge:

- There is currently an **18 tonne weight restriction** on Leven Railway Bridge, which has an impact on the routing of HGVs and heavier buses in the area – this constraint needs to be borne in mind when considering HGV routing strategies and/or the introduction of heavier buses to the services which operate across this bridge.

Environmental:

- The environmental component on the STAG Study identified a number of minor constraints which would need to be taken into consideration when considering any additional transport infrastructure between Leven and Kirkcaldy, but none of these are sufficient to influence the choice of solution to the identified problems.

3.6.2 These problems, opportunities, issues and constraints are illustrated in Figure 17.
Figure 17. Problems, Opportunities, Issues and Constraints Overview

- Most freight in the area is handled via road & there is a perception of high levels of HGV traffic on the A915 & A911.
- The A915 suffers from peak period congestion.
- Weak Bridges: 18T Restriction on Bowbee/Leven Railway Bridge.
- Stagecoach Investment in bus service enhancements, including new vehicles.
- Fife Coastal Path, golf attractions & other tourism opportunities.
- Pilgrims Way Long Distance Walking Route

Key
- Red - Significant areas of congestion (Fife LTS 2006)
- Yellow - Diageo sites
- Blue - Strategic Development Area
- Purple - Existing Rail Station
- Green - Existing Bus Station
- Green - Opportunities
- Red - Problems
4. POLICY CONTEXT

4.1 Introduction

4.1.1 This chapter sets out the national, regional and local policy backdrop against which the study is being progressed and wider contextual setting to inform the development of the Transport Planning Objectives discussed in Chapter 5.

4.1.2 For the purpose of this study, the key policies considered are contained within the:

- Scottish Government’s Statement of Purpose (2007);
- National Transport Strategy (2016);
- Delivering the Goods: Scotland’s Rail Freight Strategy (2016);
- SEStran Regional Transport Strategy (refreshed 2015);
- Fife Council Local Transport Strategy (2006);
- SESPlan Strategic Development Plan (2013);
- FIFEPlan (proposed LDP, 2014); and
- Mid-Fife Local Development Plan (2012).

4.1.3 A document entitled ‘The Levenmouth Railway – Economic Vision’ prepared by Fife Council, including various letters of support for the reopening of the rail line to Leven was received after the main STAG appraisal had been completed and has not been explicitly considered here, but is attached in Appendix N, for completeness.

4.2 National Policy

4.2.1 The Scottish Government has defined its overall purpose as:

“To focus government and public services on creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth.”

4.2.2 This is supported by the following five strategic objectives:

- Wealthier and Fairer – Enable businesses and people to increase their wealth and more people to share fairly in that wealth;
- Healthier – Help people to sustain and improve their health, especially in disadvantaged communities, ensuring better, local and faster access to health care;
- Safer and Stronger – Help local communities to flourish, becoming stronger, safer place to live, offering improved opportunities and a better quality of life;
- Smarter – Expand opportunities for Scots to succeed from nurture through to life-long learning ensuring higher and more widely shared achievements;
- Greener – Improve Scotland’s natural and built environment and the sustainable use and enjoyment of it.
4.2.3 The *National Transport Strategy* (NTS) refresh reconfirmed the high level objectives set out in the white paper entitled *Scotland’s Transport Future* (2004), and the *National Transport Strategy* (2006). They are to:

- Promote economic growth by building, enhancing managing and maintaining transport services, infrastructure and networks to maximise their efficiency;
- Promote social inclusion by connecting remote and disadvantaged communities and increasing the accessibility of the transport network;
- Protect our environment and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy;
- Improve safety of journeys by reducing accidents and enhancing the personal safety of pedestrians, drivers, passengers and staff; and
- Improve integration by making journey planning and ticketing easier and working to ensure smooth connection between different forms of transport.

4.2.4 The *NTS* also set out three strategic outcomes which are intended to provide the focus for delivering the high level objectives. The strategic outcomes are to:

- **Improve journey times and connections**: to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety;
- **Reduce emissions**: to tackle the issues of climate change, air quality and health improvement which impact on our high level objective for protecting the environment and improving health; and
- **Improve quality, accessibility and affordability**: to give people a choice of public transport, where availability means better quality transport services and value for money or an alternative to the car.

4.2.5 The *NTS* also introduced a *Refreshed Freight Strategy*. The *Refreshed Freight Strategy* recognises the need to work closely with industry to meet the freight challenges from an environment and business perspective. The objectives include:

- Enhancing Scotland’s competitiveness by encouraging investment in Scotland’s ports and strategic hubs and minimising the negative impact of rising transport costs;
- Supporting the development of the freight industry by enhancing skills and image of freight and logistics;
- Maintaining and improving the accessibility of rural and remote areas by targeting improvements;
- Minimising the adverse impact of freight movements on the environment focusing on reductions in emissions and noise. This involves promoting a modal shift to rail and water and improving efficiency and sustainability of road transport; and
- Ensuring freight policy integration by coordinating with other policy areas and plans in Scotland and the UK.
4.2.6 The Scottish Government’s vision is for a competitive, sustainable rail freight sector playing an increasing role in Scotland’s economic growth by providing a safer, greener and more efficient way of transporting products and materials.

4.2.7 Critical success factors are identified as follows:
- A sustainable rail freight industry, with identifiable growth potential over time;
- Creating increased opportunities for Scottish exports;
- Longer, faster, greener freight trains;
- A high performing, resilient, strategic freight network for Scotland, fully aligned with cross-border flows;
- Strong partnerships across the industry, focusing on doing the right things for customers; and
- High value returns on public and private investments.

4.2.8 Each freight train is projected to remove up to 76 heavy goods vehicles from the road.

4.2.9 There is a perception that freight investment has been of secondary importance with benefits often a by-product of investment in passenger services. This position has improved in recent times, for example through the Scottish Strategic Rail Freight Investment Fund, but that more work should be done to place freight on a more equal footing in future rail investments. In particular, greater clarity in rail freight outputs through processes for planning and specification of rail investments, both at a whole railway and freight specific level.

4.2.10 The STPR was published in 2008 and identified recommendations it determined would most effectively contribute towards the Government’s Purpose of increasing sustainable economic growth over the period from 2012 onwards. The study was objective-led, evidence-based and followed STAG methodology.

4.2.11 New passenger (rail) lines to serve St Andrews, Levenmouth, and Glenrothes town centre was identified as an option. However, it was not taken forward as the benefits associated with Levenmouth connections were determined to be local and regional and therefore did not meet the strategic objectives.

4.3 Regional Policy

4.3.1 The SEStran Regional Transport Strategy pulls together transport considerations from across South East Scotland and presents the following Vision Statement:

‘South East Scotland is a dynamic and growing area which aspires to become one of northern Europe’s leading economic regions. Essential to this is the development of a
transport system which enables businesses to function effectively, allows all groups in
society to share in the region’s success through high quality access to services and
opportunities, respects the environment, and contributes to better health.’

4.3.2 This Vision is realised through the following objectives:

- ‘Economy’ – to ensure transport facilities encourage economic growth, regional
  prosperity and vitality in a sustainable manner:
  - widening labour markets;
  - Improving connectivity;
  - Supporting other strategies; and
  - Tackling congestion.

- ‘Accessibility’ – to improve accessibility for those with limited transport choice or
  no access to a car, particularly those who live in rural areas:
  - Targeting improvements in access to employment, health and other
    services/opportunities; and
  - Addressing barriers to the use of public transport, including cost.

- ‘Environment’ – to ensure that development is achieved in an environmentally
  sustainable manner:
  - Reducing greenhouse gas emissions and other pollutants; and
  - Enabling sustainable travel/reduce car dependency.

- ‘Safety and Health’ – to promote a healthier and more active SEStran area
  population:
  - Reducing transport related injuries and deaths;
  - Improving the health of the population; and
  - Tackling local air quality and transport related noise.

4.3.3 The SEStran RTS was refreshed in 2015, after the start of this study. This strategy has been
reviewed and the Vision and Objectives outlined above have been found to be largely
consistent in terms of content with the 2007 report that guided the early part of this study.
Although some differences in wording of sub-objectives do exist these do not have a material
impact on the study.

4.3.4 SEStran submitted a letter of support for the reopening of the rail line to Leven after the
completion of the main STAG appraisal being reported here. This letter is attached in
Appendix N.

4.3.5 The overarching vision of the SESplan Strategic Development Plan (SDP) is ‘By 2032, the
Edinburgh City Region is a healthier, more prosperous and sustainable place which continues
to be internationally recognised as an outstanding area in which to live, work and do
business’. The vision is underpinned by the following aims:

- Enable growth in the economy by developing key economic sectors, acting as the
  national hub for development and supporting local and rural development;

- Set out a strategy to enable delivery of housing requirements to support growth
  and meet housing need and demand in the most sustainable locations;
Integrate land use and sustainable modes of transport, reduce the need to travel and cut carbon emissions by steering new development to the most sustainable locations;
- Conserve and enhance the natural and built environment;
- Promote green networks including through increasing woodland planting to increase competitiveness, enhance biodiversity and create more attractive, healthy places to live;
- Promote the development of urban brownfield land for appropriate uses;
- Promote the provision of improved infrastructure to enhance connectivity within the area, between the area and other parts of the UK and elsewhere to support economic growth and meet the needs of communities; and
- Contribute to the response to climate change through mitigation and adaptation and promote high quality design / development.

4.3.6 The current SDP identifies improvements to transport and other infrastructure required for existing and future development. This includes the re-introduction of the Levenmouth rail link.

4.3.7 SESplan is currently in the process of preparing the next Strategic Development Plan which will replace the current plan in 2017. Consultation on the Main Issues Report will conclude at the end of September 2015.

4.4 Local Policy


4.4.1 The Local Transport Strategy (LTS) for Fife 2006 – 2026 sets the 5-year short-term programme, 10-year medium-term plan and longer-term 20-year vision and objectives for transport delivery in Fife. The plan aspires to ‘develop an integrated and sustainable transport system, which is accessible to all’.

4.4.2 The LTS recognises a range of transportation improvements will be required to enable development to proceed. Some of the major issues within each of the areas include the Strategic Development Areas in West, Mid and East areas of Fife.

4.4.3 In relation to Mid-Fife, requirements identified include improvements to the key linkages to town centres and the public transport network; to the road network around the Redhouse Interchange (which is on the A92 trunk road and under the control of the Scottish Executive), including a road link to the Standing Stane road; a possible new rail halt to East Kirkcaldy; and promotion of the possible reopening of the rail link to Levenmouth and a new station in Leven.

Mid-Fife Local Plan (2012)

4.4.4 The Mid-Fife Local Plan was adopted in January 2012 and replaced the Adopted Area Local Plan (July 2004). The aim of the plan was to:
- Create sustainable communities;
- Grow the economy; and
- Safeguard and improve the environment.
4.4.5 The Local Plan highlights the decline of traditional industries within the area and its relative isolation with no rail link or dual carriageway link to the primary road network. The Plan emphasises the need for a comprehensive approach to the physical, social, and economic regeneration of the area. The development strategy for the Levenmouth area aims to promote regeneration in the area through a number of proposals:

- The identification of land for 1,650 new homes through the Levenmouth Strategic Land Allocation to help reverse the population decline experienced in the area;
- The reuse of derelict land and buildings in the Levenmouth area to be given priority;
- The identification of 55 hectares of good quality employment land to address the current shortage in the area and aid economic regeneration (40 hectares for the Energy Park Fife at Methil waterfront); and
- Retail provision in the Buckhaven and Methil areas will be boosted by new local retail development within the Strategic Land Allocation.

4.4.6 Potential improvements to the transport network were also proposed, including the following:

- Improvements to the Standing Stane link road;
- Implementation of the Leven Link Road Project (implementing road enhancements to make Lower Methil, the waterfront area and Energy Park Fife more accessible); and
- The proposed reopening of the Levenmouth Rail Link and new rail station at Leven.

**FIFEplan Proposed Plan (2014)**

4.4.7 The *FIFEplan Proposed Plan* outlines policies and supplementary guidance to be used in determining planning applications. Although *FIFEplan* incorporates the three Local Plans, including the *Mid-Fife Local Plan* it will not replace the *Local Plan* (described above) until *FIFEplan* is adopted by Fife Council (likely to be 2016).

4.4.8 *FIFEplan*’s spatial strategy defines Council planning policy over the 10 years to 2026. It is framed by national and regional policy set by the *National Planning Framework 3 (2014)* and **SESplan**. For the Levenmouth area the spatial strategy identifies a number of key proposals for employment, services and transport. These include:

- Methil Energy Park Fife
  - The Fife Energy Corridor, including the Methil Energy Park, is recognised in *National Planning Framework 3 (2014)* as an area of regional importance for the energy sector and where the focus of investing in the energy sector has brought wider economic benefits.
- Levenmouth Strategic Development Area (SDA) with a focus on employment
  - The Levenmouth SDA will provide 1,650 new homes and community facilities. Improved access to Methil docks and the energy cluster via the A911 will also be investigated as part of the plan.
- Redhouse roundabout upgrade
- Leven rail link
  - The proposed *FIFEplan* safeguards the Thornton to Leven rail link for future reinstatement as a passenger rail line.
- Levenmouth Link Road
A road network for Levenmouth linking economic regeneration areas and sites.

- Hovercraft Link
- From Kirkcaldy to Edinburgh.

4.4.9 Fife Council have recently produced a document entitled ‘The Levenmouth Railway – Economic Vision’ after the main STAG appraisal being reported here had been completed. This report has not been explicitly considered here, but is attached in Appendix N, for completeness.

4.5 Summary

4.5.1 The policy context is of particular relevance in terms of highlighting:

- The transport priorities and aspirations, particularly locally and regionally, for the Levenmouth area;
- Future development proposals in the setting of the local and also wider strategic transport network; and
- Economic development aspirations and role of transport in terms of providing access to services and opportunities to support investment of local as well as regional and national significance.
5. TRANSPORT PLANNING OBJECTIVES

5.1 Introduction

5.1.1 STAG appraisals are objective-led rather than solution-led. Therefore, Transport Planning Objectives (TPOs) have been developed to reflect, the problems, opportunities and parameters analysed at Chapter 3 and also the established national, regional and local policy framework set out in Chapter 4. The TPOs essentially reflect the outcomes sought and will directly inform the appraisal of the performance of different options.

5.1.2 In accordance with STAG, TPOs should be developed with SMART principles in mind, i.e. objectives should be:

- **Specific**: saying in precise terms what is sought;
- **Measurable**: it will be possible to measure whether or not the objective has been achieved;
- **Attainable**: there is general agreement that the objective can be achieved;
- **Relevant**: it is a sensible indicator or proxy for the change which is sought; and
- **Timed**: it will be associated with an agreed future point by which it will have been met.

5.1.3 It is acknowledged that TPOs may not be fully SMART at the earlier stages of the appraisal process, however, they should be subject to review and refinement as the process develops and more detail comes forward. This is important to ensure study objectives provide a framework against which performance can be assessed as part of monitoring and evaluation activities following the implementation / construction of measures.

5.2 Study Objectives

5.2.1 The analysis of the problems, opportunities, issues and constraints, highlighted:

- Problems associated with access to destinations and services from the Levenmouth area, particularly for non-car owning households;
- Problems associated with unattractive public transport leading to high car mode share for certain journeys (plus perceived high levels of HGV traffic);
- The importance of transport (as part of package of other measures) to increase the attractiveness of the Levenmouth area as a location for business investment and place to live and work;
- Opportunity to enhance the public transport offering through the present of an existing, but predominantly out-of-use rail line extending between the Thornton and Leven complemented by the freight facility potential and previous interest by Diageo which is a key employer in the area;
- Scope to capitalise on the setting of the Levenmouth area from a leisure and tourism dimension, and particularly with reference to the East Neuk and Fife Coastal Path;
- Increase in travel demand which would result from future developments in the area, notably the Levenmouth Strategic Development Area.

5.2.2 The consideration of these inter-related problems and opportunities, the public and stakeholder consultation carried out as part of this Study and our consideration of the wider
national, regional and local policy setting has informed the development of the following study objectives:

- **TPO 1** – Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area;
- **TPO 2** – Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area;
- **TPO 3** – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area; and
- **TPO 4** – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk.

5.2.3 This set of study objectives succinctly covers almost all of the problems and opportunities identified in Chapter 3 of this report, as illustrated in Figure 18.

5.2.4 Table 8 summarises the alignment of the TPOs with the relevant identified national, regional and local policy objectives.
Figure 18. Problems, Opportunities and Transport Planning Objectives Linkages

**Problems**
- Access to employment and services.
- Lengthy Public transport journeys.
- Public transport services to Edinburgh.
- Congestion.
- Access to a skilled workforce.
- Lengthy Public transport journeys.
- Poor perception of public transport.
- Bus-Rail Interchange.
- Perception of unreliable bus services.
- Congestion.
- Perception of High HGV traffic.
- Above average rail fares Markinch and Kirkcaldy.

**Opportunities**
- Bus service enhancements.
- Increase public transport choice — Thornton to Leven existing rail alignment.
- Proximity to Methil Docks.
- Low Carbon Investment Park.
- Bus service enhancements.
- Increase public transport choice — Thornton to Leven existing rail alignment.
- Proximity to Methil Docks.
- Low Carbon Investment Park.

**TPO 1**
Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area.

**TPO 2**
Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area.

**TPO 3**
Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area.

**TPO 4**
Enhance the Levenmouth area's role as a tourist destination and a gateway to East Neuk.
### Table 8. Transport Planning Objectives and Policy Linkages

<table>
<thead>
<tr>
<th>POLICIES/OBJECTIVES</th>
<th>TPO 1 – Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area.</th>
<th>TPO 2 – Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area.</th>
<th>TPO 3 – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area.</th>
<th>TPO 4 – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk.</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Transport Strategy</td>
<td>Promote economic growth by building, enhancing managing and maintaining transport services, infrastructure and networks to maximise their efficiency.</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Promote social inclusion by connecting remote and disadvantaged communities and increasing the accessibility of the transport network.</td>
<td>✗</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Protect our environment and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy.</td>
<td>-</td>
<td>✔</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Improve safety of journeys by reducing accidents and enhancing the personal safety of pedestrians, drivers, passengers and staff.</td>
<td>-</td>
<td>✔</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Improve integration by making journey planning and ticketing easier and working to ensure smooth connection between different forms of transport.</td>
<td>✔</td>
<td>✔</td>
<td>-</td>
</tr>
</tbody>
</table>
### POLICIES/OBJECTIVES

(✓ = policy fit; - = neutral; ✗ = policy conflict)

<table>
<thead>
<tr>
<th>TPO 1 – Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area.</th>
<th>TPO 2 – Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area.</th>
<th>TPO 3 – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area.</th>
<th>TPO 4 – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Transport Strategy</td>
<td>To ensure transport facilities encourage economic growth, regional prosperity and vitality in a sustainable manner.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>To improve accessibility for those with limited transport choice or no access to a car, particularly those who live in rural areas.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>To ensure that development is achieved in an environmentally sustainable manner.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>To promote a healthier and more active SEStran area population.</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>Local Transport Strategy</td>
<td>To develop an integrated and sustainable transport system, which is accessible to all.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Mid-Fife Local Plan</td>
<td>Create sustainable communities.</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>Grow the economy.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Safeguard and improve the environment</td>
<td>-</td>
<td>✓</td>
<td>-</td>
</tr>
</tbody>
</table>
5.3 Potential Indicators for Measuring Performance Against these Study Objectives

5.3.1 For the purposes of this Part 1 Appraisal, the outline Key Performance Indicators (KPIs) described in Table 9 have been used. The Detailed Appraisal (Part 2) outlines more specific SMART Transport Planning Objectives, building on these KPIs.

Table 9. TPOs – Outline KPIs

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>KPI’S</th>
</tr>
</thead>
</table>
| TPO 1 – Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area. | - Average peak-period public transport journey times to Kirkcaldy, Dunfermline, Glenrothes, Edinburgh.  
- Average journey time to key further educational facilities.  
- Average journey time to the closest hospital.  
- Average journey time to the closest community leisure facility.  
- Average journey time to strategic employment sites. |
| TPO 2 – Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area. | - Public transport mode share into and out of Levenmouth. |
| TPO 3 – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area. | - Labour market catchment population of the Levenmouth area. |
| TPO 4 – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk. | - Average journey time to Edinburgh Airport and Edinburgh City Centre. |
6. OPTION GENERATION, SIFTING AND DEVELOPMENT

6.1 Introduction

6.1.1 This chapter describes the option generation, sifting and development process undertaken. The purpose of this stage is to derive a range of options which should satisfy the study’s Transport Planning Objectives (TPOs) and alleviate the problems or address the opportunities identified. It is important that the option generation, and the sifting and development that follows, is carried out in a logical and transparent manner.

6.2 Option Generation and Sifting

6.2.1 In line with STAG, options for this study were generated through a number of methods, including:

- consideration of previous studies;
- through the statutory planning process (transport and land use plans);
- consultation exercises;
- consideration of known problems and opportunities;
- a gap analysis of the existing transport network and committed measures; and
- professional judgement flowing from a structured decision making process by the study team.

6.2.2 While it was important not to approach the study with pre-conceptions, it was also prudent to draw on the findings of previous work that looked into the transport problems and future requirements of the Levenmouth area.

6.2.3 A major study of the area was undertaken in 2008; this followed the STAG process to evaluate and appraise the transport situation. A range of options to improve internal and through movements was identified as part of this 2008 study. These options were reviewed, and based on their merit in relation to meeting this study’s objectives, some of the options were used as a foundation for the options generated.

6.2.4 Documents produced through the statutory planning process, such as the Local Transport Strategy (LTS) and the Fife Local Development Plan (FIFEPlan), include examination of transport problems and opportunities within the study area. As such, potential transport solutions presented in these documents were considered in relation to the study’s TPOs and, where appropriate, were used as inspiration for the options generated.

6.2.5 The consultation for this study (as outlined in Section 1.1.4 and Appendix A) identified some established views on the problems and future needs of the transport offering serving the Levenmouth area. Where options were raised in consultation, and as with all options that were looked at, these were considered in relation to the TPOs and the evidence based
problems and opportunities. Options deemed worthy of further consideration were taken through to the Part 1 appraisal.

**Gap Analysis and Structured Option Generation and Sifting Sessions**

6.2.6 A number of internal option generation and sifting workshops were held. The team carried out a gap analysis of the existing and future transport network in relation to the study’s TPOs. Using professional judgement, options were generated in response to the remaining problems and gaps.

6.2.7 STAG suggests an early option sifting process in circumstances where an unmanageable number of options have been generated and/or where there is general consensus a particular option will not address the problems and/or opportunities identified and achieve the TPOs of the study. Therefore, during these workshops, the wider options gathered through previous studies, the statutory planning process, and consultation were considered and rationalised.

6.2.8 Ultimately, eight options were identified and progressed to the initial appraisal. In summary, the options are:

- **Option 1** – Maintain existing bus services to Kirkcaldy and beyond while improving public transport facilities and information.
- **Option 2** – Integration of bus services at Levenmouth and existing rail provision at Markinch.
- **Option 3** – Provision of a rail freight link to Cameron Bridge and Methil Docks along the alignment of the existing, but currently out-of-use line between Thornton North Junction and Methil Docks.
- **Option 4** – Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks.
- **Option 5** – Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.
- **Option 6** – Provision of a new rail alignment from Leven and Methil Docks to Markinch.
- **Option 7** – Provision of a new passenger Bus Rapid Transit alignment from Leven to Markinch.
- **Option 8** – Hovercraft triangle between Levenmouth, Kirkcaldy, and Edinburgh. This includes a hovercraft terminal at Methil Docks.

6.3 **Option Development**

6.3.1 The different options are discussed in turn below with the rationale for inclusion in relation to the Transport Planning Objective. This includes a Do Minimum option against which other options can be compared.

6.3.2 Given the complex nature of some of the options and the potential for various station, routing and freight options, the use of sub-options was viewed appropriate.

6.3.3 Sub-options have only been included where the scheme has varying costs (e.g. additional cost of second station) and/or benefits (e.g. increased catchment in two station sub-option, strategic impacts of rail freight availability) to warrant being addressed separately at points in the appraisal. In this case, this includes separating out one and two station options for the
rail options and the BRT option as well as the introduction of freight to the line for some of the rail options. This approach ensures that viable options are considered through to appraisal, and are not dismissed at too early a stage of the study when the available evidence is not sufficient to determine the most beneficial or cost effective variant.

6.3.4 The focus of the study is to consider sustainable transport options to and from the Levenmouth area. Given the TPOs’ KPIs focus on longer-distance trips with the wider Fife area and beyond, a standalone active travel option has not been developed. However, for options taken forward, access to public transport services by walking and cycling, as well as bus-bus and bus-rail integration alongside car-bus/rail integration, would be integral to each option progressed.

**Do Minimum**

6.3.5 The Do Minimum scenario includes relevant transport and planning developments which may impact on the study. This represents the scenario if no options from this study are taken forward.

6.3.6 For the purpose of this study, the following committed transport interventions have been identified for inclusion in the Do Minimum scenario:

- Queensferry Crossing;
- Signalisation of Redhouse (A92/A921) and Gallatown (A915/A921) roundabouts;
- Standingstane Road/Windygates Road Junction Signalisation; and
- Kirkcaldy and Dysart - Redhouse roundabout to Standing Stane Road Link.

6.3.7 **Option Descriptions**

**Option 1 – Maintain existing bus services to Kirkcaldy and beyond while improving public transport facilities and information.**

6.3.8 This option (Figure 19) focuses on the maintenance of the existing level of bus service connecting the Levenmouth area to Kirkcaldy and beyond while improving service information and ticketing.

6.3.9 As discussed previously, the degradation of Bawbee Bridge/Leven Railway Bridge could impact further on express services routing through the Levenmouth area, with the largest impact on services to the southern side of the River Leven. This option assumes repair actions to Bawbee Bridge/Leven Railway Bridge take place through existing ongoing maintenance mechanisms in order to facilitate high quality and optimal bus services into the future.

6.3.10 This option would also look at the impact planning applications may have on congestion hotspots within the area and mitigating these where appropriate in relation to providing for and encouraging travel by alternatives to the private car. Improvements to facilities will include on street enhancements such as improved bus shelters, as well as the improved access to digital and at-stop information.

6.3.11 Option 1 is anticipated to be an affordable option which would have a positive impact on access to employment, education, healthcare and leisure destinations in the area and encourage increased sustainable travel mode share through the improvement of public transport.
transport facilities, information and associated journey time savings. Option 1 is also anticipated to have some positive impact on attracting jobs and people to Levenmouth by maintaining connections and improving transport facilities to serve the employment opportunities and resident population. Therefore, the rationale for inclusion in the initial appraisal is the positive impact Option 1 is anticipated to have on the following TPOs:

- TPO 1;
- TPO 2; and
- TPO 3.

6.3.12 This option was generated through the gap analysis and structured option generation sessions.

Figure 19. Option 1 Maintain existing bus services to Kirkcaldy and beyond while improving public transport facilities and information.

Option 2 – Integration of bus services at Levenmouth and existing rail provision at Markinch.

6.3.13 Bus and rail integration from Levenmouth to Markinch has recently been improved to provide a link to the rail network, largely via the X4 service. This option would entail further improved provision of bus services from Methil, Methilhill and Buckhaven to Markinch station through the re-branding and timetable adjustments to service 44B to meet rail services at Markinch. The existing X4 service connecting Leven town centre, Markinch station and Glenrothes will also form part of this re-branding exercise.

6.3.14 Rail fare re-balancing across Fife is also key to this option in terms of increasing the attractiveness of rail options at Markinch to address the higher fare for rail travel from Markinch to Edinburgh in comparison to services from Kirkcaldy. Re-balancing refers to an adjustment to the rail fare structure in relation to services accessed at Markinch Rail Station. With regard to this option, this assumes a reduction in fares to promote use of these services, determined by the relative benefits and costs of doing so. Given the regulated nature of rail
fares, any re-balancing of fares would be a matter for Transport Scotland, in negotiation with the operator.

6.3.15 Option 2 is anticipated to have a positive impact on access to employment, education, healthcare and leisure destinations in the area and encourage increased sustainable travel mode share through improved access via the rail network, and a branding campaign targeting modal shift. Option 2 is also anticipated to have a positive impact on attracting jobs, people and tourists to Levenmouth through the improved access to the national rail network (via Markinch), Glenrothes and Whitehill Industrial Estate. Therefore, the rationale for inclusion in the initial appraisal is the positive impact Option 2 is anticipated to have on the following TPOs:

- TPO 1;
- TPO 2;
- TPO 3; and
- TPO 4

6.3.16 This option was inspired by previous transport studies and was adapted through the gap analysis and structured option generation sessions.

Figure 20. Option 2 Integration of bus services at Levenmouth and existing rail provision at Markinch

Option 3 – Provision of a rail freight link to Cameron Bridge and Methil Docks along the alignment of the existing, but currently out-of-use line between Thornton North Junction and Methil Docks.

6.3.17 This option involves opening the existing out-of-use rail line at Methil Docks to Cameron Bridge and onwards to the mainline for freight only. The current rail alignment joins the Markinch to Kirkcaldy line halfway between Markinch and Kirkcaldy (as shown in Figure 21). Freight facilities would be provided at Methil Docks and Cameron Bridge and could facilitate the strategic movement of freight. Option 3 has been identified as a standalone freight only option due to the difference in costs associated with freight and passenger standard lines.
6.3.18 Option 3 is anticipated to have a small positive impact on access to employment, education, healthcare and leisure destinations in the area through improvements to journey times due to HGV flow reductions on the road network. Option 3 is also anticipated to have a positive impact on attracting jobs to Levenmouth by supporting industry, in particular the sites at Cameron Bridge and Methil Docks. As noted previously, there are significant rail freight opportunities for long-distance import/export activities related to the major Diageo operations in the area.

6.3.19 Therefore, the rationale for inclusion in the initial appraisal is the positive impact Option 3 is anticipated to have on the following TPOs:

- TPO 1; and
- TPO 3.

6.3.20 This option was highlighted in previous transport studies and was raised in consultation with key stakeholders. The opportunity for reopening of the rail line is highlighted in the following documents: *Fife Council Local Transport Strategy* (2006), *Mid-Fife Local Plan* (2012), *FIFEplan Proposed Plan* (2014). The promotion of modal shift of freight traffic from road to rail is also outlined in the following policy documents: *Delivering the Goods: Scotland’s Rail Freight Strategy* (2016) and *Scotland’s NTS Refresh* (2016).

![Option 3 Out-of-Use Existing Rail Alignment](image)

Figure 21. Option 3 Out-of-Use Existing Rail Alignment

**Option 4 – Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks.**

6.3.21 This option involves opening the existing, but out-of-use, rail line to freight and passenger services between Methil and the existing mainline with stations provided at Cameron Bridge and Leven. The current rail alignment joins the mainline half-way between Markinch and Kirkcaldy and offers access to both sides of the Fife Circle. It is the intention that passenger
services would be fulfilled by a new service or the extension/diversion of existing rail services. The feasibility of potential service arrangements would be considered further as part of the Detailed Appraisal if this option is taken forward.

6.3.22 Sub-options include the development of a rail station at Leven and Cameron Bridge (as shown in Figure 22) and the inclusion of rail freight facilities and can be summarised as follows:

- Sub-option 4a. Passenger rail only option, with a station provided at Leven only;
- Sub-option 4b. Passenger rail only option, with stations provided at Leven and Cameron Bridge;
- Sub-option 4c. Passenger and freight rail option, with a station provided at Leven only, and freight facilities provided at Cameron Bridge and Methil Docks; and
- Sub-option 4d. Passenger and freight rail option, with stations provided at Leven and Cameron Bridge, and freight facilities provided at Cameron Bridge and Methil Docks.

6.3.23 Option 4 is anticipated to have a positive impact on access to employment, education, healthcare, and leisure destinations and encourage increased sustainable travel mode share through improved access to settlements via the rail network, reduced journey times (varying by sub-option), and improving public transport mode choice for Levenmouth workers and residents.

6.3.24 Option 4 is also anticipated to have a positive impact on investment, attracting employers, people and tourists to Levenmouth through the improved public transport mode choice and reduced journey times.

6.3.25 Rail freight in particular is expected to facilitate investment in industry (for sub-options 4c and 4d), in particular the sites at Cameron Bridge and Methil Docks. As noted previously, there are significant rail freight opportunities for long-distance import/export activities related to the major Diageo operations in the area. The rationale for inclusion in the initial appraisal is, therefore, the positive impact Option 4 is anticipated to have on the following TPOs:

- TPO 1;
- TPO 2;
- TPO 3; and
- TPO 4.

6.3.26 This option was highlighted in previous transport studies and was raised in consultation with key stakeholders. The opportunity for reopening of the rail line is highlighted in the following documents: Fife Council Local Transport Strategy (2006), Mid-Fife Local Plan (2012), FIFEplan Proposed Plan (2014).

6.3.27 The promotion of modal shift of freight traffic from road to rail is also outlined in the following policy documents: Delivering the Goods: Scotland’s Rail Freight Strategy (2016) and Scotland’s NTS Refresh (2016).
Figure 22. Option 4 Out-of-Use Existing Rail Alignment
Option 5 – Provision of a new passenger only rail alignment from Leven to Kirkcaldy.

6.3.28 This option involves the reopening of the out-of-use rail line from Leven as far as Cameron Bridge and then construction of a new rail alignment to join the Markinch to Kirkcaldy line. This alignment will not provide access to the Dunfermline (west) branch of the Fife Circle, but is likely to offer enhanced journey times to the East Coast Mainline when compared to the existing out-of-use alignment. It is the intention that passenger services would be fulfilled by the provision of a new service or the extension/diversion of existing rail services. The feasibility of potential service arrangements would be considered further as part of the Detailed Appraisal if this option is taken forward.

6.3.29 This option has a number of sub-options as detailed below:

- Sub-option 5a. Passenger rail station, provided at Leven only; and
- Sub-option 5b. Passenger rail station, provided at Leven and Cameron Bridge.

6.3.30 Option 5 is anticipated to have a positive impact on access to employment, education, healthcare, and leisure destinations and encourage increased sustainable travel mode share through improved access to settlements via the rail network, reduced journey times (varying by sub-option), and improving public transport mode choice for Levenmouth workers and residents.

6.3.31 Option 5 is also anticipated to have a positive impact on investment, attracting employers, people and tourists to Levenmouth through the improved public transport mode choice and reduced journey times. The rationale for inclusion in the initial appraisal is, therefore, the positive impact Option 5 is anticipated to have on the following TPOs:

- TPO 1;
- TPO 2;
- TPO 3; and
- TPO 4.

6.3.32 This option was highlighted in previous transport studies, and the opening of a rail line was raised in consultation with key stakeholders. The opportunity for reopening of the rail line is highlighted in the following documents: Fife Council Local Transport Strategy (2006), Mid-Fife Local Plan (2012), FIFEplan Proposed Plan (2014). This option builds on this opportunity.
6.3.33 This option involves the re-opening of the out-of-use rail line from Leven towards Cameron Bridge. From the Cameron Bridge area, the rail link will follow a new rail alignment with new track built to join the Markinch to Kirkcaldy line at Markinch. This option will allow connection to both sides of the Fife Circle, but will see to straighten the alignment to deliver better journey times to the East Coast Mainline when compared to the existing out-of-use alignment. It is the intention that passenger services would be fulfilled by the provision of a new service or the extension/diversion of existing rail services. The feasibility of potential service arrangements would be considered further as part of the Detailed Appraisal if this option is taken forward.

6.3.34 This option has a number of sub-options as detailed below:

- Sub-option 6a. Passenger rail only option, with a station provided at Leven only;
- Sub-option 6b. Passenger rail only option, with stations provided at Leven and Cameron Bridge;
- Sub-option 6c. Passenger and freight rail option, with a station provided at Leven only, and freight facilities provided at Cameron Bridge and Methil Docks; and
- Sub-option 6d. Passenger and freight rail option, with stations provided at Leven and Cameron Bridge, and freight facilities provided at Cameron Bridge and Methil Docks.

6.3.35 Option 6 is anticipated to have a positive impact on access to employment, education, healthcare and leisure destinations in the area and encourage increased sustainable travel mode share through improved access to settlements via the rail network, reduced journey times (varying by sub-option) and improving public transport mode choice for Levenmouth workers and residents. Option 6 is also anticipated to have a positive impact on attracting jobs, people and tourists to Levenmouth through the improved access to the rail network,
reduced journey times and investment in industry (for sub-options 6c and 6d) which attracts employers, a skilled active workforce and tourists to the area. The *rationale for inclusion* in the initial appraisal is, therefore, the positive impact Option 6 is anticipated to have on the following TPOs:

- TPO 1;
- TPO 2;
- TPO 3; and
- TPO 4.

6.3.36 This option was highlighted in previous transport studies, and the opening of a rail line was raised in consultation with key stakeholders. The opportunity for reopening of the rail line is highlighted in the following documents: *Fife Council Local Transport Strategy* (2006), *Mid-Fife Local Plan* (2012), *FIFEplan Proposed Plan* (2014). This option builds on this opportunity.

6.3.37 The promotion of modal shift of freight traffic from road to rail is also outlined in the following policy documents: *Delivering the Goods: Scotland’s Rail Freight Strategy* (2016) and Scotland’s *NTS Refresh* (2016).

6.3.38 This option would include a segregated Bus Rapid Transit (BRT) route from Leven to Markinch Rail Station, providing a traffic free, high quality bus link to the station. BRT services can offer a quality of passenger ride, boarding, user friendliness and accessibility, safety, and reliability of journey time similar to that of rail services, but at a reduced cost.

6.3.39 The following two sub-options have been considered:
6.3.40 Option 7 is anticipated to have a positive impact on access to employment, education, healthcare and leisure destinations in the area and encourage increased sustainable travel mode share through reduced journey times (varying by sub-option) and improved access to settlements via the rail network and BRT link. Option 7 is also anticipated to have a positive impact on attracting jobs, people and tourists to Levenmouth through the improved access to services and reduced journey times which attracts a skilled active workforce and tourists to the area. The rationale for inclusion in the initial appraisal is the positive impact Option 7 is anticipated to have on the following TPOs:

- TPO 1;
- TPO 2;
- TPO 3; and
- TPO 4.

6.3.41 This option was inspired by previous transport studies and was adapted through the gap analysis and structured option generation sessions.

6.3.42 This option would provide a hovercraft link between Methil Docks, Kirkcaldy, and Edinburgh. This would include a new passenger terminal at Methil Docks.

6.3.43 Option 8 is anticipated to have a positive impact on access to employment, education, healthcare and leisure destinations in the area and encourage increased sustainable travel mode share through the provision of an additional mode choice and improved access to Kirkcaldy and Edinburgh via the hovercraft link. Option 8 is also anticipated to have a positive impact on attracting jobs, people and tourists to Levenmouth through the improved direct
access to Edinburgh and Kirkcaldy. The nature of the mode is suited to marketing as a transport gateway to the East Neuk. The **rationale for inclusion** in the initial appraisal is the positive impact Option 4 is anticipated to have on the following TPOs:

- TPO 1;
- TPO 2;
- TPO 3; and
- TPO 4.

6.3.44 This option was suggested in consultation with SEStran and builds upon the Kirkcaldy to Edinburgh link concept noted in the *Proposed FIFEplan Local Development Plan (2014)* adding an additional connection to the Levenmouth area.

![Figure 26. Option 8 Potential Hovercraft between Levenmouth, Kirkcaldy, and Edinburgh](image-url)
7. INITIAL (PART 1) APPRAISAL

7.1 Introduction

7.1.1 This chapter provides a summary of the outcomes of the appraisal, including assessment of the:

- likely impacts of the options against transport planning objectives;
- likely impacts of the options against the five STAG criteria (Environment; Safety; Economy; Integration and Accessibility and Social Inclusion); and
- feasibility, affordability and likely public acceptability of the options.

7.1.2 As supported by STAG Guidance, the appraisal has been completed on a largely qualitative basis and draws on the quantitative data collected as part of the pre-appraisal phase and previous studies where appropriate. The Part 1 Appraisal Summary Tables (ASTs) that form Appendix D provide further information on the different aspects of the appraisal for the core options and variants identified.

7.2 Appraisal of the Options

7.2.1 This section considers each of the options against the STAG criteria, followed by the Transport Planning Objectives which have been defined. The following seven-point scale of assessment is recommended as part of the STAG Guidance, and has therefore been adopted for this part of the appraisal:

- Major benefit (✔✔✔): these are benefits or positive impacts which, depending on the scale of benefit or severity of impact, the practitioner feels should be a principal consideration when assessing an option’s eligibility for funding;
- Moderate benefit (✔✔): the option is anticipated to have only a moderate benefit or positive impact. Moderate benefits and impacts are those which taken in isolation may not determine an option’s eligibility for funding, but taken together do so;
- Minor benefit (✔): the option is anticipated to have only a small benefit or positive impact. Small benefits or impacts are those which are worth noting, but the practitioner believes are not likely to contribute materially to determining whether an option is funded or otherwise.
- No benefit or impact (-): the option is anticipated to have no or negligible benefit or negative impact.
- Small minor cost or negative impact (✘): the option is anticipated to have only a moderate cost or negative impact. Moderate costs/negative impacts are those which taken in isolation may not determine an option’s eligibility for funding, but taken together could do so.
- Moderate cost or negative impact (✘✘): the option is anticipated to have only a moderate cost or negative impact. Moderate costs/negative impacts are those which taken in isolation may not determine an option’s eligibility for funding, but taken together could do so; and
- Major cost or negative impacts (✘✘✘): these are costs or negative impacts which, depending on the scale of cost or severity of impact, the practitioner should take into consideration when assessing an option’s eligibility for funding.
7.3 Environmental

7.3.1 For the environmental appraisal, at the Initial Appraisal stage a qualitative assessment is made which considers the relative size and scale of option impacts. In this appraisal we have provided a broad assessment using the seven-point scale assessment, considering the following environmental sub-criteria:

- Noise and vibration;
- Global air quality - carbon dioxide (CO2);
- Local air quality - particulates (PM10) and nitrogen dioxide (NO2);
- Water quality, drainage and flood defence;
- Geology;
- Biodiversity and habitats;
- Landscape;
- Visual amenity;
- Agriculture and soils; and
- Cultural heritage.

7.3.2 For environmental effects, in many cases, a range of impacts have been predicted. This reflects potentially different effects associated with different aspects of the options under consideration. For example, some options have the potential for minor beneficial impacts associated with the relief of traffic from new rail or bus measures, however, the environmental impact resulting from the development of new rail infrastructure associated with some of the options, for example, also has the potential for moderate to major adverse impacts. Table 10 therefore provides, at this stage of the appraisal, the ‘worst case scenario’ for each core option. This represents an overview to highlight the focus of more detailed appraisal.

7.3.3 The on-street bus options (Option 1 and Option 2) are expected to have the least impact on the environment. Option 2 scores largely neutral, other than potential positive and negative impacts on local air quality, and a potential minor beneficial impact on biodiversity and habitats. Option 1 requires further investigation to determine the majority of associated impacts, but whether positive or negative, the impacts are expected to be minor compared to other options.

7.3.4 Options 3, 4, 5 and 6 are likely to have a significant negative environmental impact for almost all sub-criteria reflecting the new rail infrastructure forming part of all these options. The only consistently positive sub-criterion for these options is that of global air quality resulting from an expected transfer of trips from road to rail. Options 5 and 6, of which a new rail alignment forms a significant element, are expected to have a particularly negative environmental impact in relation to biodiversity and habitats, visual amenity, landscape and cultural heritage. Use of the full extent of the existing rail alignment (Options 3 and 4) is expected to somewhat reduce the impact on these receptors, with no ‘major’ negative impacts predicted. Options 7 and 8 also scored largely negatively across the different criteria, reflecting in particular the new alignment and inter-face with the Firth of Forth estuary respectively.

7.3.5 In summary, key issues raised by consideration of the potential environmental impacts at this stage include:
Negative construction and operational impacts such as air quality, noise and vibration, water quality and geology and soils (Options 1 – 8);

- Negative impact on biodiversity, in particular at the local wildlife site at Kennoway-Windygates which interacts with the existing out-of-use rail alignment (All Rail Options);

- Cultural heritage, visual effects, and landscape features, where development and new lines are in close proximity (Options 5, 6 and 7);

- Potential impact of the hovercraft on wildlife in the Firth of Forth (Option 8); and

- Building works and operations in the vicinity of the Firth of Forth APA/SSSI/ Ramsar site (Option 8).
Table 10. Environmental Appraisal Summary

<table>
<thead>
<tr>
<th>OPTION</th>
<th>NOISE AND VIBRATION</th>
<th>GLOBAL AIR QUALITY</th>
<th>LOCAL AIR QUALITY</th>
<th>WATER QUALITY, DRAINAGE AND FLOOD DEFENCE</th>
<th>GEOLOGY</th>
<th>BIO-DIVERSITY AND HABITATS</th>
<th>LANDSCAPE</th>
<th>VISUAL AMENITY</th>
<th>AGRICULTURE AND SOILS</th>
<th>CULTURAL HERITAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintain bus services to Kirkcaldy and beyond and improve PT facilities and information.</td>
<td>-</td>
<td>-</td>
<td>✓/x</td>
<td>✓/x</td>
<td>-</td>
<td>✓/x</td>
<td>✓/x</td>
<td>-</td>
<td>-</td>
<td>✓/x</td>
</tr>
<tr>
<td>2. Integration of bus services at Levenmouth and existing rail provision at Markinch.</td>
<td>-</td>
<td>-</td>
<td>✓/x</td>
<td>-</td>
<td>-</td>
<td>-/✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. Provision of rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line.</td>
<td>✓/x</td>
<td>✓</td>
<td>✓/x</td>
<td>x/xx</td>
<td>x/xx</td>
<td>x/xx</td>
<td>✓/xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4. Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil.</td>
<td>✓/x</td>
<td>✓</td>
<td>✓/x</td>
<td>x/xx</td>
<td>x/xx</td>
<td>x/xx</td>
<td>✓/xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>OPTION</td>
<td>NOISE AND VIBRATION</td>
<td>GLOBAL AIR QUALITY</td>
<td>LOCAL AIR QUALITY</td>
<td>WATER QUALITY, DRAINAGE AND FLOOD DEFENCE</td>
<td>GEOLOGY</td>
<td>BIO-DIVERSITY AND HABITATS</td>
<td>LANDSCAPE</td>
<td>VISUAL AMENITY</td>
<td>AGRICULTURE AND SOILS</td>
<td>CULTURAL HERITAGE</td>
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</tr>
<tr>
<td>5. Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.</td>
<td>✓/ xx</td>
<td>✓</td>
<td>✓/ x</td>
<td>x/ xx</td>
<td>x/ xx</td>
<td>x/ xxx</td>
<td>x/ xx</td>
<td>✓/ xxx</td>
<td>x/ xx</td>
<td>x/ xxx</td>
</tr>
<tr>
<td>6. Provision of a new rail alignment from Leven and Methil Docks to Markinch.</td>
<td>✓/ xx</td>
<td>✓</td>
<td>✓/ x</td>
<td>x/ xx</td>
<td>x/ xx</td>
<td>x/ xxx</td>
<td>x/ xx</td>
<td>✓/ xxx</td>
<td>x/ xx</td>
<td>x/ xx</td>
</tr>
<tr>
<td>7. Provision of a new passenger Bus Rapid Transit alignment from Leven to Markinch.</td>
<td>✓/ xx</td>
<td>✓</td>
<td>✓/ x</td>
<td>x/ xx</td>
<td>x/ xx</td>
<td>x/ xxx</td>
<td>x/ xx</td>
<td>✓/ xxx</td>
<td>x/ xx</td>
<td>x/ xx</td>
</tr>
<tr>
<td>8. Hovercraft triangle between Levenmouth, Kirkcaldy, and Edinburgh.</td>
<td>✓/ xx</td>
<td>✓</td>
<td>✓/-</td>
<td>x</td>
<td>x/ xx</td>
<td>x/ xx</td>
<td>x/-</td>
<td>✓/ x</td>
<td>-</td>
<td>x/-</td>
</tr>
</tbody>
</table>
7.4 Safety

7.4.1 The Safety criteria covers two sub-criteria:
- Accidents; and
- Security.

7.4.2 Accidents relate to those taking place on all modes, but the advice set out in STAG only effectively requires consideration of accidents taking place on the road network. Security relates to how safe the transport system is for users, and takes into account the impact of such initiatives as CCTV, help points, lighting, etc.

7.4.3 In line with STAG guidance, accidents have been qualitatively assessed in terms of changes to road traffic and the subsequent effect on accidents where appropriate. Similarly, a qualitative appraisal has been applied to security benefits assessing existing conditions against proposals. As the level of trip mode-choice change is not modelled until the STAG Part 2 appraisal, the quantitative assessment of safety will be carried out only for options proceeding to that stage.

Accidents

7.4.4 As discussed in Section 3.2.33, a list of ‘worst’ road crash sites is produced by Fife Council on an annual basis to identify the locations where high road crash numbers have been recorded. This includes a number of locations identified within the Levenmouth area.

7.4.5 Each of the options, including freight only (Option 3) and hovercraft (Option 8), are likely to have a positive impact on accident rates on the roads in the vicinity of Levenmouth to varying degrees. These benefits are realised mostly through the reduction of vehicles on the road, primarily as a result of:
- Modal shift away from car use towards public transport, both for the full and part of the trip-making undertaken (i.e. previous use of the car to access rail stations in Kirkcaldy, Markinch or Thornton) (Options 1 - 2, 4 - 8); and
- A reduction in road freight movement (Options 3 and 4).

7.4.6 The additional bus service (Option 2), BRT (Option 7), hovercraft (Option 8), and rail freight only (Option 3) are expected to have the potential for a minor reduction in accidents. This is largely down to the modal switch (car to public transport, or HGV to rail freight) expected to arise. Option 1 is expected to have negligible impact on mode shift to the extent that there would be resulting impact on accidents.

7.4.7 The rail options (Option 4a, Option 5a and Option 6a) including only one station at Leven, and not include rail freight, are expected to also have potential minor reductions in accidents. This reflects a potentially smaller passenger catchment and exclusion of freight facilities to support modal transfer from road to rail.

7.4.8 The rail options with one passenger station and freight (Option 4c and Option 6c), two passenger stations (Option 4b, 6b and 5b), or two passenger stations and freight (Option 4d and Option 6d), are likely to result in the greatest benefits to accident rates. This is a
reflection of the increased potential for modal shift from private car to rail and/or road freight traffic to rail freight.

### Security

7.4.9 STAG Table 8.1 identifies the security indicators for public transport passengers as:

- Site perimeters, entrances and exits;
- Formal surveillance;
- Informal surveillance;
- Landscaping;
- Lighting and visibility; and
- Emergency call (facilities).

7.4.10 These factors have been considered in the qualitative assessment of this sub-criteria. The on-street bus options (Option 1 and Option 2) are likely to have minor security improvements resulting from real and perceived improvements to security in relation to enhancements to bus facilities, such as lighting at stops, and increased natural surveillance from increased passenger numbers on-board and at stops. Improved information can also be expected to positively contribute to increased perceptions of safety for Option 1. For Option 2 users are likely to benefit from reduced wait times for services on-street and a reduction in the number of connections required to access rail services, particularly from the Methil and Buckhaven areas.

7.4.11 Passenger rail (Option 4a-d, 5a-b and Option 6a-d), BRT (Option 7) and hovercraft (Option 8) will all likely improve security for public transport users through the inclusion of passenger waiting facilities that will be built to at least minimum safety requirements for factors such as site perimeters, entrances and exits, and lighting. The stations/terminals for these options would also likely be of a scale to include periods of staff presence as well as the provision of formal surveillance (CCTV) and on-platform emergency call/information facilities. The two station options (Options 4b/4d, 5b, 6b /d and 7b) therefore score the highest across all the options.

7.4.12 Security impacts relate directly to passenger users. As such, Option 3 scored neutral as it does not include provision for rail passengers.

### Summary of Safety Appraisal

7.4.13 Table 11 summarises the results of the safety appraisal for each of the options. In summary, the removal of vehicle traffic, both private vehicle and HGV movements, combined with improved waiting facilities at new stations/terminals, are likely to generate the most benefit (of moderate impact) for Options 4b/ d, 5b, and 6b /d, and 7b.

7.4.14 Options 4c and 6c score only minor improvement for security and moderate impact for accidents, but have been scored as ‘moderate impact’ overall, since accident rates are an identified problem within the study area and these options will support Fife Council’s Route Accident Reduction Plan. Similarly, while Option 1 will have a neutral impact on accidents, it scored minor positive overall due to the expected security benefits.
### Table 11. Summary of Safety Appraisal

<table>
<thead>
<tr>
<th>OPTION</th>
<th>ACCIDENTS</th>
<th>SECURITY</th>
<th>OVERALL APPRAISAL FOR SAFETY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintain bus services to Kirkcaldy and beyond and improve PT facilities and information.</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2. Integration of bus services at Levenmouth and existing rail provision at Markinch.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Provision of rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line.</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>4. Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>✓✓</td>
<td>✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>✓✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>OPTION</td>
<td>ACCIDENTS</td>
<td>SECURITY</td>
<td>OVERALL APPRAISAL FOR SAFETY</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------</td>
<td>----------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>5. Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>6. Provision of a new rail alignment from Leven and Methil Docks to Markinch.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>7. Provision of a new passenger Bus Rapid Transit alignment from Leven to Markinch.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
</tbody>
</table>
7.5 Economy

7.5.1 Options have been assessed taking into account Transport Economic Efficiency (TEE) and also Economic Activity and Location Impacts (EALIs), which are considered of particular importance given the potential rail freight offering for the local and wider economy. Wider Economic Benefits (WEBS) are not within the scope of the economic considerations, as proposals were unlikely to have an appreciable impact on agglomeration.

### Economy - Transport Economic Efficiency (TEE) Criterion

7.5.2 Transport Economic Efficiency (TEE) takes into consideration the welfare gain resulting from investment in a particular option. The TEE analysis, includes consideration of the net benefit to transport users, comprising:

- Travel time savings;
- User charges including fares, parking charges and tolls;
- Vehicle operating cost changes for road vehicles;
- Quality benefits to transport users; and
- Reliability benefits to transport users.

7.5.3 For consideration of net benefits to private sector operators the following factors are also considered:

- Operating and maintenance costs;
- Revenues; and
- Grant and subsidy payments.

7.5.4 Options 1 and 2 both score positively. Option 1 is likely to produce a minor overall benefit, largely from travel time savings, reliability benefits, and quality benefits to the user. Option 2 is likely to produce a moderate overall benefit for the same reasons, but to a greater extent, with the addition of user fares benefits from the re-balancing of rail fares across Fife. The BRT option (Option 7) offers similar benefits to Option 2, but increased due to higher quality vehicles and traffic-free running.

7.5.5 The rail freight only option (Option 3) would have minor potential benefits to other traffic and reliability. This is primarily due to reductions in road-based freight traffic volumes.

7.5.6 The rail option utilising the alignment of the existing out-of-use rail line (Option 4) has a moderate positive impact. There are likely to be benefits from this option relating to travel time savings (dependent on achievable line speeds); quality from additional mode choice and reduced requirement to interchange to access the rail network; and revenues from additional overall public transport patronage, although there is potential reduction in bus use due to modal transfer from bus to rail. Option 4b, inclusive of the additional station, and Option 4c and 4d which include freight also, are expected to add to the benefits. Option 4d scores particularly highly, with a major benefit provided via the combined provision of two stations and the rail freight option.

7.5.7 The rail options requiring a new rail line (Options 5 and 6) offer similar benefits to Option 4. Option 5 may offer additional journey time benefits for users, however, it does not offer the
opportunity to run services across both sides of the Fife Circle, meaning that direct access to destinations on the north line (e.g. Dunfermline) are limited, and the opportunity to improve frequency by running alternate services around the Fife circle is removed. 6d scores as a major benefit, with the inclusion of two stations and freight opportunities.

7.5.8 The hovercraft option (Option 8) may produce journey time benefits, however, these are likely to be for users whose origins and destinations are closest to the terminals. For Edinburgh in particular, access to the city centre would require further interchange. Quality benefits to users are also offered from increased modal choice.

**Economy - Economic Activity and Location Impact (EALI) Criterion**

7.5.9 The Economic Activity and Location Impact (EALI) analysis provides an assessment of the impact of transport investment on the economy, measured in terms of income (GDP or GVA) and/or employment. EALI analysis is used to evaluate local effects or outcomes in terms of economic variables that are important to local people and local businesses, in particular changes in employment and in output.

7.5.10 It has been recognised that economic activity and locational impacts are an important consideration in appraising the emerging options for the Levenmouth area, as many of the problems faced in the area are spatial in nature. By this it is meant that Levenmouth is impacted heavily by its location in relation to the rest of the region and beyond, and some of the problems associated with the area are localised in their severity. This section, therefore, includes consideration of EALIs for national and local impacts in a qualitative nature, drawing on supporting evidence where available. This will help to inform the consideration of EALIs in the Part 2 study.

7.5.11 Investment in the local transport infrastructure increases access to employment, markets and supply chains. Alongside reductions in travel times and other costs, this provides the opportunity to increase the attractiveness of the Levenmouth area for businesses and employment. As such, all the options considered offer benefit to varying extents to facilitate access to employment opportunities to the wider Fife region and other parts of SEStran area.

7.5.12 Similarly, the options also support access to education as well as healthcare and social opportunities. These are important factors as the Levenmouth area includes areas with high rates of health issues, low levels of educational attainment, high levels of unemployment, and high levels of social exclusion. Therefore, many of the benefits relate to promoting Levenmouth as a place to live and work through improved access to education, healthcare, employment and social opportunities.

7.5.13 **Option 1 and Option 2** offer specific improvements in access to some of the most deprived areas of Levenmouth, including settlements south of the River Leven, and therefore the score for these options is a minor and moderate positive respectively, based on their expected impact on economic activity.

7.5.14 The passenger rail options (Options 4, 5 and 6) all offer the potential benefits related to enhanced accessibility to the area. Those with two stations (Options 4b, 5b and 6b) all score moderate benefit. Of the one station options, **Option 4a** scores a moderate benefit as it also provides the opportunity to provide direct access to destinations on each side of the Fife Circle.
given appropriate timetabling; however, the option of a new line connecting towards Kirkcaldy (Option 5a) scores a minor overall benefit as services would be limited to the Kirkcaldy side of the circle.

7.5.15 **Option 3**, the rail freight only option, scores a moderate positive. Key considerations for rail freight concern the provision of benefits to large-scale industry in the area, in particular the Diageo site at the Cameron Bridge and Fife Energy Park at Methil Docks. Linkages between the national rail network and the dock facilities may have a wider strategic benefit to the local and national economy, if utilised, as well as the immediate local and wider economy in Fife. The addition of a rail freight link for the area may open up the types and scale of industry which can operate in the Levenmouth area potentially impacting on inward and external investment levels. Therefore, options with the inclusion of dedicated rail freight station facilities (Options 3, 4c, and 6c) score a moderate benefit while those including freight and two stations (Option 4d and 6d) score major benefit. This is a reflection of the addition of freight to passenger services facilitating business access to markets and inputs as well as increasing the likely attractiveness of the area to inward investment from existing and new businesses.

**Summary of Economy Appraisal**

7.5.16 Options (Option 4d and 6d) combining to provide two passenger stations and freight rail services score the highest in terms of economic impact. This reflects the increased access to employment, education, healthcare and social opportunities for the population of the Levenmouth area complemented by improved business access to markets facilitating support for future expansion and investment from existing and new industries in the area.

7.5.17 From a public cost perspective, the bus options (Options 1 and 2) are expected to have a lower cost. The ongoing maintenance of Bawbee Bridge/Leven Railway Bridge is required to ensure it is fit for purpose to accommodate buses. Options involving the construction of new sections of alignment (Options 5, 6 and 7) will be higher cost. Cost to Government will be fully considered for options progressed to Detailed Appraisal to assess the net cost of each option from a public spending perspective.
## Table 12. Economy Appraisal Summary

<table>
<thead>
<tr>
<th>OPTION</th>
<th>TEE</th>
<th>EALI</th>
<th>OVERALL APPRAISAL FOR ECONOMY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintain bus services to Kirkcaldy and beyond and improve PT facilities and information.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2. Integration of bus services at Levenmouth and existing rail provision at Markinch.</td>
<td>✓✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>3. Provision of rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line.</td>
<td>✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>4. Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>✓✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>✓✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>5. Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓✓</td>
<td>✓✓</td>
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</table>
### Option 6. Provision of a new rail alignment from Leven and Methil Docks to Markinch.

<table>
<thead>
<tr>
<th>Provision Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
</tr>
<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
</tr>
<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEE</th>
<th>EALI</th>
<th>Overall Appraisal for Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️ ✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>✔️ ✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>✔️ ✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>✔️ ✔️ ✔️</td>
<td>✔️ ✔️</td>
<td>✔️ ✔️</td>
</tr>
</tbody>
</table>

### Option 7. Provision of a new passenger Bus Rapid Transit alignment from Leven to Markinch.

<table>
<thead>
<tr>
<th>Provision Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area Stations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEE</th>
<th>EALI</th>
<th>Overall Appraisal for Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

### Option 8. Hovercraft triangle between Levenmouth, Kirkcaldy, and Edinburgh.

<table>
<thead>
<tr>
<th>Provision Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEE</th>
<th>EALI</th>
<th>Overall Appraisal for Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>❌</td>
<td>✔️</td>
<td>-</td>
</tr>
</tbody>
</table>

---
### 7.6 Integration

#### 7.6.1 The options have been appraised taking account of integration in relation to

- **Transport integration** - consideration of options in terms of services and ticketing, infrastructure and information;
- **Transport and land-use integration** - an assessment of the impact of options on proposed or existing land-use developments; and
- **Policy integration** - a check of options against national policy, and also against specific accessibility issues such as disability, health, rural affairs and social inclusion.

#### Transport Integration

#### 7.6.2 The Transport Integration appraisal has been summarised at a high level in Table 13. This highlights a moderate benefit for rail (Options 3, 4, 5 and 6), hovercraft (Option 8) and the on-street bus (Option 1) and rail integration (Option 2). Benefits are likely to be associated with service and ticketing integration, especially for Option 2 which improves existing bus/rail connections by timetable matching and branding, with further integration of ticketing and information. Rail options benefit from direct access to the rail network, simplification of ticketing requirements compared to multiple modes, and improved infrastructure and information from new stations. Furthermore, inclusion of a station situated within walking distance of the existing Leven Bus Station would improve integration of these modes. Option 7 and Option 8 offer similar benefits, while Option 1 offers a minor benefit overall by bringing improvements to bus stops and information provision.

#### 7.6.3 Option 3 largely scores neutral due to the criteria being related mostly to user benefits. This option does, however, provide the potential for integration with sea freight at the docks.
Table 13. Transport Integration Sub-Category Appraisal

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>OPTION</th>
<th>1. Maintain bus services to Kirkcaldy and beyond + PT facilities and information.</th>
<th>2. Integration of bus services at Levenmouth and existing rail provision at Markinch.</th>
<th>3. Rail Freight</th>
<th>4 – 7. Rail &amp; BRT Options</th>
<th>8. Hovercraft Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services and Ticketing</td>
<td>Seamless PT Network</td>
<td>Minor benefit</td>
<td>Moderate benefit</td>
<td>Neutral benefit</td>
<td>Moderate benefit</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td></td>
<td>Seamless Ticketing</td>
<td>Neutral benefit</td>
<td>Moderate benefit</td>
<td>Neutral benefit</td>
<td>Minor benefit</td>
<td>Minor benefit</td>
</tr>
<tr>
<td>Quality of Infrastructure</td>
<td></td>
<td>Minor benefit</td>
<td>Moderate benefit</td>
<td>Neutral benefit</td>
<td>Moderate benefit</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Layout of Infrastructure</td>
<td></td>
<td>Moderate benefit</td>
<td>Moderate benefit</td>
<td>Neutral benefit</td>
<td>Moderate benefit</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Information</td>
<td></td>
<td>Moderate benefit</td>
<td>Moderate benefit</td>
<td>Neutral benefit</td>
<td>Moderate benefit</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Visible Staff Presence</td>
<td></td>
<td>Neutral benefit</td>
<td>Neutral benefit</td>
<td>Neutral benefit</td>
<td>Moderate benefit</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Physical Linkage for Next Journey</td>
<td></td>
<td>Minor benefit</td>
<td>Minor benefit</td>
<td>Moderate benefit</td>
<td>Moderate benefit</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Overall Assessment of Impact</td>
<td></td>
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<td>✔️</td>
<td>-</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>
Transport and Land Use Integration

7.6.4 **Option 1**, maintenance of on-street bus services to Kirkcaldy and beyond, is likely to have a minor positive impact allowing the continuation of services to the southern side of Levenmouth area. A greater benefit is seen with **Option 2**, which includes improvements to integration of bus and rail from both Leven town centre, with a branded bus service, as well as the areas of Methil (including the Energy Park), Methilhill, Buckhaven and Windygates. This would provide improved access to the Energy Park and the Cameron Bridge (Distillery and Hospital) employment areas.

7.6.5 In terms of the rail options, the freight only option (**Option 3**) scores well with a moderate positive impact, with land use integration benefits to large scale industry in the area, in particular at the Cameron Bridge and Methil Docks sites in the form of Diageo and the Fife Energy Park, both of which are identified in the Mid-Fife LDP as planned areas of development.

7.6.6 The further rail options (**Options 4, 5 and 6**) and the BRT option (**Option 7**) also integrate well with the majority of existing development and future developments in the area, however, the alignments for these options will need to be managed in relation to existing land use in their paths (in particular the new line to Kirkcaldy option) and with regards to infrastructure. The Hovercraft option (**Option 8**) promotes access to the Energy Park, but may be difficult to access from the rest of Levenmouth, and may not be well integrated with destination developments in Edinburgh and Kirkcaldy.

Policy Integration

7.6.7 All the options appraised scored positively in the policy integration appraisal. The public transport based options (all options except **Option 3**) align with transport policy from national to local level (as outlined in Section 4), particularly in terms of promoting:

- Sustainable mode use over private motorised vehicles;
- Social inclusion; and
- An economically active, educated, and healthy workforce via enhanced accessibility to employment, education, healthcare and social amenities by alternative modes to the car.

7.6.8 **Option 3** also supports local to national policy, particularly in terms of economic policy through supporting the aim to encourage inward investment to the Levenmouth area in particular in relation to the continued presence of Diageo, and the future further development of industry at the Fife Energy Park. It also supports policy relating to the reduction of road freight traffic, in particular in relation to Fife Council’s Route Accident Reduction Plan.
Transport and Land Use Integration

7.6.9 Option 1 is likely to have a minor positive impact by allowing the continuation of services to the southern side of the Levenmouth area. A greater benefit is seen with Option 2, which includes improvements to integration of bus and rail from both Leven town centre, with a branded bus service, as well as the areas of Methil (including the Energy Park), Methilhill, Buckhaven and Windygates. This would directly provide for improved access to the Energy Park and the Cameron Bridge (Distillery and Hospital) employment areas.

7.6.10 In terms of the rail options, the freight only option (Option 3) scores well with a moderate positive impact, with land-use integration benefits to large-scale industry in the area. This includes the Diageo site at Cameron Bridge and Fife Energy Park at Methil Docks, which are both identified in the Mid-Fife LDP as planned areas for future development.

7.6.11 The further rail options (Options 4, 5 and 6) and the BRT option (Option 7) also integrate well with the majority of existing development and future developments in the area. The Mid-Fife LDP safeguards the existing rail alignment, however the new alignments for Options 5 and 6 would need to be managed in relation to existing land use (in particular the new line to Kirkcaldy option) and also with regard to current infrastructure. The Hovercraft option (Option 8) promotes access to the Energy Park, but may be difficult to access from the rest of Levenmouth, and does not necessarily provide direct access to key destinations within Edinburgh and Kirkcaldy.

Policy Integration

7.6.12 All the options appraised scored positively in relation to policy integration. The public transport based options (all options except Option 3) include alignment with transport policy from national to local level (as outlined in Section 4), particularly in terms of promoting:

- Sustainable mode use over private motorised vehicles;
- Social inclusion; and
- An economically active, educated, and healthy workforce via enhanced accessibility to employment, education, healthcare and social amenities by alternative modes to the car.

7.6.13 Options 3, 4c, 4d, 6c and 6d also align with local to national economic policy through supporting the aim to encourage inward investment to the Levenmouth area particularly in relation to supporting the operations of Diageo, and the future development of industry at the Fife Energy Park. The options also align with policy to support the transfer of freight from road to rail and, in doing so, can be expected to potentially also positively contribute to Fife Council’s Route Accident Reduction Plan.

Summary of Integration Appraisal

7.6.14 Overall, the options scored well in terms of Integration, as summarised in Table 14. While Option 1 was not seen to have a large enough potential impact to warrant a moderate positive scoring, all other options achieved this. This is largely due to the fact that the options increase
access to opportunities and future development through alternatives to the private car as well as facilitating a rail freight alternative (with the exception of Option 2).

7.6.15 While Options 2 to 8 all achieved a moderate score, the largest benefits are likely to be realised with the rail options, in particular those that offer both two stations with freight (Options 4c, 4d, 6c and 6d).
### Table 14. Integration Appraisal Summary

<table>
<thead>
<tr>
<th>OPTION</th>
<th>TRANSPORT</th>
<th>LAND USE AND TRANSPORT</th>
<th>POLICY</th>
<th>OVERALL APPRAISAL FOR INTEGRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintain bus services to Kirkcaldy and beyond and improve PT facilities and information.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2. Integration of bus services at Levenmouth and existing rail provision at Markinch.</td>
<td>✓✓</td>
<td>✓</td>
<td>✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>3. Provision of rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>4. Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks.</td>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓✓</td>
<td>✓</td>
<td>✓✓</td>
</tr>
<tr>
<td></td>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓✓</td>
<td>✓</td>
<td>✓✓</td>
</tr>
<tr>
<td></td>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>✓✓</td>
<td>✓</td>
<td>✓✓</td>
</tr>
<tr>
<td></td>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>✓✓</td>
<td>✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>OPTION</td>
<td>TRANSPORT</td>
<td>LAND USE AND TRANSPORT</td>
<td>POLICY</td>
<td>OVERALL APPRAISAL FOR INTEGRATION</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------</td>
<td>------------------------</td>
<td>--------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>5. Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.</td>
<td>![Option Image]</td>
<td>![Option Image]</td>
<td>![Option Image]</td>
<td>![Option Image]</td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓ ✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area Stations.</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
7.7 Accessibility and Social Inclusion

7.7.1 The Accessibility and Social Inclusion objective covers two sub-objectives:

- Community Accessibility;
- Comparative Accessibility.

7.7.2 Community Accessibility includes consideration of the public transport network coverage and also local accessibility, which is essentially opportunities to walk or cycle to services or facilities.

7.7.3 Comparative Accessibility includes consideration of people groups and the needs of any socially excluded groups, and also geographic consideration of locations relative to proposed interventions.

Community Accessibility

7.7.4 With the exception of Option 3, each option is likely to be of a moderate benefit for community accessibility. Option 1 helps protect and improve public transport connections to central Leven and across the southern side of Levenmouth, in particular Methil, Buckhaven, East Wemyss and Coaltown of Wemyss areas. This maximises access to public transport services on foot and by bicycle across this area. It does not directly improve walking and cycling connections, but helps facilitate non-car access to services and facilities.

7.7.5 Similarly, Option 2 enhances connections to Methil, Methilhill and Buckhaven, while boosting access to the rail network at Markinch and through to Glenrothes. Option 7 also enhances access to the rail network via provision of the segregated BRT link.

7.7.6 Passenger rail options (Options 4, 5 and 6) all help integrate with the wider rail network, and improve accessibility, by providing a link to the Levenmouth area. Options with two stations (4b/d, 5b, and 6b/d) are of particular benefit in terms of increasing the public transport catchment. The new line to Markinch option (Option 6), and the existing alignment options (Option 4) are expected to offer greater benefit to overall accessibility compared to Option 5 as they may allow the potential to deliver passenger services along each side of the Fife Circle Line, therefore providing connections to additional settlements, such as Dunfermline, and the potential for a more frequent service to the area.

7.7.7 The hovercraft option (Option 8) was found to be of moderate benefit as it would provide an additional public transport mode accessing both Kirkcaldy and Edinburgh, allowing integration with additional services in these settlements. This is likely to benefit access to key destinations for employment, education, healthcare and social activities. As with rail, the provision of an additional mode option for Levenmouth is likely also to help improve the perception of disconnectedness that was identified in the analysis of problems and opportunities. While this option does not directly improve walking and cycling connections, it helps facilitate car independent access to services and facilities.

7.7.8 Option 3 scores neutral under this sub-criterion. This reflects the option not including specific provision for passengers.
Comparative Accessibility

7.7.9 With the exception of Option 3, each option is likely to be of a moderate benefit for comparative accessibility. The public transport options (Options 1, 2 and 4 to 8) are all expected to improve accessibility for a number of socially excluded groups. It was highlighted in the analysis of the problems and opportunities that the areas affected by these options are some of the areas within Levenmouth and, to an extent, Fife with the greatest health issues, lowest levels of educational attainment, highest levels of unemployment, and highest levels of social exclusion. Fare re-balancing as part of Option 2 may also improve access to the rail network for large proportions of the community, in terms of affordability.

7.7.10 Of the Rail options, those with two stations (Options 4b/d, 5b, and 6b/d), offer the greatest benefit in terms of potential catchment area. Option 1 and Option 2 improve access to areas with some of the highest levels of the problems above, such as Methil, Buckhaven and Methilhill.

Summary of Accessibility and Social Inclusion Appraisal

7.7.11 Overall scoring for Accessibility and Social Inclusion was a moderate benefit for all options except the rail freight only option (Option 3). The options showed improvement to public transport access, and provided benefit to areas where these benefits are most needed in terms of helping social inclusion related issues.

7.7.12 As noted above, the rail options which include two stations, are of the most benefit.
### Table 15. Accessibility and Social Inclusion Appraisal Summary

<table>
<thead>
<tr>
<th>OPTION</th>
<th>COMMUNITY ACCESSIBILITY</th>
<th>COMPARATIVE ACCESSIBILITY</th>
<th>OVERALL APPRAISAL FOR ACCESSIBILITY AND SOCIAL INCLUSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintain bus services to Kirkcaldy and beyond and improve PT facilities and information.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>2. Integration of bus services at Levenmouth and existing rail provision at Markinch.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>3. Provision of rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4. Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks.</td>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td></td>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td></td>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td></td>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
</tbody>
</table>
## OPTION

### 5. Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.

<table>
<thead>
<tr>
<th>Option</th>
<th>Community Accessibility</th>
<th>Comparative Accessibility</th>
<th>Overall Appraisal for Accessibility and Social Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

### 6. Provision of a new rail alignment from Leven and Methil Docks to Markinch.

<table>
<thead>
<tr>
<th>Option</th>
<th>Community Accessibility</th>
<th>Comparative Accessibility</th>
<th>Overall Appraisal for Accessibility and Social Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

### 7. Provision of a new passenger Bus Rapid Transit alignment from Leven to Markinch.

<table>
<thead>
<tr>
<th>Option</th>
<th>Community Accessibility</th>
<th>Comparative Accessibility</th>
<th>Overall Appraisal for Accessibility and Social Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area Stations.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

### 8. Hovercraft triangle between Levenmouth, Kirkcaldy, and Edinburgh.

<table>
<thead>
<tr>
<th>Option</th>
<th>Community Accessibility</th>
<th>Comparative Accessibility</th>
<th>Overall Appraisal for Accessibility and Social Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>
7.8 Transport Planning Objectives

7.8.1 The Transport Planning Objectives (TPO) for this study, as noted in Section 4.1, are as follows:

- TPO 1 – Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area.
- TPO 2 – Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area.
- TPO 3 – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area.
- TPO 4 – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk.

7.8.2 The options have therefore been appraised in relation to their role in meeting these objectives overall and guided by the KPIs outlined in Table 9. Overall the options score positively against the TPOs as summarised in Table 16.

7.8.3 For TPO 1 the new rail line to Markinch (Option 6), and the existing alignment option (Option 4) score particularly highly where two stations and/or freight facilities are provided (4b/c/d and 5b/c/d), scoring a ‘moderate benefit’. Options 4a/6a, while just providing one station, are also scored moderate as it retains the opportunity to operate services to destinations on the Fife Circle. The Kirkcaldy route option (Option 5) does not offer the opportunity to run services across both sides of the Fife Circle meaning that direct access to destination options are limited and the opportunity to enhance frequency by running alternate services around the Fife Circle is removed, hence the ‘minor benefit’ scoring. Similar impacts are expected in relation to TPO 2 with regard to changes towards sustainable mode share, again with Option 4 and Option 6 scoring higher comparatively.

7.8.4 For TPO 3, the bus options (Options 1 and 2) as well as the BRT (Option 7) all score minor impact in terms of attracting inward investment. All the rail options score positively, with options including two stations and/or rail freight scoring a moderate benefit, in terms of attracting investment, in particular when accompanied by public transport passenger options. Option 3 scores a minor positive impact, reflecting the freight benefit but not also the passenger offering. Option 8 also scored a minor benefit, reflecting the relatively poor connections from the hovercraft terminus in Leith to central Edinburgh.

7.8.5 In relation to the tourism TPO 4, Options 2 and 7 score a minor benefit as they offer longer distance connectivity benefits to central Levenmouth area. Option 1 and 3 are not expected to have a notable impact in terms of tourism activity. Options 4 to 8 all scored moderate benefit in terms of attracting tourist to the area. Options 4, 5, and 6 all provide the opportunity for a direct rail link from the area to Edinburgh.

7.8.6 The hovercraft link (Option 8) represents an opportunity for direct cross-forth connection between Edinburgh and the Levenmouth area, which could potentially be used as leisure travel for tourists. Waterborne transport, as a mode, lends itself well to tourist travel, as there is added ‘experience’ of travel by this mode. A number of leisure and tourism boat trips operate on the Forth Estuary, and the coastal position of the terminal could link well to the Fife Coastal Path. Marketing around these options would serve to help further encourage tourist travel to the Levenmouth area.
### Table 16. Transport Planning Objectives Appraisal Summary

<table>
<thead>
<tr>
<th>OPTION</th>
<th>TPO 1 SCORING</th>
<th>TPO 2 SCORING</th>
<th>TPO 3 SCORING</th>
<th>TPO 4 SCORING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintain bus services to Kirkcaldy and beyond and improve PT facilities and information.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>2. Integration of bus services at Levenmouth and existing rail provision at Markinch.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Provision of rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line.</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>4. Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Levenmouth STAG Update
Levenmouth Sustainable Transport Study - STAG Report 103405
Report 19/12/2016
<table>
<thead>
<tr>
<th>OPTION</th>
<th>TPO 1 SCORING</th>
<th>TPO 2 SCORING</th>
<th>TPO 3 SCORING</th>
<th>TPO 4 SCORING</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Provision of a new rail alignment from Leven and Methil Docks to Markinch.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>7. Provision of a new passenger Bus Rapid Transit alignment from Leven to Markinch.</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.9 Feasibility, Affordability and Public Acceptability

7.9.1 The implementation potential of the options was appraised in terms of feasibility, affordability and public acceptability as follows:

- **Feasibility** – a preliminary assessment of the feasibility of construction or implementation and operation (if relevant) of an option and the status of its technology (e.g. proven, prototype, in development, etc.) as well as any cost, timescale or deliverability risks associated with the construction or operation of the option, including consideration of the need for any departure from design standards that may be required;

- **Affordability** – the scale of the financing burden on the promoting authority and other possible funding organisations and the risks associated with these should be considered together with the level of risk associated with an option’s ongoing operating or maintenance costs and its likely operating revenues (if applicable); and

- **Public Acceptability** – the likely public response at this initial appraisal phase.

7.9.2 For this appraisal we have assessed these criteria over three levels: minor, moderate or major considerations. By ‘consideration’ it is meant that there may be potential negative or problematic issues which will require a certain level of investigation.

7.9.3 As this analysis highlights ‘potential’ issues, the scorings of ‘major’ in this section of the appraisal have not led to an outright rejection of these options. The scoring has been considered in the overall context of the appraisal and further analysis of these issues will need to be explored if the option is taken forward. Further analysis in the Part 2 will allow more detailed scoring (i.e. in relation to a seven-point scale for example), however, at present (Part 1) it is felt that doing this would be mis-representative, creating an unfairly negative score where details of considerations are unconfirmed.

### Feasibility Appraisal

7.9.4 **Option 1**, the maintenance of bus services may rely on repair works to Leven Railway Bridge depending on the vehicle specification used for proposed upgrades. Investigation is currently ongoing within Fife Council (outside of the remit of this appraisal) as to the potential for these works and the possibility of repairing or replacing the bridge to remove the 18T limit. Feasibility of this option has therefore been highlighted as a moderate consideration.

7.9.5 **Option 2**, bus and rail integration, is expected to be technically feasible, however, it would require discussion with public transport operators regarding provision of the services. Fare re-balancing proposals for this option, while not representing technical feasibility issues, will also require significant effort in terms of negotiation and agreement. There is a risk that an agreement on fare re-balancing may not be achievable; however, the relative costs and benefits of such an action should considered. Feasibility of this option has been highlighted as a moderate consideration due to the risk and the effort required in fare re-balancing as described above. Failure to deliver fare re-balancing may have an impact on the attractiveness of this option for potential users, and the user benefits associated with this.

7.9.6 Rail freight only (Option 3) would be technically feasible. This line is subject to a Short Term Network Change, requiring Network Rail to bring some stretches of the route up to standard
if requested. However, bringing the line back into use over the full extent would require effort, particularly in relation to the assessment of structures along the route, and development of appropriate freight facilities. Feasibility of this option has been highlighted as a moderate consideration.

7.9.7 Re-opening of the existing out-of-use rail line to passenger rail and potentially freight rail use (Option 4), would require re-design and construction of the line to bring it up to passenger rail standard. While not an insignificant undertaking, it is technically feasible with a live line having operated previously. This has been highlighted as a moderate consideration.

7.9.8 For the new rail line options (Options 5 and 6), major consideration is required of the feasibility of new rail alignments. Particular issues include interaction with existing infrastructure, existing and planned development, and land issues such as known mining grounds. These options have, therefore, been highlighted major consideration in relation to technical feasibility.

7.9.9 From an operational point of view, all the rail options would require consideration in terms of what is a technically feasible service offering within the current timetables. Outline timetabling would be undertaken for any rail options progressed to Part 2.

7.9.10 There is moderate consideration around the feasibility of delivering BRT (Option 7). While a new alignment is involved, there would be comparatively more flexibility to overcome engineering issues compared to works associated with new rail alignments.

7.9.11 For the Hovercraft option (Option 8), while technical feasibility is not expected to be a major issue for this option, the deliverability of this option for Levenmouth is dependent on the implementation of a Kirkcaldy - Edinburgh service. While a trial of this service has taken place in recent history, this was not taken forward. As such, this option is highlighted for major consideration.

**Affordability Appraisal**

7.9.12 **Option 1**, the maintenance of bus services, will involve upgrade to on-street facilities and information, which once in place are expected to be maintained at a relatively minor cost. However, repair and future maintenance costs relating to Leven Railway Bridge are a consideration subject to the outcome of investigation work undertaken by Fife Council and also the vehicle specification used by Stagecoach for the upgrade of express services which currently route via the bridge. Affordability of this option has, therefore, been highlighted as a moderate consideration.

7.9.13 **Option 2**, bus and rail integration, would be relatively affordable, although there would be costs associated with improved service frequency, implementation, and maintenance of the branding exercise. Fare re-balancing may also incur a cost in terms of a reimbursement agreement, and would need to be further investigated if taken forward to the detailed appraisal. Affordability of this option has been highlighted as a moderate consideration.

7.9.14 Aside from the costs involved with bringing the rail freight only (Option 3) line into use, there would also be costs associated with maintenance and operation of the line. The affordability of this option has been highlighted as a moderate consideration. Maximising the number of
freight users would support the viability of the line in terms of costs and benefit from the level of freight movement occurring.

7.9.15 For Options 4, 5, and 6 there would be significant costs associated with maintenance and operation of the line and changes to rail franchise agreements would also need to be considered. The sub-options including rail freight facilities may also incur ongoing associated costs.

7.9.16 BRT (Option 7) would incur costs associated with maintenance and operation of the route and maintenance of the vehicles would need to be considered if not fully covered by the operator (i.e. forming part of any agreement with the operator with regards to providing new fleet to deliver the service). This is a major consideration for more detailed appraisal.

7.9.17 Affordability is also a major consideration for the Hovercraft option (Option 8), with likely costs associated with the running of the service, operation of the terminal, and maintenance of the craft (and any agreements in place in relation to implementing this option). Commercial viability of the option may also be a major risk.

### Public Acceptability Appraisal

7.9.18 In terms of public acceptability, Option 1 and Option 2 are not expected to receive public opposition. However, it is noted that implementation of Option 1 and 2 alone may come under criticism as they may not be seen to be doing enough, but simply perpetuating the current situation. Likewise, not implementing Option 1 could result in deterioration of the existing public transport offering in southern Levenmouth, which would likely meet public criticism. Therefore, for Options 1 and 2 public acceptability is seen as a moderate consideration.

7.9.19 Option 3 has also been highlighted as a moderate consideration. While freight is not expected to be negatively received by most, it is likely that opening the line to freight will increase calls to re-open the passenger line.

7.9.20 Consultation has noted support from the public and business community for the re-opening of a rail line to the Levenmouth area. It is expected that there would be greatest support for options including both rail and freight and utilising the existing line, which is already safeguarded and negates the majority of additional land take needs within the local area. Public acceptability is therefore highlighted as a minor consideration for Option 4. Options involving a new alignment (Options 5 and 6) would be expected to require significant dialogue with the public and businesses before the provision of passenger or freight along any of the rail alignment options outlined in this study. Construction and running of a rail line, stations, and freight facilities is a not an insignificant undertaking. There would be associated disruption during construction that would require close engagement with the local communities and businesses to minimise impacts so far as possible. The BRT option (Option 7) also has major works associated with it, and so public acceptability has also been highlighted as a major consideration for this option.

7.9.21 Option 8 would largely be provided away from the residential population, and so would not require as much public disruption in the provision of its supporting infrastructure. Public acceptability has been raised as a minor consideration at this stage.
Summary of Feasibility, Affordability, and Public Acceptability Appraisal

7.9.22 Table 17 summarises the feasibility of the options in relation to feasibility, affordability and public acceptability parameters. All the options raise different issues for further consideration. Particular consideration is required of the options (5, 6 and 7) which include a new rail/BRT route that would require new land provision outwith the area currently safeguarded in the LDP.
### Table 17. Feasibility, Affordability and Public Acceptability Appraisal

<table>
<thead>
<tr>
<th>OPTION</th>
<th>FEASIBILITY</th>
<th>AFFORDABILITY</th>
<th>PUBLIC ACCEPTABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintain bus services to Kirkcaldy and beyond and improve PT facilities and information.</td>
<td>Moderate Consideration</td>
<td>Moderate Consideration</td>
<td>Moderate Consideration</td>
</tr>
<tr>
<td>2. Integration of bus services at Levenmouth and existing rail provision at Markinch.</td>
<td>Moderate Consideration</td>
<td>Moderate Consideration</td>
<td>Moderate Consideration</td>
</tr>
<tr>
<td>3. Provision of rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line.</td>
<td>Moderate Consideration</td>
<td>Moderate Consideration</td>
<td>Moderate Consideration</td>
</tr>
<tr>
<td>4. Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks.</td>
<td>Moderate Consideration</td>
<td>Moderate Consideration</td>
<td>Moderate Consideration</td>
</tr>
<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>Moderate Consideration</td>
<td>Major Consideration</td>
<td>Minor Consideration</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>Moderate Consideration</td>
<td>Major Consideration</td>
<td>Minor Consideration</td>
</tr>
<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>Moderate Consideration</td>
<td>Major Consideration</td>
<td>Minor Consideration</td>
</tr>
<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
<td>Moderate Consideration</td>
<td>Major Consideration</td>
<td>Minor Consideration</td>
</tr>
<tr>
<td>OPTION</td>
<td>FEASIBILITY</td>
<td>AFFORDABILITY</td>
<td>PUBLIC ACCEPTABILITY</td>
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<tr>
<td>5. Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.</td>
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<tr>
<td>a) Passenger rail, Leven Station only.</td>
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<td>Major Consideration</td>
</tr>
<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
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<td>Major Consideration</td>
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<tr>
<td>6. Provision of a new rail alignment from Leven and Methil Docks to Markinch.</td>
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<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>Major Consideration</td>
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<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area stations.</td>
<td>Major Consideration</td>
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<tr>
<td>c) Passenger rail at Leven &amp; freight facilities.</td>
<td>Major Consideration</td>
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<tr>
<td>d) Passenger rail at Leven &amp; Cameron Bridge, &amp; freight facilities</td>
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<tr>
<td>7. Provision of a new passenger Bus Rapid Transit alignment from Leven to Markinch.</td>
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<tr>
<td>a) Passenger rail, Leven Station only.</td>
<td>Moderate Consideration</td>
<td>Major Consideration</td>
<td>Major Consideration</td>
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<tr>
<td>b) Passenger rail, Leven &amp; Cameron Bridge area Stations.</td>
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<td>Major Consideration</td>
<td>Major Consideration</td>
<td>Minor Consideration</td>
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</table>
8. OUTCOMES OF THE PART 1 APPRAISAL

8.1.1 Table 18 summarises the finding of the Part 1 Appraisal, presenting the scoring of each option. In the case of options which include a variant, the highest scoring of these has been shown. An overall score for each of the main STAG criteria has been presented alongside feasibility, affordability, and public acceptability. In the case of Environment, the lowest score is presented in order to highlight particular issues subject to further definition of each option. Appendix E includes the scorings for each sub-option and sub-criteria appraised.

8.1.2 In summary, the options appraised were as follows:

- **Option 1** – Maintain existing bus services to Kirkcaldy and beyond while improving public transport facilities and information;
- **Option 2** – Integration of bus services at Levenmouth and existing rail provision at Markinch:
- **Option 3** – Provision of a rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line;
- **Option 4** – Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks:
  - a) Passenger rail, Leven Station only.
  - b) Passenger rail, Leven & Cameron Bridge area stations.
  - c) Passenger rail at Leven & freight facilities.
  - d) Passenger rail at Leven & Cameron Bridge, & freight facilities.
- **Option 5** – Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.
  - a) Passenger rail, Leven Station only.
  - b) Passenger rail, Leven & Cameron Bridge area stations.
- **Option 6** – Provision of a new rail alignment from Leven and Methil Docks to Markinch.
  - a) Passenger rail, Leven Station only.
  - b) Passenger rail, Leven & Cameron Bridge area stations.
  - c) Passenger rail at Leven & freight facilities.
  - d) Passenger rail at Leven & Cameron Bridge, & freight facilities.
- **Option 7** – Provision of a new passenger Bus Rapid Transit alignment from Leven to Markinch:
  - a) Station provided at Leven only.
  - b) Stations provided at Leven and Cameron Bridge.
- **Option 8** – Hovercraft triangle between Levenmouth, Kirkcaldy, and Edinburgh. This includes a hovercraft terminal at Methil Docks.
### Table 18. Summary of Part 1 Appraisal

<table>
<thead>
<tr>
<th>OPTION</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>TPO 1 – Accessibility</td>
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<td>-</td>
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<td>TPO 3 – Investment</td>
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<td>✓✓</td>
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<td>TPO 4 – Tourism</td>
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<td>Environment</td>
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<tr>
<td>Integration</td>
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<td>Accessibility &amp; Social Inclusion</td>
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<td>✓✓</td>
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<tr>
<td><strong>Implementability</strong></td>
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<td>Feasibility</td>
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<td>Affordability</td>
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<tr>
<td>Public Acceptability</td>
<td>Mod</td>
<td>Mod</td>
<td>Mod</td>
<td>Min</td>
<td>Maj</td>
<td>Maj</td>
<td>Maj</td>
<td>Min</td>
</tr>
</tbody>
</table>

**Key:**

- ✓ -- Minor Positive Impact
- ✓✓ -- Moderate Positive Impact
- ✓✓✓ -- Major Positive Impact
- X -- Minor Negative Impact
- xx -- Moderate Negative Impact
- xxx -- Major Negative Impact
- Maj -- Major Consideration
- Mod -- Moderate Consideration
- Min -- Minor Consideration
8.2 Options Progressed to Detailed (Part 2) Appraisal

8.2.1 This section outlines the options to be progressed to detailed appraisal, taking account of the outcomes of the Part 1 Appraisal. The rational for selection or rejection of each option is summarised. A fuller explanation is provided as part of the Part 1 ASTs enclosed in Appendix D.

**Option 1 – Maintain existing bus services to Kirkcaldy and beyond while improving public transport facilities and information.**

8.2.2 This option performs well across the majority of Transport Planning Objectives and STAG Criteria. It provides particular benefits for residents and businesses south of the River Leven by maintaining existing connections in this area. If this option is not taken forward, the express connections – and potentially other services in the future – could be diverted away from this area, due to weight restrictions on Leven Railway Bridge. This area has some of the most significant social issues in the Levenmouth area, and so this option is particularly beneficial due to its positive impact on accessibility and social inclusion.

8.2.3 This option is one of the more easily implemented. It would be relatively low cost compared to the other options considered, does not have the potential for any significant environmental impacts, and scores positively in term of economic benefit.

8.2.4 Due to the above factors, this option has been taken forward to detailed appraisal.

**Option 2 – Integration of bus services at Levenmouth and existing rail provision at Markinch.**

8.2.5 Option 2 also benefits areas south of the River Leven through improved connections to the rail network and Glenrothes, again providing particular benefit to accessibility and social inclusion. Connections to Leven town centre are also reinforced through the branding exercise, and particular benefits are seen for integration and journey times through improved timetabling and fare re-balancing.

8.2.6 This option has relatively low costs with little or no impact to environment, other than a minor impact on local air quality, and a potential improvement to biodiversity and habitats.

8.2.7 The combination of improvements to services, the branding exercise, and fare re-balancing are likely to make this an attractive public transport option for the residents and workforce of the Levenmouth area.

8.2.8 The above factors, coupled with expected positive economic impacts of this option means that this option is taken forward to detailed appraisal.

**Option 3 – Provision of a rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line.**

8.2.9 Although the rail freight option contributes positively to TPO 3 (ensure that transport infrastructure and services encourage investment in Levenmouth, and attract jobs and people
to the area) it has a minimal or neutral benefit for the remaining TPOs. This is a reflection of the freight only basis of the option. While supporting business access and operations, it negates the opportunity for improved access to employment, education, healthcare and social opportunities within Fife and beyond.

8.2.10 While scoring positively against the majority of the STAG criteria, the benefits are relatively minor for most. It is also unlikely that the re-opening of the rail line for freight only would be well received within the local community.

8.2.11 While this option is regarded as likely to have a generally positive impact on the Levenmouth area, the likely benefits achieved are not well enough aligned with the objectives of this study; therefore, this option has not been taken forward to detailed appraisal as part of this study.

Options 4, 5, and 6 – Passenger Rail and Rail Freight

- Option 4 – Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Methil Docks.

- Option 5 – Provision of a new passenger only rail alignment from Leven and Methil Docks to Kirkcaldy.

- Option 6 – Provision of a new rail alignment from Leven and Methil Docks to Markinch.

8.2.12 Each of the rail options present significant potential benefits for the Levenmouth area, particularly in relation to the opportunity to attract investment and improve connectivity and accessibility from the area to key destinations for employment, education, healthcare, and social activities. Options 4 and 6 offer particular benefit for this as their connection point with the existing Fife Circle Line/East coast Main Line offers operational flexibility in relation to the possibility for providing passenger services along both sides of the Fife Circle.

8.2.13 Each option scores positively overall across the majority of the STAG Criteria, with the highest scorings seen for options/sub-options including the provision of two stations and freight facilities. The highest economic benefit is expected to be achieved by Options 4 and 6.

8.2.14 One area where all rail options scored negatively is that of the environmental appraisal, which highlighted some significant potential impacts. The largest of these were seen for the rail options requiring construction of a new line (Options 5 and 6), although provision of passenger rail and rail freight along the existing alignment does have the potential for moderate negative impacts.

8.2.15 In terms of implementation, Option 4 again came out strongest, with the provision of new rail alignments in Options 5 and 6 presenting potential issues across feasibility, affordability and public acceptability. While Option 4 may present significant implementability issues requiring consideration, these are expected to be less than Options 5 or 6 which would involve the construction of a new section of rail alignment.

8.2.16 Based on the above reasoning, it has been recommended that Option 4 – inclusive of its four sub-options – is taken forward for detailed appraisal, while Options 5 and 6 are not.
Option 7 – Provision of a new passenger Bus Rapid Transit alignment from Leven to Markinch.

8.2.17 While Option 7 performs relatively well against all the STAG Criteria other than for the Environment, it does not perform as well against the Transport Planning Objectives compared to the rail options. In particular, it is likely to only have a minor impact on attracting inward investment and enhancing Levenmouth’s role as a tourist destination. Lack of freight potential, in particular, leads to a lost opportunity with this option.

8.2.18 Similar to Options 5 and 6, Option 7 requires a new alignment. Although feasibly the option would be comparatively more flexible to overcome engineering issues compared to the new rail alignments, there would still be major public acceptability considerations and it is expected that there would be significant resistance from some members of the local population in relation to the potential alignment.

8.2.19 Affordability is also a major consideration. Aside from the significant costs associated with bringing this route into use, including design and construction, there would be significant costs associated with maintenance and operation of the dedicated BRT line.

8.2.20 The significant likely relative costs compared to expected benefits, coupled with the major potential environmental impacts, and implementability considerations relating to public acceptability and affordability leads to this option not taken forward for detailed appraisal.

Option 8 – Hovercraft triangle between Levenmouth, Kirkcaldy, and Edinburgh. This includes a hovercraft terminal at Methil Docks.

8.2.21 As with Option 7, this Option scores relatively well against all the STAG Criteria other than for the Environment. It does not perform as well against the accessibility and sustainable travel related Transport Planning Objectives compared to the rail options. Option 8 provides a direct link to Edinburgh and Kirkcaldy with a reduced journey time, however, the location of the terminals reduces the likely users and associated benefits since further interchange is likely to be required, particularly in Edinburgh. In relation to TPO4 (enhance Levenmouth’s role as a tourist destination and a gateway to the East Neuk), Option 8 scores favourably.

8.2.22 Despite these benefits, this option has significant capital and ongoing costs associated with it and presents major potential issues across feasibility and affordability. In particular, while technical feasibility is not expected to be a major issue for this option, the deliverability of this option for Levenmouth is dependent on the implementation of a Kirkcaldy - Edinburgh service. While a trial of this service has taken place in recent history, this was not taken forward. The uncertainty around commercial viability, i.e. that patronage would be sufficient to meet the costs, is a major risk in relation to the ongoing costs associated with the running of the service, operation of the terminal, and maintenance of the craft. This option is, therefore, not taken forward for detailed appraisal.
### 8.3 Summary of Selection and Rejection for Detailed Appraisal

<table>
<thead>
<tr>
<th>Options not taken forward for Detailed Appraisal</th>
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<tbody>
<tr>
<td>• Option 3 – Provision of a rail freight link to Cameron Bridge and Methil Docks along the alignment of the currently out-of-use line.</td>
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<tr>
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<tr>
<td>• Option 6 – Provision of a new rail alignment from Leven and Methil Docks to Markinch.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Options taken forward for Detailed Appraisal</th>
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<tbody>
<tr>
<td>• Option 1 – Maintain existing bus services to Kirkcaldy and beyond while improving public transport facilities and information.</td>
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</tbody>
</table>
9. OPTIONS FOR DETAILED APPRAISAL (PART 2)

9.1 Introduction

9.1.1 At the Initial Appraisal stage, the options were defined at a relatively high level. In advance of the Detailed Appraisal, further technical scoping was undertaken in order to provide additional definition of the options being taken forward. This chapter describes the further development and refinement of the options.

9.2 Part 2 Consultation

9.2.1 Following the Initial Appraisal and short-listing of options to be taken through to the Detailed Appraisal, further consultation was undertaken. The consultation comprised:
- Public Consultation; and
- Key stakeholder engagement.

Public Consultation

9.2.2 The public consultation involved drop-in sessions (Figure 27) to provide local residents, commuters, businesses, and other interested stakeholders a further opportunity to input to the study. The events were held on the 9th and 10th October 2015 at the following locations:
- 9th October
  - Leven Bus Station, 2pm to 7pm.
  - Kirkland High School Community Use, Methil, 5:30pm to 7pm.
- 10th October
  - Leven Bus Station, 11am to 3pm.
  - Methil Library, 11am to 1:30pm.

9.2.3 The events were advertised within the local communities. This included a press release issued by Fife Council alongside advertising via Fife Direct, Fife Chambers of Commerce, East Fife Mail and Fife Courier. Details about the drop-in sessions were also e-mailed directly to stakeholders and local representatives, including Transport Scotland, ScotRail Abellio, Network Rail, Stagecoach, Community Councils (Leven, Largo Area, East Wemyss and McDuff, and Kennoway), Fife Chamber of Commerce and Levenmouth Rail Campaign.

9.2.4 An e-mail communication about the events was also issued to respondents to the business (13 respondents) and public (41 respondents) surveys undertaken as part of the early consultation activities who indicated they would like to be contacted again about the study at a future date.
9.2.5 The events were attended by representatives from Fife Council and SYSTRA. This provided the opportunity for members of the study team to explain progress and answer questions and, most importantly, to hear the views of the community on the proposals.

9.2.6 Attendees were encouraged to complete a comments form. A total of 17 forms were returned, including comments submitted following the events. The responses received reconfirmed the problems identified in the Pre-Appraisal, particularly in relation to the poor connectivity of the area, the difficulty of attracting businesses and investment to the area, and social deprivation issues. Of the written responses received, the re-opening of the existing out-of-use rail line (Option 4) was identified as the preferred option by the majority. It was suggested that this would provide the best opportunity to enhance the economic and social well-being of the area.

9.2.7 Some responses, in particular verbal responses, made in person at the sessions did also note the importance of the existing bus services within the area and that rail services would not be of interest; this was mainly attributed to cost. Comments also noted that bus improvements should be happening as a matter of course. One response received stated that bus services would be the preferred option. This was also echoed verbally by a small number of attendees on the day.

**Stakeholder Engagement**

9.2.8 In order to inform the study, further engagement was also undertaken with a number of key stakeholders. This included discussions with the following organisations:

- Fife Energy Park (Fife Council and Scottish Enterprise representatives): A telephone conference call was undertaken with the Fife Council and Scottish Enterprise representatives for the Fife Energy Park on 13th October 2015. In summary, the discussion highlighted there is not expected to be a large amount of immediate demand for rail freight from the Energy Park. The quayside was noted as the main attraction within the current supply chain, providing marine access in and out via Methil Docks. Overall, rail freight facilities were not identified as a determining

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**Figure 27. Leven Bus Station Public Consultation Display**
factor, or necessarily ‘nice to have’ by current or prospective businesses. However, it was commented this is not to imply there will be no demand in the future with interest potentially coming from other entities such as the Low Carbon Investment Park, although they were not expected to become a major user. Discussions also highlighted that the current rail line is punctured by development at Methil Docks Business Park and the other unknown is land ownership relating to the site of the old Methil Power Station to the north of the Energy Park which would provide the natural ending of a rail line in this locality. The land is currently owned by Forth Ports Estates.

- Stagecoach: E-mail communication, followed by a telephone discussion was undertaken with Stagecoach on 15th October 2015. The primary purpose of this call was to discuss the bus-based proposals carried forward to ensure they were aware of all available information and did not raise concern with the principle bus operator serving Levenmouth. The proposals forming Option 2, as described in Section 6.3, were considered credible measures, particularly in relation to supporting bus access to future development proposals in the Levenmouth Strategic Development Area.

9.2.9 Further key points discussed included:

- The upgrade of vehicles scheduled for November 2015 will bring in a shorter and lighter specification to operate express services in comparison to the vehicles used on the X27 route. This means that there will be no imminent re-routing of services required. However, it was also noted that the new vehicles provide the maximum capacity for services between Levenmouth and Edinburgh, as increased frequency would not be seen as cost effective in comparison to operating larger (and heavier) vehicles.

- The re-routing of the Glasgow X27 service from serving population centres in the Levenmouth area was also discussed. As well as providing access to Glasgow, the service also serves Victoria Hospital in Kirkcaldy, retail (Central Fife Retail Park) and employment locations (such as the John Smith Business Park). Within the Levenmouth area, the heavier vehicles mean the service cannot route via Leven Railway Bridge and, therefore, bypasses the communities of Methil, Methilhill and Buckhaven. Demand on the route from Halbeath Park and Ride into Glasgow, means it is not possible to return to operating the service with a smaller and lighter vehicle. While this has reduced bus services in south Levenmouth, analysis suggests there is low demand for services from this area to Glasgow and alternative local services provide access to Kirkcaldy and Glenrothes.

- Following a review by Stagecoach of existing services in the Levenmouth area, changes will be introduced to services 7/7A/7B/7C and 95 from November 2015. The 7/7A will be revised and replace the existing 7/7A/7B/7C. Overall frequency will be maintained with a general 10-minute headway between Leven and Kirkcaldy, alternating via Methilhill or Lower Methil. Service 95 will see a revised timetable to improve reliability, but not involve changes to the routes.

9.3 Option Review and Development

9.3.1 This section discusses the further development and refinement of the short-listed options identified through the Initial Appraisal before undertaking the Detailed Appraisal.
This option focused on the maintenance of the existing level of bus service connecting the Levenmouth area to Kirkcaldy and beyond, while improving service information and ticketing. This option also considered the impact that planning applications may have on congestion hotspots within the area, and mitigating these where appropriate in relation to bus services. Improvements to facilities included on-street enhancements such as improved bus shelters, as well as improved access to digital and at-stop information.

9.3.3 The rationale for the development of this option related largely to the following issues:

- The potential replacement of the Stagecoach fleet with heavier vehicles over the 18t weight restriction in place on the Leven Railway Bridge would result in the loss of Stagecoach express service routing to the south of the River Leven (through Methil and Buckhaven for example).
- Future development could lead to increased road traffic and congestion, which in turn could cause reliability issues for bus journeys to Kirkcaldy and beyond.
- Public transport information provision and on-street bus shelter decline were raised as issues through the consultation activities.

9.3.4 Since the Initial Appraisal was completed, a number of circumstances have changed in the study area with a direct consequence on this option. Understanding of these factors has been informed by further discussions with Stagecoach and the Structures team at Fife Council. This comprises:

- As noted in the consultation section, Stagecoach is now actively investing in new coaches, including on-board enhancements such as Wi-Fi facilities and on-board washrooms. These will be delivered for use in November 2015 on the St Andrews, East Neuk, Leven, and Kirkcaldy to Edinburgh express services X58/X60/X62. The vehicles will be shorter (and therefore lighter) in comparison to the coaches introduced on to the X27 Leven to Glasgow service previously. This means services will continue to serve the settlements in south Levenmouth for the foreseeable future, crossing Bawbee Bridge / Leven Railway Bridge without the need for re-routing as a result of heavier vehicles being used.
- The Structures team at Fife Council advised that they are actively looking at maintenance options to prevent further deterioration of the Bawbee Bridge / Leven Railway Bridge crossing. The operation of lighter vehicles by Stagecoach means this option is not directly dependent on the upgrade of the bridge to a specification to remove the current weight restriction.
- Stagecoach confirmed intentions to improve provision of digital bus information via an app independently of the outcome of this study.

9.3.5 Due to the change in issues that provided the original basis of this option, the measures proposed by this option have not been further developed for Detailed Appraisal. The changes described above will therefore be considered as the ‘current situation’ in this appraisal, and Bawbee Bridge/Leven Railway Bridge reflected as a constraint for vehicles heavier than 18t. Any potential re-instatement of the rail line at this location would also require consideration.
of repair works progressed in the interim to safeguard the ongoing safety and operation of the bridge to road users.

9.3.6 With regard to the mitigation of future development, the ‘Do Minimum’ interventions described below, are identified to mitigate issues regarding committed planned development. However, it is recommended that there is continued ongoing liaison between Fife Council and Stagecoach regarding future bus provision serving the Levenmouth area in order to ensure that, as development proposals come forward into the future, Stagecoach and other bus operators are consulted early in the planning process. This will allow for mitigation measures concerning development to be identified as required in the future, along with the provision of suitable bus operations infrastructure, for example bus turning circles or bus priority measures.

9.3.7 In relation to bus shelter degradation, it is also recommended that Fife Council consider this issue as part of their ongoing programme of bus service consultation activities across Autumn/Winter 2015/16 in the Levenmouth area. This issue alone, however, is not considered sufficient to develop a separate option for Detailed Appraisal and would be primarily delivered as part of ongoing routine maintenance activities.

### Do Minimum Case

9.3.8 In order to develop the options, and propose improvements to transport in the Levenmouth area, it is necessary to first understand the Do Minimum case. This Do Minimum scenario includes relevant transport and planning developments that may affect the study, and will be the baseline against which each option is appraised. This represents the outcome scenario if no options from this study are taken forward.

9.3.9 For the purpose of this study, the following transport interventions (as included within the SEStran Strategic Regional Model) have been included in the Do Minimum:

- Queensferry Crossing;
- Signalisation of Redhouse (A92/A921) and Gallatown (A915/A921) roundabouts;
- Standing Stane Road/Windygates Road Junction Signalisation; and
- Kirkcaldy and Dysart - Redhouse roundabout to Standing Stane Road Link.

9.3.10 These interventions were brought forward from the Initial Appraisal.

### Option A - Integration of bus services in the Levenmouth Area with existing rail provision at Markinch.

9.3.11 This Option is Option 2 from the Initial Appraisal.

9.3.12 Bus and rail integration from Levenmouth to Markinch has recently been improved to provide a link to the rail network, largely via the X4 service. This option (Figure 28) suggests further improved provision of bus services from Methil, Methilhill and Buckhaven to Markinch station through the rebranding and timetable adjustments to service 44B to meet rail services at Markinch. The existing X4 service connecting Leven town centre, Markinch Station, and
Glenrothes would also form part of this rebranding exercise. The re-branding exercise would primarily involve livery on vehicles and timetabling providing a link to Markinch Station.

9.3.13 Rail fare re-balancing\textsuperscript{22} across Fife is also key to this option in terms of increasing the attractiveness of rail options at Markinch, as it was highlighted in the problems and opportunities that those people accessing rail connections to Edinburgh face a significantly higher per/mile charge than those accessing services at Kirkcaldy. Fare re-balancing is discussed further in Chapter 10.

9.3.14 Since the Initial Appraisal, the following points have been highlighted:

- Vehicles operating the X4 and 44B routes are part of a wider network and also used to operate into Glenrothes and between Glenrothes and Victoria Hospital in Kirkcaldy. Vehicle specific branding would therefore necessitate consideration of the dedicated scheduling of vehicles to routes i.e. to avoid branded vehicles operating across multiple routes; and

- The consideration of service patterns has identified that an additional three peak hour services could be provided in order to ‘meet’ all peak period rail services to the south (towards Edinburgh) and north (towards Perth and Dundee). During the off-peak, an hourly service frequency has been considered. This arrangement would require up to three additional vehicles operating throughout the day in order to cover these additional services.

\textsuperscript{22} Re-balancing refers to an adjustment to the rail fare structure in relation to services accessed at Markinch Rail Station. With regard to this option, this assumes a reduction in fares to promote use of these services, determined by the relative benefits and costs of doing so. Given the regulated nature of rail fares, any re-structuring of fares would be a matter for Transport Scotland, in negotiation with the operator.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure28.png}
\caption{Integration of Levenmouth Area Bus Services with Markinch Rail Services}
\end{figure}
Option B - Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Leven.

9.3.15 This Option is a variation of Option 4 from the Initial Appraisal. The differences are as described below.

9.3.16 This option (illustrated in Figure 29) involves opening the existing out-of-use rail line between Thornton North Junction and Leven for freight and passenger options. The current rail line joins the Markinch to Kirkcaldy line mid-way between Markinch and Kirkcaldy. The total length of the line is 8.9km, with an average maximum running speed of 40mph. Freight facilities would be provided at Cameron Bridge and the line could operate with either one or two passenger stations at Leven and/or Cameron Bridge.

9.3.17 Previously, the option as presented in Initial Appraisal (Option 4), proposed extension of the rail line through to Methil Docks in order to provide a freight terminal facility at this location.

9.3.18 Subsequent discussions undertaken with stakeholders did not identify a high potential for freight opportunities at this location, with the quayside location at Methil Docks being more attractive to a supply chain that is predominantly marine based. Extending the link from a passenger station at Leven to Methil Docks has therefore not been considered further within the appraisal at this stage, but is reflected as a potential opportunity for further consideration if a rail option were progressed. The economic section of the appraisal reported in Chapter 11 provides further discussion on these points.

9.3.19 It is understood from information provided by Fife Council that existing maintenance budgets for Leven Railway Bridge involve the propping of the structure, however, the re-instatement of the rail track would preclude this action. If re-opening of the rail line were to be taken forward, consideration of the structure would form part of the detailed design work undertaken, as would the consideration of all structures along the extent of the rail line. For the purpose of this appraisal, deck replacement has been assumed as required at Leven Railway Bridge. Any future decking proposals taken forward independent of proposed re-opening if progressed should be advanced with due account of the specification of the new rail line. This should ensure that any future changes to the bridge are aligned to these specifications and provide appropriate flexibility, for example with regard to clearance and headroom.

9.3.20 As part of the option development process, detailed consideration has been given to various alternative service patterns that could use the re-opened rail line. Details of the appraisal of the various alternative service patterns are provided in Chapter 10.
9.4 Summary

9.4.1 In summary, the options progressed for further appraisal are the:

- Do Minimum, as outlined above;
- Option A - Integration of bus services in the Levenmouth area with existing rail provision at Markinch Rail Service (re-named from Option 2 in the Initial Appraisal to Option A in the Detailed Appraisal); and
- Option B - Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Leven (re-named from Option 4 in the Initial Appraisal to Option B in the Detailed Appraisal).
10. OPTION APPRAISAL DEMAND FORECASTING

10.1 Introduction

10.1.1 This chapter explains the approach to demand forecasting for the study, which has been used to estimate the additional public transport use and benefits generated by the options. An overview is provided of the methodology used to predict the pattern of public transport patronage and associated benefits generated.

10.2 Demand Forecasting Method

10.2.1 A spreadsheet-based method was developed to predict future year public transport use in corridors of relevance. Details of the input data, key assumptions and travel demand patterns used in this demand forecasting are provided in Appendix F.

10.2.2 The key features of the demand forecasting methodology are summarised below:

- Demand and benefit estimates are estimated for a list of 165 key origin-destination (OD) pairs to, from and within the wider Levenmouth area;
- These 165 OD pairs represent the main Travel to Work movements to, from and between a set of 22 zones, seven representing the Levenmouth area, the East Neuk (represented by a single zone centred on Anstruther), Kirkcaldy/Dysart (split into 4 zones), Glenrothes/Markinch/Ladybank (five zones) and five other key origins/destinations (Dundee, Perth, Dunfermline, Rosyth and Edinburgh);
- The mode choice considers car, existing ‘pure’ public transport (including all direct services and the main two-stage bus/bus and bus/rail ‘indirect’ combinations) and Park and Ride via the three main existing transport hubs (Markinch rail station, Kirkcaldy rail station and Glenrothes Bus Station), and the two potential new rail stations (Leven and Cameron Bridge);
- The main travel demand pattern is based on the 2011 Census Travel to Work demand between the 165 OD pairs (Appendix G provides further detail);
- The 2011 demand is adjusted to reflect three separate modelled years (2012, 2022 and 2032), taking account of the profile of proposed new housing in the Levenmouth area and the projected growth in the number of employed adults living in Fife;\(^{23}\)
- The model bases its mode choice and benefit estimates on the from-home-to-work journey and assumes that the return journey options and benefits are equivalent (i.e. the total benefits per daily commuter trip are estimated by simply doubling the from-home direction travel patterns). This approach assumes that a symmetric service pattern can be delivered for each scenario (i.e. the relevant frequency of additional afternoon and early evening services matches that assumed in the model, based on the AM peak timetables);
- The Do Minimum public transport service patterns were derived by using Traveline Scotland data to identify the set of public transport alternatives for each OD pair which reached the relevant ultimate destination (represented using a specific postcode representing each of the 22 origins/destinations described above) between 07:00 and 09:00 on Monday 12\(^{th}\) October 2015. Details of the

\(^{23}\) Source: TMfS12 projections, provided by the Transport Scotland LATIS team on 14\(^{th}\) October 2015.
representative postcodes used and the Do Minimum public transport services (number, average end-to-end time, average in-vehicle time and average walk-time) are provided in Appendix H; and

- The mode choice uses a logit-based mode choice process, based on the generalised time for the car, ‘Best Public Transport’ and ‘Best Park and Ride’ options – the time and money components of these journeys are combined using the predicted average value of time for commuters in the relevant modelled year.\(^{24}\)

10.2.3 Details of the predicted total daily from-home-to-work travel demand for each of the 165 OD pairs for each of the three modelled years (2012, 2022 and 2032) are provided in matrix format in Appendix G.

10.2.4 The mode choice parameters (e.g. spread parameter, mode constants, transfer penalties etc) were calibrated using the Census 2011 Travel to Work mode shares, aggregated up into ten key Travel to Work movements (Levenmouth area to/from Kirkcaldy, Glenrothes, Dundee, Dunfermline and Edinburgh). Figure 30 illustrates the comparison between the observed public transport demand (based on 2011 Census Travel to Work mode shares for these ten Travel to Work movements) and that predicted by the 2012 Do Minimum model.

<table>
<thead>
<tr>
<th>Travel to Work Movement</th>
<th>Modelled PT</th>
<th>Target PT</th>
<th>Difference</th>
</tr>
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<tbody>
<tr>
<td>Levenmouth to Kirkcaldy</td>
<td>248</td>
<td>241</td>
<td>7</td>
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<tr>
<td>Levenmouth to Glenrothes</td>
<td>112</td>
<td>113</td>
<td>1</td>
</tr>
<tr>
<td>Levenmouth to Edinburgh</td>
<td>15</td>
<td>132</td>
<td>111</td>
</tr>
<tr>
<td>Levenmouth to Dundee</td>
<td>15</td>
<td>26</td>
<td>11</td>
</tr>
<tr>
<td>Levenmouth to Dunfermline</td>
<td>36</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>Kirkcaldy to Levenmouth</td>
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<td>42</td>
<td>7</td>
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<td>Glenrothes to Levenmouth</td>
<td>37</td>
<td>37</td>
<td>0</td>
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<td>Edinburgh to Levenmouth</td>
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<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Dunfermline to Levenmouth</td>
<td>3</td>
<td>6</td>
<td>-3</td>
</tr>
<tr>
<td>From Levenmouth</td>
<td>545</td>
<td>547</td>
<td>-2</td>
</tr>
<tr>
<td>To Levenmouth</td>
<td>91</td>
<td>96</td>
<td>5</td>
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<tr>
<td>Total</td>
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<td>633</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Return Trips (per day)</th>
<th>Public Transport Commuting - Modelled vs Census 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modelled PT</td>
<td>Target PT</td>
</tr>
<tr>
<td>Kirkcaldy to Levenmouth</td>
<td>248</td>
</tr>
<tr>
<td>Glenrothes to Levenmouth</td>
<td>112</td>
</tr>
<tr>
<td>Edinburgh to Levenmouth</td>
<td>15</td>
</tr>
<tr>
<td>Dunfermline to Levenmouth</td>
<td>36</td>
</tr>
<tr>
<td>From Levenmouth</td>
<td>545</td>
</tr>
<tr>
<td>To Levenmouth</td>
<td>91</td>
</tr>
<tr>
<td>Total</td>
<td>636</td>
</tr>
</tbody>
</table>

Figure 30. Pattern of AM Peak Demand (Commute) – 2012 Model vs 2011 Census Travel to Work

10.2.5 The level of correlation between observed and modelled public transport demand at this aggregate level suggests that the spreadsheet tool is well-calibrated and suitable for use in predicting the demand for the options being considered here.

10.2.6 It would be of potential value to compare the forecasts for the final recommended public transport services with those derived using a conventional network assignment model, such as the updated SEStran Regional Model (SRM), when this becomes available for use. It is understood this is likely to be early 2016.

10.3 Determining the Forecasting Parameters – Bus Services

10.3.1 Consideration of the bus service patterns in Option A has identified that an additional three peak hour services could be provided in order to ‘meet’ all peak period rail services to the south (towards Edinburgh) and north (towards Perth and Dundee). During the off-peak, an

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24 Source: WebTAG Unit 3.5.6/ WebTAG Table A_1.3.2.
hourly service frequency has been considered. This arrangement would require up to three additional buses operating throughout the day in order to provide these additional services.

10.4 Determining the Forecasting Parameters – Rail Services

10.4.1 To understand the potential demand for rail services to/from Levenmouth (Option B), there was a need to define a potential service pattern, which would operate to and from Levenmouth. A high-level assessment has been undertaken of potential rail service patterns to the Levenmouth area. The services are only indicative of the type of service that may be feasible within the scope of the current timetables and operating circumstances. The implementation of any service would require detailed investigation and discussion with the rail industry. This would be carried out as part of the Governance to Rail Investment Process (GRIP) if a rail option were progressed through to the detailed design stage.

10.4.2 The service patterns identified for consideration are summarised below and discussed further in Table 19:

- Service 1: Diversion of the existing Edinburgh – Glenrothes with Thornton terminating services to Leven;
- Service 2: Extension of the existing Edinburgh – Cowdenbeath service to Leven;
- Service 3: Service 1 and 2 in combination;
- Service 4: A new Leven – Kirkcaldy shuttle service;
- Service 5: Services 1 and 4 in combination;
- Service 6: Services 2 and 4 in combination;
- Service 7: Service 1 and a Glenrothes with Thornton to Leven shuttle;
- Service 8: A new Leven to Edinburgh ‘express’ service via Kirkcaldy;
- Service 9: Service 1 plus a new Leven to Edinburgh ‘stopping’ service via Kirkcaldy; and
- Service 10: Services 1 and 8 in combination.
<table>
<thead>
<tr>
<th>SERVICE PATTERN VARIANT</th>
<th>GOING TO/FROM</th>
<th>ESTIMATED JOURNEY TIME TO EDINBURGH</th>
<th>FREQUENCY TO EDINBURGH</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diversion of the existing Edinburgh to Glenrothes with Thornton terminating trains to Leven.</td>
<td>Edinburgh – Leven via Kirkcaldy.</td>
<td>65 minutes.</td>
<td>Peak: Two AM services could be re-planned to serve Levenmouth, offering a service into Edinburgh. Provision of an equivalent PM peak service would require revision of current timetables and resource plans.</td>
<td>Calls at Glenrothes with Thornton omitted. The station would, however, still be served by the Edinburgh service which runs via Dunfermline Town. Based on the current timetable, there would be a lay-over of 65 minutes at Leven Station compared with 15 minutes at Glenrothes with Thornton. However, removal of a call from the existing Edinburgh to Kirkcaldy service or re-timing of the departure from Edinburgh would provide sufficient turn-around at Leven to avoid an extended lay-over and thereby reduce operating costs. Provision of PM peak services would require a revision to the current timetables and resource plans.</td>
</tr>
<tr>
<td>2. Extension of existing Edinburgh to Cowdenbeath services to Leven.</td>
<td>Edinburgh – Leven via Cowdenbeath/ Glenrothes with Thornton.</td>
<td>70 minutes.</td>
<td>Peak: AM and PM service re-planned to serve Levenmouth in the morning and evening peak.</td>
<td>Based on the current timetable, there would be a lay-over at Leven of 35 minutes compared with 20 minutes at Glenrothes with Thornton. Planned as a non-stop service from Cowdenbeath i.e. calls at Lochgelly and Cardenden omitted. There would be no direct service from Leven to Kirkcaldy, but there would be access to Dunfermline and other stations on the Fife Circle.</td>
</tr>
<tr>
<td>3. Options 1 and 2 combined.</td>
<td>Leven to Edinburgh via 1) Kirkcaldy and 2) Cowdenbeath.</td>
<td>65/70 minutes.</td>
<td>Two trains per hour – one via Kirkcaldy, and the other via Dunfermline.</td>
<td>As above for Options 1 and 2. Under the current timetable two services would operate in an hour but would have to arrive and depart within 10 minutes of each other and thereby not achieve a true “clock-face” half-hourly service between Leven and Edinburgh. A full review of the Fife Circle timetable would be required to provide a half-hourly “clock-face” service.</td>
</tr>
<tr>
<td>SERVICE PATTERN VARIANT</td>
<td>GOING TO/FROM</td>
<td>ESTIMATED JOURNEY TIME TO EDINBURGH</td>
<td>FREQUENCY TO EDINBURGH</td>
<td>COMMENTS</td>
</tr>
<tr>
<td>-------------------------</td>
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<tr>
<td>4. Leven – Kirkcaldy shuttle.</td>
<td>Leven – Kirkcaldy.</td>
<td>15 minutes.</td>
<td>Half-hourly.</td>
<td>This service would not be expected to substantially improve access as interchange would still be required at Kirkcaldy to access onward rail connections to wider Fife, Edinburgh, Perth, Dundee and further afield. For this reason, the service pattern has not been considered further in isolation.</td>
</tr>
<tr>
<td>5. Variant 1 and 4 combined.</td>
<td>Edinburgh – Leven via Kirkcaldy and Leven to Kirkcaldy shuttle.</td>
<td>Leven – Ed: 65 minutes.</td>
<td>As option 1.</td>
<td>While there is a potential 65-minute lay-over in Leven associated with Option 1 it would not be practical to use this time to operate a Leven – Kirkcaldy shuttle. This is because 45 minutes would be taken by the shuttle running time, so the remaining “spare time”, would be 20 minutes. This means that the shuttle would operate in each direction only 10 minutes apart from the Edinburgh service and therefore not provide a spaced service pattern. An extra unit would therefore be required to operate the shuttle service to offer something closer to a 30-minute service interval to Kirkcaldy. The service pattern is considered to have sufficient merit to warrant further testing.</td>
</tr>
<tr>
<td>6. Variant 2 and 4 combined.</td>
<td>Leven – Cowdenbeath – Edinburgh and Leven – Kirkcaldy shuttle.</td>
<td>69 minutes.</td>
<td>Ed – Leven – hourly.</td>
<td>The longer journey time associated with services between Leven and Edinburgh combined with a shuttle-only service offering to Kirkcaldy was considered less attractive than Option 5. This service pattern was therefore not tested further.</td>
</tr>
<tr>
<td>7. Variant 1 and Glenrothes with Thornton – Leven shuttle combined.</td>
<td>Leven – Edinburgh via Kirkcaldy plus Glenrothes with Thornton to Leven.</td>
<td>Leven – Edinburgh: n/a 62 minutes</td>
<td>Shuttle: 10 minutes.</td>
<td>The structure of the Fife timetables would result in a clash between the Edinburgh – Leven train and the Glenrothes with Thornton – Leven train. This would not be possible to resolve, as to leave Glenrothes with Thornton earlier would break the connection from West Fife. For this reason, this service pattern has not been considered further.</td>
</tr>
<tr>
<td>SERVICE PATTERN VARIANT</td>
<td>GOING TO/FROM</td>
<td>ESTIMATED JOURNEY TIME TO EDINBURGH</td>
<td>FREQUENCY TO EDINBURGH</td>
<td>COMMENTS</td>
</tr>
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<td>-------------------------</td>
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</tr>
<tr>
<td>8. Leven – Edinburgh ‘Express’ Service</td>
<td>Leven – Edinburgh.</td>
<td>51 minutes.</td>
<td>Hourly.</td>
<td>This option is based on the introduction of a new service calling at Kirkcaldy, Inverkeithing, Edinburgh Gateway (when opened), Haymarket and Waverley. To minimise disruption, the least disruptive paths out of and into Edinburgh were identified. Some modifications to other Fife route services may be required for the service to operate. This option, while providing a quicker journey time to Edinburgh, would offer reduced access within Fife. For this reason, the service pattern has not been considered further in isolation (but tested in combination – see below).</td>
</tr>
<tr>
<td>9. Leven – Edinburgh ‘Stopping’ Service</td>
<td>Edinburgh – Leven via Kirkcaldy calling at all stations.</td>
<td>65 minutes.</td>
<td>Half-hourly (in combination with variant 1).</td>
<td>The Fife Circle currently runs hourly between Edinburgh – Cowdenbeath – Kirkcaldy – Edinburgh (with an anti-clockwise service also running). This option would break the Fife Circle at Kirkcaldy resulting in an hourly Edinburgh – Cowdenbeath – Glenrothes with Thornton – Kirkcaldy service returning by the same route. The remaining part of the service would provide for an Edinburgh - Kirkcaldy return service extending to Leven as in variant 1. Combined with variant 1 this would offer two Edinburgh - Kirkcaldy - Levenmouth return services every hour. This arrangement would, however, have a significant detrimental impact on the existing Fife Circle and is therefore not considered further.</td>
</tr>
<tr>
<td>10. Variants 1 and 8 combined.</td>
<td>Edinburgh – Leven via Kirkcaldy calling at all stations</td>
<td>65 minutes.</td>
<td>Hourly.</td>
<td>This alternative would offer an express service and a stopping service between Leven and Edinburgh. The service would require a review of the current timetable to optimise running paths and avoid a “bunched” pattern requiring the two services having to depart within five minutes of each other. A review of timetables could also potentially have benefits on the Highland Main Line to provide a regular interval north of Perth, which would be desirable in the context of targeted investment on upgrading the single-track section between Perth and Inverness. This service pattern has been tested using the demand forecasting tool.</td>
</tr>
</tbody>
</table>
10.4.3 Following an initial sift, service variants 1, 2, 3, 5 and 10 were identified for further consideration. Each service pattern was tested with one station (at Leven) and two stations (Leven and Cameron Bridge) in order to understand the relative merit of a single or double station arrangement. Table 20 summarises the tests and referencing adopted for reporting in subsequent sections of this chapter.

Table 20. Rail Service Test Summary

<table>
<thead>
<tr>
<th>TEST</th>
<th>LEVEN STATION</th>
<th>CAMERON BRIDGE STATION</th>
<th>DIVERSION OF EDINBURGH – KIRKCALDY (SERVICE 1)</th>
<th>EXTENSION OF EDINBURGH – COWDENBEAT H (SERVICE 2)</th>
<th>1 &amp; 2 (SERVICE 3)</th>
<th>1 &amp; LEVEN – EDINBURGH EXPRESS (SERVICE 5)</th>
<th>1 &amp; LEVEN – KIRKCALDY SHUTTLE (SERVICE 10)</th>
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</table>

10.5 Bus and Rail Fares

10.5.1 The demand forecasting starts from a “default” assumption of no (real) change to future rail and bus fares. Therefore, for Option B fares to/from the two new Levenmouth stations to Kirkcaldy and beyond would match the corresponding current rail fares to/from Markinch station.

10.5.2 Analysis undertaken as part of this study and the consultation process, however, identified that the rail fares to/from Markinch Station to stations to the south are disproportionately higher than the corresponding Kirkcaldy fares impacting on the relative attractiveness of accessing the rail network at Markinch rather than Kirkcaldy. Therefore, as part of the demand forecasting, a number of fare-related sensitivity tests were undertaken whereby the rail fares to/from Markinch Station and to/from the new stations at Leven and Cameron Bridge were adjusted up or down in £1 increments.

10.5.3 The results of these tests suggested that the overall benefits of the options would be maximised with a single fare around £1 lower than the current Markinch rail fares, while
operator revenues would be maximised somewhere between the current single fare and the current single fare + £1. A further variant of Option A was therefore tested, in which the assumed single rail fare from Markinch was reduced by £1 relative to the current Abellio ScotRail fares. This additional sensitivity test is denoted ‘A @ -£1’ in the following sections. The results indicated that the total net benefits of a direct rail service from Levenmouth was insensitive to the small +/- £1 changes to the current rail fares and therefore Option B was tested on the basis of the current fare structure for rail services to/from Markinch.

10.6 Public Transport Demand Forecasts

10.6.1 Table 21 summarises the predicted change in mode share of week-day commuters resulting from the bus and different rail service patterns considered. These estimates exclude any change in the total number of commuters between any OD pair which might be generated by the additional transport services, for example due to changes in the number of employed adults and/or jobs in the Levenmouth area.

Table 21. Predicted Change in Mode Share

<table>
<thead>
<tr>
<th>Scenario</th>
<th>2022</th>
<th>Change in Demand Relative to Ref Case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Car</td>
<td>PT</td>
</tr>
<tr>
<td>Committed schemes only</td>
<td>6,432</td>
<td>641</td>
</tr>
<tr>
<td>A. Bus/Rail Integration at Markinch</td>
<td>6,385</td>
<td>689</td>
</tr>
<tr>
<td>A@-£1: Bus/Rail Integration at Markinch @ -£1</td>
<td>6,383</td>
<td>692</td>
</tr>
<tr>
<td>L1: Diversion of existing Edinburgh - Glenrothes (Leven only)</td>
<td>6,389</td>
<td>673</td>
</tr>
<tr>
<td>L1: Diversion of existing Edinburgh-Glenrothes (Leven + Cb)</td>
<td>6,376</td>
<td>685</td>
</tr>
<tr>
<td>L2: Extension of Edinburgh-Cowdenbeath (Leven only)</td>
<td>6,409</td>
<td>664</td>
</tr>
<tr>
<td>L2: Extension of Edinburgh-Cowdenbeath (Leven + Cb)</td>
<td>6,399</td>
<td>673</td>
</tr>
<tr>
<td>L3: L1 + L2 (Leven only)</td>
<td>6,373</td>
<td>686</td>
</tr>
<tr>
<td>L3: L1 + L2 (Leven + Cameron Bridge)</td>
<td>6,359</td>
<td>698</td>
</tr>
<tr>
<td>L4: L1 + Levenmouth - Edinburgh Express (Leven only)</td>
<td>6,366</td>
<td>704</td>
</tr>
<tr>
<td>L4: L1 + Levenmouth - Edinburgh Express (Leven + Cb)</td>
<td>6,353</td>
<td>716</td>
</tr>
<tr>
<td>L5: L1 + Edinburgh - Kirkcaldy Shuttle (Leven only)</td>
<td>6,376</td>
<td>682</td>
</tr>
<tr>
<td>L5: L1 + Edinburgh - Kirkcaldy Shuttle (Leven + Cb)</td>
<td>6,359</td>
<td>697</td>
</tr>
</tbody>
</table>

10.6.2 The resulting increase in the number of commuters using public transport per day for each of the main service patterns is illustrated in Figure 31.
10.6.3 These results illustrate that adding Cameron Bridge Station adds a significant number of additional public transport users to each of the rail service alternatives which have been tested with and without Cameron Bridge station (i.e. L1 v LC1; L2 v LC2; L3 v LC3; L4 v LC4 and L5 v LC5). Further disaggregation of the additional public transport trips (by Travel to Work corridor and mode) are provided in Appendix I.

10.6.4 These results also illustrate the unsurprising conclusion that the rail service patterns which provide more trains to more destinations (L3, L4 and L5) generate more additional public transport use. This, however, does not consider the additional operating costs required to deliver these services.

10.6.5 In order to consider the impact of the additional operating costs, two further comparisons are presented. The first considers the public transport operating surplus and the second the total net benefits in the opening year. Each of these measures of overall viability is described in turn below.

10.7 Public Transport Operating Surplus (per annum)

10.7.1 In this section, the total public transport operating surplus (i.e. total additional public transport revenue minus the operational cost of running these additional services) is discussed.

10.7.2 This metric excludes the cost of the infrastructure and any other benefits, but provides a good measure of the strength of the business case for running the different public transport services once the relevant infrastructure has been provided.

10.7.3 For the rail service options outlined in Table 19, there are variable associated operating costs which are dependent on factors related to timetable changes and availability of rolling stock.
from strengthening of other services. This in turn provides a lower and upper end operating cost for the services short-listed for testing in Table 20.

10.7.4 Therefore, there are two versions of operating surpluses reported in this section as follows:

- a ‘Worst Case’ scenario in which the higher potential operating cost (as described in Chapter 12) is assumed for the relevant public transport services and the relative level of use of the new stations for other journey purposes matches that of the average of the comparable Fife stations, resulting in an annualisation factor from daily commuters to total station patronage of 2,539 (see Appendix J); and

- a ‘Best Case’ scenario in which the lower potential operating cost is assumed and the pattern of use by other purposes is based on the relevant Fife coast stations only, resulting in an annualisation factor of 3,554 (see Appendix G).

10.7.5 Table 22 and Figure 32 compare the ‘Worst Case’ public transport operating surplus for the different scenarios considered. Figure 33 provide the corresponding ‘Best Case’ version. These forecasts suggest that, of the different rail service patterns tested, LC1 performs best against this ‘Operator Business Case’ metric.

### Table 22. Public Transport Operating Surplus 2022 – Worst Case

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Public Transport Revenue (£M pa)</th>
<th>Assumed Operating Cost (£M pa)</th>
<th>PT Operating Surplus (£M pa)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Bus/Rail Integration at Markinch</td>
<td>0.155</td>
<td>0.279</td>
<td>-0.124</td>
<td>1</td>
</tr>
<tr>
<td>A@-£1 : Bus/Rail Integration at Markinch @ -£1</td>
<td>0.147</td>
<td>0.466</td>
<td>-0.319</td>
<td>2</td>
</tr>
<tr>
<td>L1: Diversion of existing Edinburgh - Glenrothes (Leven only)</td>
<td>0.549</td>
<td>1.333</td>
<td>-0.784</td>
<td>4</td>
</tr>
<tr>
<td>LC1: Diversion of existing Edinburgh-Glenrothes (Leven + CB)</td>
<td>0.669</td>
<td>1.353</td>
<td>-0.684</td>
<td>3</td>
</tr>
<tr>
<td>L2: Extension of Edinburgh-Cowdenbeath (Leven only)</td>
<td>0.405</td>
<td>1.658</td>
<td>-1.253</td>
<td>6</td>
</tr>
<tr>
<td>LC2: Extension of Edinburgh-Cowdenbeath (Leven + CB)</td>
<td>0.581</td>
<td>1.678</td>
<td>-1.097</td>
<td>5</td>
</tr>
<tr>
<td>L3: L1 + L2 (Leven only)</td>
<td>0.761</td>
<td>2.784</td>
<td>-2.023</td>
<td>10</td>
</tr>
<tr>
<td>LC3: LC1 + LC2 (Leven + Cameron Bridge)</td>
<td>0.961</td>
<td>2.804</td>
<td>-1.843</td>
<td>8</td>
</tr>
<tr>
<td>L4: L1 + Levenmouth - Edinburgh Express (Leven only)</td>
<td>0.984</td>
<td>4.562</td>
<td>-3.578</td>
<td>12</td>
</tr>
<tr>
<td>LC4: LC1 + Levenmouth - Edinburgh Express (Leven + CB)</td>
<td>1.197</td>
<td>4.582</td>
<td>-3.385</td>
<td>11</td>
</tr>
<tr>
<td>L5: L1 + Edinburgh - Kirkcaldy Shuttle (Leven only)</td>
<td>0.646</td>
<td>2.599</td>
<td>-1.953</td>
<td>9</td>
</tr>
<tr>
<td>L5: LC1 + Edinburgh - Kirkcaldy Shuttle (Leven + CB)</td>
<td>0.803</td>
<td>2.619</td>
<td>-1.816</td>
<td>7</td>
</tr>
</tbody>
</table>
Figure 32. Public Transport Operating Surplus 2022 – Worst Case

Table 23. Public Transport Operating Surplus 2022 – Best Case

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Public Transport Revenue (£M pa)</th>
<th>Assumed Operating Cost (£M pa)</th>
<th>PT Operating Surplus (£M pa)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Bus/Rail Integration at Markinch</td>
<td>0.218</td>
<td>0.279</td>
<td>-0.06</td>
<td>3</td>
</tr>
<tr>
<td>A@-£1: Bus/Rail Integration at Markinch @ -£1</td>
<td>0.206</td>
<td>0.466</td>
<td>-0.26</td>
<td>4</td>
</tr>
<tr>
<td>L1: Diversion of existing Edinburgh - Glenrothes (Leven only)</td>
<td>0.768</td>
<td>0.395</td>
<td>0.37</td>
<td>2</td>
</tr>
<tr>
<td>LC1: Diversion of existing Edinburgh-Glenrothes (Leven + CB)</td>
<td>0.937</td>
<td>0.415</td>
<td>0.52</td>
<td>1</td>
</tr>
<tr>
<td>L2: Extension of Edinburgh-Cowdenbeath (Leven only)</td>
<td>0.567</td>
<td>1.658</td>
<td>-1.09</td>
<td>10</td>
</tr>
<tr>
<td>LC2: Extension of Edinburgh-Cowdenbeath (Leven + CB)</td>
<td>0.813</td>
<td>1.678</td>
<td>-0.87</td>
<td>9</td>
</tr>
<tr>
<td>L3: L1 + L2 (Leven only)</td>
<td>1.066</td>
<td>1.846</td>
<td>-0.78</td>
<td>8</td>
</tr>
<tr>
<td>LC3: LC1 + LC2 (Leven + Cameron Bridge)</td>
<td>1.345</td>
<td>1.866</td>
<td>-0.52</td>
<td>5</td>
</tr>
<tr>
<td>L4: L1 + Levenmouth - Edinburgh Express (Leven only)</td>
<td>1.378</td>
<td>2.824</td>
<td>-1.45</td>
<td>12</td>
</tr>
<tr>
<td>LC4: LC1 + Levenmouth - Edinburgh Express (Leven + CB)</td>
<td>1.676</td>
<td>2.844</td>
<td>-1.17</td>
<td>11</td>
</tr>
<tr>
<td>L5: L1 + Edinburgh - Kirkcaldy Shuttle (Leven only)</td>
<td>0.904</td>
<td>1.661</td>
<td>-0.76</td>
<td>7</td>
</tr>
<tr>
<td>L5: LC1 + Edinburgh - Kirkcaldy Shuttle (Leven + CB)</td>
<td>1.124</td>
<td>1.681</td>
<td>-0.56</td>
<td>6</td>
</tr>
</tbody>
</table>
10.8 Total Net Benefit per Annum generated by the Public Passenger Services

10.8.1 The measure of total net benefits delivered by the schemes in the opening year (assumed here to be 2022 for all scenarios) includes time and money user benefits, non-user decongestion benefits from the reduction in car use, changes in car-parking and fuel sale revenues and the net public transport operating surplus described above. It excludes freight-related benefits (which are assumed to be broadly consistent between the different rail service patterns) and tax-related impacts.

10.8.2 Table 24 and Figure 34 show the ‘Worst Case’ values for this ‘Opening Year Net Benefit’ metric, while Table 25 and Figure 35 provide the corresponding ‘Best case’ values. These results suggest that, of the different rail service patterns tested, scenario LC1 (hourly rail service from Levenmouth to Edinburgh via Kirkcaldy) delivers the most net benefits in the forecast opening year (2022).
### Table 24. 2022 Net Benefits – Worst Case

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Total Benefits</th>
<th>Assumed Operating Cost (£M pa)</th>
<th>Total Net Benefit (£M pa)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Bus/Rail Integration at Markinch</td>
<td>0.801</td>
<td>0.28</td>
<td>0.52</td>
<td>1</td>
</tr>
<tr>
<td>A@-£1 : Bus/Rail Integration at Markinch @ -£1</td>
<td>0.818</td>
<td>0.47</td>
<td>0.35</td>
<td>2</td>
</tr>
<tr>
<td>L1: Diversion of existing Edinburgh - Glenrothes (Leven only)</td>
<td>1.247</td>
<td>1.33</td>
<td>-0.09</td>
<td>4</td>
</tr>
<tr>
<td>LC1: Diversion of existing Edinburgh-Glenrothes (Leven + CB)</td>
<td>1.588</td>
<td>1.35</td>
<td>0.23</td>
<td>3</td>
</tr>
<tr>
<td>L2: Extension of Edinburgh-Cowdenbeath (Leven only)</td>
<td>0.746</td>
<td>1.66</td>
<td>-0.91</td>
<td>8</td>
</tr>
<tr>
<td>LC2: Extension of Edinburgh-Cowdenbeath (Leven + CB)</td>
<td>1.036</td>
<td>1.68</td>
<td>-0.64</td>
<td>6</td>
</tr>
<tr>
<td>L3: L1 + L2 (Leven only)</td>
<td>1.726</td>
<td>2.78</td>
<td>-1.06</td>
<td>10</td>
</tr>
<tr>
<td>LC3: LC1 + LC2 (Leven + Cameron Bridge)</td>
<td>2.144</td>
<td>2.80</td>
<td>-0.66</td>
<td>7</td>
</tr>
<tr>
<td>L4: L1 + Levenmouth - Edinburgh Express (Leven only)</td>
<td>2.024</td>
<td>4.56</td>
<td>-2.54</td>
<td>12</td>
</tr>
<tr>
<td>LC4: LC1 + Levenmouth - Edinburgh Express (Leven + CB)</td>
<td>2.467</td>
<td>4.58</td>
<td>-2.12</td>
<td>11</td>
</tr>
<tr>
<td>L5: L1 + Edinburgh - Kirkcaldy Shuttle (Leven only)</td>
<td>1.557</td>
<td>2.599</td>
<td>-1.04</td>
<td>9</td>
</tr>
<tr>
<td>L5: LC1 + Edinburgh - Kirkcaldy Shuttle (Leven + CB)</td>
<td>2.001</td>
<td>2.619</td>
<td>-0.62</td>
<td>5</td>
</tr>
</tbody>
</table>

**Figure 34. 2022 Net Benefits – Worst Case**

- A: Total Net Benefit (£M pa)
  - A @ -£1: Total Net Benefit (£M pa)
  - L1
  - LC1
  - L2
  - LC2
  - L3
  - LC3
  - L4
  - LC4
  - L5
  - LC5

Net Benefit (WC) 2022

-3.00
-2.50
-2.00
-1.50
-1.00
-0.50
0.00
0.50
1.00
Table 25. 2022 Net Benefits – Best Case

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Total Benefits</th>
<th>Assumed Operating Cost (£M pa)</th>
<th>Total Net Benefit (£M pa)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Bus/Rail Integration at Markinch</td>
<td>1.121</td>
<td>0.279</td>
<td>0.842</td>
<td>5</td>
</tr>
<tr>
<td>A@-£1: Bus/Rail Integration at Markinch @ -£1</td>
<td>1.145</td>
<td>0.466</td>
<td>0.679</td>
<td>6</td>
</tr>
<tr>
<td>L1: Diversion of existing Edinburgh - Glenrothes (Leven only)</td>
<td>1.746</td>
<td>0.395</td>
<td>1.351</td>
<td>2</td>
</tr>
<tr>
<td>LC1: Diversion of existing Edinburgh-Glenrothes (Leven + CB)</td>
<td>2.223</td>
<td>0.415</td>
<td>1.808</td>
<td>1</td>
</tr>
<tr>
<td>L2: Extension of Edinburgh-Cowdenbeath (Leven only)</td>
<td>1.045</td>
<td>1.658</td>
<td>-0.614</td>
<td>12</td>
</tr>
<tr>
<td>LC2: Extension of Edinburgh-Cowdenbeath (Leven + CB)</td>
<td>1.449</td>
<td>1.678</td>
<td>-0.229</td>
<td>11</td>
</tr>
<tr>
<td>L3: L1 + L2 (Leven only)</td>
<td>2.416</td>
<td>1.846</td>
<td>0.570</td>
<td>8</td>
</tr>
<tr>
<td>LC3: LC1 + LC2 (Leven + Cameron Bridge)</td>
<td>3.001</td>
<td>1.866</td>
<td>1.135</td>
<td>3</td>
</tr>
<tr>
<td>L4: L1 + Levenmouth - Edinburgh Express (Leven only)</td>
<td>2.833</td>
<td>2.824</td>
<td>0.009</td>
<td>10</td>
</tr>
<tr>
<td>LC4: LC1 + Levenmouth - Edinburgh Express (Leven + CB)</td>
<td>3.453</td>
<td>2.844</td>
<td>0.609</td>
<td>7</td>
</tr>
<tr>
<td>L5: L1 + Edinburgh - Kirkcaldy Shuttle (Leven only)</td>
<td>2.180</td>
<td>1.661</td>
<td>0.519</td>
<td>9</td>
</tr>
<tr>
<td>LC5: L1 + Edinburgh - Kirkcaldy Shuttle (Leven + CB)</td>
<td>2.801</td>
<td>1.681</td>
<td>1.120</td>
<td>4</td>
</tr>
</tbody>
</table>

Figure 35. 2022 Net Benefits – Best Case
10.9 Rail Freight Demand

10.9.1 Within the Levenmouth area, it has been identified that there is a large volume of road freight traffic produced through industry. This is predominantly produced by Diageo operations in the area. Diageo has two sites within the Levenmouth area including distillery and bottling facilities. It is the largest distillery in Scotland, with over 24 million cases of whisky and white spirits being produced each year.

10.9.2 Discussions with Diageo and their haulier WH Malcolm noted ongoing activity to investigate rail freight opportunities to support site operations at Cameron Bridge and Leven. The origins and destinations of incoming materials and outgoing product extend as far as Manchester and the Midlands. Based on stakeholder consultation with Diageo and WH Malcolm, a typical freight loading of 2 trains per day, each with loads of 20 containers in and 20 containers out, could be expected. As a representation of the HGV-km removed from the road network, the distribution shown in Table 26 has been considered assuming operations as described above on an average of six days per week (313 days per year).

Table 26. Diageo Road Freight Distribution Assumptions

<table>
<thead>
<tr>
<th>ORIGIN/DESTINATION AND LOAD</th>
<th>DISTRIBUTION</th>
<th>ANNUAL LOADS</th>
<th>ANNUAL HGV-KM REMOVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leven – Grangemouth return trip): (Ready to Drink Cased Goods)</td>
<td>28%</td>
<td>6,952</td>
<td>928,666</td>
</tr>
<tr>
<td>Leven – Grangemouth (return trip): (Other Cased Goods)</td>
<td>39%</td>
<td>9,733</td>
<td>1,300,132</td>
</tr>
<tr>
<td>Cameron Bridge – Midlands: (Whisky/Malt)</td>
<td>19%</td>
<td>4,755</td>
<td>2,785,729</td>
</tr>
<tr>
<td>Grangemouth - Cameron Bridge: (Grain Neutral Spirit)</td>
<td>7%</td>
<td>1,808</td>
<td>120,727</td>
</tr>
<tr>
<td>Manchester - Cameron Bridge: (Grain Neutral Spirit)</td>
<td>2%</td>
<td>417</td>
<td>182,265</td>
</tr>
<tr>
<td>Cameron Bridge – Midland (Return): Empty Casks</td>
<td>5%</td>
<td>1,251</td>
<td>1,466,173</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25,029</strong></td>
<td><strong>6,783,691</strong></td>
<td></td>
</tr>
</tbody>
</table>

10.9.3 As can be seen, there is a potential saving of over 6.7 million HGV-km per annum. This does not allow for annual increases in volumes. Transferring freight from road to rail is in line with national policy and provides significant benefits from the removal of HGVs from the network. These benefits have been captured in the appraisal of the rail option taken forward and

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25 Updated from the *Levenmouth Sustainable Transport Study* (Scott Wilson, 2008) based on consultation with Diageo and WH Malcolm.
calculated by applying HGV (Artic) specific Marginal External Costs (MECs) provided by the Department for Transport (DfT) in accordance with TAG Unit A5.3 – Rail Appraisal.

10.9.4 HGV-specific MECs capture congestion, infrastructure, accident, local air quality, noise, greenhouse gases, and indirect taxation costs by applying a ‘pence per km’ value to the HGV-km removed from the road for different road categories along each route. The road categories applied include:
- Motorway - Rural (79% of HGV-km);
- A Road - Rural (9% of HGV-km);
- Motorway - Inner and Outer Conurbations (9% of HGV-km);
- A Road - Inner and Outer Conurbations (1% of HGV-km); and
- A Road - Other Urban (<1% of HGV-km).

10.9.5 The relevant 60-year non-user benefits, along with negative indirect taxation impacts, have been captured in the appraisal of the rail option.

10.10 Summary

10.10.1 A spreadsheet-based approach was developed to predict the patterns of public transport patronage for different service patterns and associated benefits.

10.10.2 Service parameters were defined for both bus and rail. For bus, the addition of three peak services to the current timetable for the 44B service and off-peak hourly operating frequency were tested. This would provide a service pattern connecting at Markinch Station with all peak-period rail services southbound (towards Edinburgh) and northbound (toward Perth and Dundee).

10.10.3 A series of rail service pattern variants were considered and sifted to provide the basis to identify a service pattern to be carried through to the Detailed Appraisal. These included extensions/diversions to existing services and also the introduction of new services. Associated operating costs are dependent on factors relating to timetable changes and availability of rolling stock from other services as a result of the strengthening of routes resulting from the addition of a Levenmouth service.

10.10.4 Analysis of potential changes in rail fares noted a fall in public transport operating surplus with incremental adjustments without corresponding notable benefit i.e. an increase or decrease in rail fares did not have a significant impact on revenue and total net benefit. Therefore, current rail fares to/from Markinch have been assumed as the basis of the charging structure for the service pattern tested with Option B in the Detailed Appraisal described in the following chapters of this report.

10.10.5 For Option A, a fare readjustment has been included to promote bus-rail integration at Markinch Station in response to the fare anomaly noted for services south from Markinch with impacts on the relative attractiveness of services from Kirkcaldy.
10.10.6 In summary, both options and including alternative service patterns for Option B were appraised in terms of their performance relating to:

- Patronage;
- Public transport operating surplus; and
- Total net benefits in the opening year.

10.10.7 These parameters provide a good measure of the strength of business case and sustainability of running different services. The outcomes helped to identify an operating strategy to carry forward into the Detailed Appraisal that is sustainable and therefore carries less inherent risk.

10.10.8 The results suggest that scenario LC1 comprising an hourly rail service from Leven to Edinburgh via Kirkcaldy and both stations at Leven and Cameron Bridge delivers the most net benefits in the opening year (assumed 2022). In terms of patronage, this service would result in around 120 return commuter trips using the new stations each day. Applying the appropriate annualisation factor, which incorporates all journey purposes (see Appendix J for details), the patronage at the Leven and Cameron Bridge stations combined is predicted to be over 340,000 one-way trips per annum. Of these approximately half (46%) are new public transport trips, with the remaining being abstracted from existing bus services.
11. **PART 2 APPRAISAL**

11.1 **Introduction**

11.1.1 This chapter presents the results of the Detailed (Part 2) Appraisal. In line with STAG, the appraisal outlines the performance of the options in relation to the Transport Planning Objectives (TPOs) and STAG Criteria comprising:

- Environment;
- Safety;
- Economy;
- Integration; and
- Accessibility and Social Inclusion.

11.1.2 Consideration is also given to Cost to Government, Risk and Uncertainty, Implementability, and Public Acceptability. Part 2 Appraisal Summary Tables (ASTs) for the options are presented in Appendix K.

11.2 **Options**

11.2.1 As outlined earlier in Chapter 9, further development of the options was undertaken and led to the following short-list for Detailed Appraisal:

- **Do Minimum** – schemes including Queensferry Crossing; signalisation of Redhouse (A92/A921) and Gallatown (A915/A921) roundabouts; Standingstane Road/Windygates Road junction signalisation and Kirkcaldy and Dysart - Redhouse Roundabout to Standing Stane Road Link as reflected in the SEStran Strategic Regional Model.
- **Option A** - Integration of bus services in the Levenmouth area with existing rail provision at Markinch Rail Station; and
- **Option B** - Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction, with a passenger station at Leven and passenger station and freight facility at Cameron Bridge. The service is appraised based on the diversion of the existing Edinburgh to Glenrothes with Thornton terminating service to serve the new Levenmouth stations.

11.3 **Smartenning of the Objectives**

11.3.1 In advance of undertaking the Detailed Appraisal, the study’s TPOs, developed during the Pre-Appraisal stage, have been reviewed in line with the SMART principles advocated by STAG:

- **Specific**: it will say in precise terms what is sought;
- **Measurable**: there will exist means to establish to stakeholders’ satisfaction whether or not the objective has been achieved;
- **Attainable**: there is general agreement that the objective set can be reached;
- **Relevant**: the objective is a sensible indicator or proxy for the change which is sought; and
- **Timed:** the objective will be associated with an agreed future point by which it will have been met.

11.3.2 The objective smartening process is summarised in Table 27.
<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>SPECIFIC</th>
<th>MEASURABLE</th>
<th>ATTAINABLE</th>
<th>RELEVANT</th>
<th>TIMED</th>
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</thead>
<tbody>
<tr>
<td>TPO 1 – Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area.</td>
<td>Objective relates to public transport connectivity for the study area.</td>
<td>Scottish Index of Multiple Deprivation. Journey times to key destinations measured using TRACC accessibility software. 2021 Census.</td>
<td>Collaborative working required between local authority and other public transport stakeholders.</td>
<td>Supportive of improved access to employment, education opportunities and social and economic well-being. Higher than average levels of unemployment. Lower levels of participation compared to the Scottish average.</td>
<td>Baseline established prior to scheme opening. Timeframe linked to 10-year period from year of opening with interim monitoring in line with finalised Monitoring and Evaluation Framework.</td>
</tr>
<tr>
<td>TPO 2 – Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area.</td>
<td>Objective relates to modal share and promotion of access by public transport to/from the Levenmouth area.</td>
<td>Scottish Index of Multiple Deprivation. The 2021 Census will provide a comparison on modal share to the 2011 Census.</td>
<td>Collaborative working required between local authority and other public transport stakeholders.</td>
<td>Supportive of national, regional and local policies to provide for and promote travel by alternatives to the private car. Low levels of car ownership with higher dependence on public transport.</td>
<td>Baseline established prior to scheme opening. Timeframe linked to 10-year period from year of opening with interim monitoring in line with finalised Monitoring and Evaluation Framework.</td>
</tr>
<tr>
<td>TPO 3 – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area.</td>
<td>Supportive of job creation and market access to/from the study area.</td>
<td>Scottish Index of Multiple Deprivation Occupancy rates of retail and business units are currently collected in the area.</td>
<td>Collaborative working required between local authority, developers and transport operators.</td>
<td>Supportive of sustainable economic growth and access to employment and markets for local residents and businesses.</td>
<td>Baseline established prior to scheme opening. Timeframe linked to 10-year period from year of opening with interim monitoring in line with finalised Monitoring and Evaluation Framework.</td>
</tr>
<tr>
<td>OBJECTIVE</td>
<td>SPECIFIC</td>
<td>MEASURABLE</td>
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<tr>
<td>TPO 4 – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk</td>
<td>Investment in transport complementary to wider initiatives to market and develop the area as a visitor and tourist destination.</td>
<td>Distances and times to Edinburgh Airport measured using TRACC accessibility software. Tourism indicators for the Levenmouth area, such as overnight stay figures and Fife Coastal Path user counts.</td>
<td>Collaborative working between local authority, tourism sector, wider business community and transport operators.</td>
<td>Enhancing tourism is in alignment with national and local policies and supportive of sustainable economic growth. Opportunities to maximise the coastal setting of Levenmouth.</td>
<td>Baseline established prior to scheme opening. Timeframe linked to 10-year period from year of opening with interim monitoring in line with finalised Monitoring and Evaluation Framework.</td>
</tr>
</tbody>
</table>
11.4 Appraisal of the Options

11.4.1 This section considers each of the options against the STAG criteria and then against the agreed Transport Planning Objectives. An overview of the appraisal is provided in the Appraisal Summary Tables (see Appendix K).

11.4.2 The following seven-point scale of assessment is recommended as part of the STAG Guidance, and has therefore been adopted for this part of the appraisal:

- **Major benefit (✔✔✔):** these are benefits or positive impacts which, depending on the scale of benefit or severity of impact, the practitioner feels should be a principal consideration when assessing an option’s eligibility for funding;

- **Moderate benefit (✔✔):** the option is anticipated to have only a moderate benefit or positive impact. Moderate benefits and impacts are those which taken in isolation may not determine an option’s eligibility for funding, but taken together do so;

- **Minor benefit (✔):** the option is anticipated to have only a small benefit or positive impact. Small benefits or impacts are those which are worth noting, but the practitioner believes are not likely to contribute materially to determining whether an option is funded or otherwise.

- **No benefit or impact (-):** the option is anticipated to have no (or negligible) benefit or negative impact.

- **Small minor cost or negative impact (✘):** the option is anticipated to have only a moderate cost or negative impact. Moderate costs/negative impacts are those which taken in isolation may not determine an option’s eligibility for funding, but taken together could do so.

- **Moderate cost or negative impact (✘✘):** the option is anticipated to have only a moderate cost or negative impact. Moderate costs/negative impacts are those which taken in isolation may not determine an option’s eligibility for funding, but taken together could do so;

- **Major cost or negative impacts (✘✘✘):** these are costs or negative impacts which, depending on the scale of cost or severity of impact, the practitioner should take into consideration when assessing an option’s eligibility for funding.
11.5 Environmental Appraisal

11.5.1 The environmental constraints baseline, which has been used to inform the appraisal, is presented in Appendix C. This document sets out a review of the principal designations and constraints of relevance to the study area and provides a record of feedback from consultation with key environmental and planning stakeholders, which has informed the baseline analysis.

11.5.2 The Detailed Appraisal has followed an approach to prediction of impacts based on an understanding of baseline sensitivity and on information provided about the physical characteristics of each option and its likely operational effects, including new bus and train movements, and the potential for each option to change the flows on existing roads or rail line in the study area. The potential for significant environmental impacts during construction of infrastructure for relevant options has also been considered. The appraisal presented in this section and summarised in the Appraisal Summary Tables (see Appendix K), take account of assumed mitigation measures such as good construction practices and the adoption of sustainable drainage in railway designs. Our assumptions regarding key mitigation are presented at the start of each section below. The appraisal also draws on the outputs of the demand forecasting reported in Chapter 10, in particular the estimated modal shift and changes in travel demand for each option.

11.5.3 The appraisal of Option B (which has greater potential than Option A for significant environmental effects) has also been informed through a GIS-based analysis of key constraints along the route of the railway between Thornton North Junction and Leven. A plan showing the constraints and the alignment of the option is presented in Figure 36.

11.5.4 The environmental appraisal has been reported using the seven-point scale assessment presented in Section 11.4 for the following environmental sub-criteria:

- Noise and vibration;
- Global air quality - carbon dioxide (CO2);
- Local air quality - particulates (PM10) and nitrogen dioxide (NO2);
- Water quality, drainage and flood defence;
- Geology;
- Biodiversity and habitats;
- Landscape;
- Visual amenity;
- Agriculture and soils; and
- Cultural heritage.

11.5.5 For environmental effects, in some cases a range of impacts has been predicted. This reflects potentially varying effects associated with different aspects of each option. For example, some options have the potential for minor beneficial impacts associated with the relief of traffic from modal shift due to new rail and/or bus measures. The environmental impact of the permanent development of some of these options may also have the potential for adverse impacts in some cases (particularly on the natural and cultural heritage). Impacts predicted to be moderate or greater are considered to be significant environmental effects.
Figure 36. Option B Environmental Constraints
11.5.6 The following section presents the findings of the environmental appraisal of Options A and B. A high-level summary of the predicted effects of each option is then presented in Table 28 based on the worst case scenario for each option.

**Option A – Integration of Bus Services in the Levenmouth Area with Existing Rail Provision at Markinch.**

11.5.7 Key baseline sensitivities and designations include:
- A Candidate Noise Management Area (CNMA) in Glenrothes;
- Proximity to the Firth of Forth Special Protection Area (SPA)/Ramsar site and Site of Special Scientific Interest (SSSI) which follows much of the Fife coast in the study area;
- Gardens and Designed Landscapes at Balbirnie (north east edge of Markinch), Leslie House (north west of Glenrothes city centre) and at Letham Glen in Leven; and
- Conservation Areas at Links Road (Leven), Markinch and Cadham village.

11.5.8 Key mitigation for Option A would also be expected to include:
- Use of very low emissions buses, which offers the potential to reduce emissions of local air pollutants compared with current services/vehicles.

### Noise and vibration

11.5.9 Findings of the appraisal of impacts on noise and vibration:
- Improved branding, timetabling and fare changes may encourage increased use of bus and rail services with the potential for small changes in use of other modes (e.g. reduced use of private car on existing key roads between Levenmouth and Markinch).
- As the option does not involve any new physical works no short-term noise effects associated with construction works are predicted.
- Transport modelling indicates that some minor reductions in road traffic flows on key roads in the study area are expected from this option due to modal shift from car to public transport. No significant traffic noise or vibration effects are predicted from these changes.
- No significant effects on transport noise or vibration for receptors adjacent to bus routes are predicted.
- No significant effects on Candidate Noise Management Areas (CNMAs) in Kirkcaldy and Glenrothes are predicted.

11.5.10 Overall the option is anticipated to have **no benefit or impact** (-).
### Global air quality - carbon dioxide (CO₂)

**11.5.11** Findings of the appraisal of impacts on global air quality:

- Improved branding, timetabling and fare changes may encourage increased use of bus and rail services with the potential for small changes in use of other modes (e.g. reduced use of private car).
- Transport modelling indicates that some minor reductions in road traffic flows on key roads in the study area are expected from this option due to modal shift from car to public transport which would contribute to modest reductions in global emissions.
- No significant effects on global (carbon) emissions are predicted.

**11.5.12** Overall the option is anticipated to have **no benefit or impact (-)** on global air quality.

### Local air quality - particulates (PM₁₀) and nitrogen dioxide (NO₂)

**11.5.13** Findings of the appraisal of impacts on local air quality:

- This option may encourage increased use of bus and rail services with the potential for small changes in use of other modes (e.g. reduced use of private car on existing key roads between Levenmouth and Markinch).
- Transport modelling indicates that some minor reductions in road traffic flows on key roads in the study area are expected from this option due to modal shift from car to public transport which would contribute to modest reductions in local air pollutant emissions.
- The option results in some changes in routing of buses in the urban areas of Buckhaven/Methil/Leven and Markinch which is predicted to have slight potential for positive or negative effects on air quality in the immediate vicinity of these locations.
- No significant overall effects on local air pollutant emissions or ambient air quality concentrations in the vicinity of the affected roads are predicted.
- Use of very low emissions bus vehicles on the amended routes offers the potential for minor beneficial effects on local air quality.

**11.5.14** Overall the option is anticipated to have **no benefit or impact (-)**.

### Water quality, drainage and flood defence

**11.5.15** Findings of the appraisal of impacts on water quality, drainage and flood defence:

- Improved branding, timetabling and fare changes may encourage increased use of bus services with potentially small changes in use of other modes (e.g. reduced use of private car) with the potential for very small impacts on run-off quality from existing roads and urban areas which are not predicted to be significant.
- No significant effects on water quality, drainage and flood defence are predicted from this option.
11.5.16 The option is predicted to **have no benefit or impact (-)** on water quality, drainage and flood defence.

**Geology**

11.5.17 Findings of the appraisal of impacts on geology:
- The proposals for improvements to bus and rail services would not require new works affecting geological sites or resources.
- No significant effects on geology or geological/material resources are predicted for this option.

11.5.18 Overall the option is anticipated to have **no benefit or impact (-)** on geology.

**Biodiversity and habitats**

11.5.19 Findings of the appraisal of impacts on biodiversity and habitats:
- This option may encourage increased use of bus service with the potential for small changes in use of other modes (e.g. reduced use of private car).
- Transport modelling indicates modest levels of modal shift and no significant impacts on habitat and species disturbance and wildlife collisions associated with road traffic in the study area are predicted.
- No significant effects on biodiversity and habitats are predicted from this option.

11.5.20 Overall the option is anticipated to have **no benefit or impact (-)** on biodiversity and habitats.

**Landscape**

11.5.21 Findings of the appraisal of impacts on landscape:
- No new infrastructure is proposed for this option.
- Overall no significant effects on landscape and townscape are predicted from this option.

11.5.22 Overall the option is anticipated to have **no benefit or impact (-)** on landscape.

**Visual amenity**

11.5.23 Findings of the appraisal of impacts on visual amenity:
- Improved branding, timetabling and fare changes may encourage increased use of bus service with the potential for small changes in use of other modes (e.g. reduced use of private car).
- Transport modelling indicates that these changes would be small and no significant visual impacts associated with reduced traffic on key routes between the towns (e.g. the A911 between Levenmouth and Markinch) are predicted.
Overall no significant effects on visual amenity are predicted from this option

11.5.24 Overall the option is anticipated to have **no benefit or impact (-)** on visual amenity.

### Agriculture and soils

11.5.25 Findings of the appraisal of impacts on agriculture and soils:
- It is assumed that no new works would be undertaken and no new agricultural land take or other effects on farm units would be required for this option.
- No significant effects on agriculture and soils are predicted for this option.

11.5.26 Overall the option is anticipated to have **no benefit or impact (-)** on agriculture and soils.

### Cultural heritage

11.5.27 Findings of the appraisal of impacts on cultural heritage:
- Improved branding, timetabling and fare changes may encourage increased use of bus service with the potential for small changes in use of other modes (eg reduced use of private car).
- Traffic modelling indicates that these changes would be small and no significant effects on setting of cultural heritage features such as Balbirnie Garden and Designed Landscape and Conservation Areas in Links Road (Leven), Markinch and Cadham village associated with reduced traffic on key routes are predicted.
- Overall no significant effects on cultural heritage are predicted from this option.

11.5.28 Overall the option is anticipated to have **no benefit or impact (-)** on cultural heritage receptors

### Physical Fitness

11.5.29 Findings of the appraisal of impacts:
- Bus services within walking distance of current and future residential areas, supportive of promoting access by walking and cycling.

11.5.30 Overall the option is anticipated to have **no benefit or impact (-)** on physical fitness.

**Option A** is predicted to result in **no benefit or impact (-)** on the Environment taking account of all the aspects that have been appraised
Option B – Provision of a Rail Line along the Alignment of the Existing, But Out-of-Use Rail Line between Thornton North Junction and Leven.

11.5.31 Key baseline sensitivities and designations include:

- Rail-based Candidate Noise Management Areas (CNMAs) close to the railway route in Kirkcaldy;
- Sensitive receptors (residential properties) adjacent to the line of railway, particularly at the edge of Windygates and Leven;
- Railway line crossings of the River Ore and River Leven;
- Areas of railway land downstream of Cameron Bridge lie within the flood plain for the River Leven;
- Proximity to the Firth of Forth Special Protection Area (SPA) /Ramsar site and Site of Special Scientific Interest (SSSI) which follows much of the coast in the study corridor;
- The former railway passes through the southern part of the Kennoway - Windygates Wildlife Site at the eastern edge of Windygates;
- Areas of ancient woodland and native woodland are located adjacent to the route of the disused railway line;
- There is a Conservation Area at Links Road in Leven; and
- Cameron Bridge Distillery is a Listed Building (category B).

11.5.32 Key mitigation for Option B would be expected to include:

- Good construction practices would be deployed and would help to mitigate some construction nuisance and impacts and help prevent pollution risks to nearby watercourses;
- Permanent railway drainage would deploy sustainable drainage techniques;
- Any excavated material would be reused for fill in earthworks and landscaping and remaining transferred off site for reuse if of suitable quality;
- Construction works which could affect areas of potentially contaminated land associated with former industrial uses will require more detailed investigation, assessment and if appropriate remediation at later design stages;
- Areas such as disused rail lines have the potential to contain invasive species therefore an ecological walkover survey will be carried out pre-reinstatement works, to confirm presence of any of these species and further define any necessary mitigation;
- Site specific surveys would be required to ascertain the potential for effects on bats taking account of the extent of any required bridge works;
- Appropriate landscaping and measures to enhance local biodiversity will be incorporated into the detailed designs of the proposals; and
- New railway infrastructure and buildings would be designed sympathetically to fit with the local landscape and townscape.
11.5.33 Findings of the appraisal of impacts on noise and vibration:

- Reinstatement works for the railway (including renewal of the track bed) and associated freight receipt facilities and passenger stations are likely to generate construction noise and vibration although it is assumed that good construction practices would be deployed and would help to mitigate some impacts.
- It is predicted that noise and vibration effects would be experienced during construction which could be significant for short periods of intensive activity (e.g. from station, structures and track construction).
- Transport modelling indicates that the improved freight facilities and services would reduce the number of road based heavy goods vehicle (HGV) freight movements on principal roads in the study area (and beyond) as a result of transfer of freight loads from road to rail.
- Passenger rail services are predicted to slightly reduce the number of private car journeys made on roads between key destinations in the study area.
- A small reduction in HGV and car traffic flows on key roads in the study area or beyond is predicted to have up to minor beneficial environmental effects on communities adjacent to these routes.
- Operational noise impacts would be predicted from freight and passenger train movements for lineside and near lineside properties, which may be significant dependent on the frequency and timing of rail operations but which would be mitigated through railway design including where appropriate use of noise barriers.
- No significant effects on road-based Candidate Noise Management Areas (CNMAs) in Kirkcaldy and Glenrothes are predicted although increased rail freight movements have potential to increase rail noise in the rail-based CNMAs close to the railway route in Kirkcaldy, depending on the number and timing of movements.

11.5.34 Overall the option is anticipated to have a range of effects from minor benefit (✓) to moderate negative impact (✗) on noise and vibration.

**Global air quality - carbon dioxide (CO₂)**

11.5.35 Findings of the appraisal of impacts on global air quality:

- Operation of the freight and passenger railway line would result in increased fuel (or electricity) use for railway locomotives with associated carbon emissions.
- A small reduction in HGV and car traffic flows on key roads in the study area or beyond are predicted to have up to minor beneficial effects on carbon emissions from reduced overall HGV and car vehicle kilometres.
- No significant effects on global (carbon) emissions are predicted overall.

11.5.36 Overall the option is anticipated to have minor benefit (✓) on global air quality.
Local air quality - particulates (PM$_{10}$) and nitrogen dioxide (NO$_2$)

11.5.37 Findings of the appraisal of impacts on local air quality:

- Reinstatement works for railway and associated freight receipt facilities / passenger stations are likely to generate construction dust during periods of dry weather although it is assumed that good construction practices would be deployed and would mitigate nuisance impacts such that residual effects would not be significant.

- Operational impacts (emissions to atmosphere from diesel rail locomotives) would be predicted from freight and (potentially) passenger train movements, the impacts of which would be dependent on the frequency of train operations and the characteristics of locomotives deployed.

- Emissions of local air pollutants from railway operations are not predicted to significantly affect background concentrations of local air pollutants for receptors within 200m of the rail line.

- Improved freight facilities and rail services are predicted to reduce the number of road based heavy goods vehicle (HGV) freight movements as a result of transfer of freight loads from road to rail.

- Passenger rail services are predicted to slightly reduce the number of private car journeys made on roads between key destinations in the study area.

- A small reduction in HGV and car traffic flows on key roads in the study area or beyond is predicted to have up to minor beneficial effects on local air quality for communities adjacent to the key routes used for freight and other road traffic.

11.5.38 Overall the option is anticipated to have minor benefit (✓).

Water quality, drainage and flood defence

11.5.39 Findings of the appraisal of impacts on water quality, drainage and flood defence:

- Reinstatement of the former railway corridor could give rise to increased sedimentation of run-off and potential for pollution of watercourses from machinery and plant. Without mitigation potentially polluted discharges could reach nearby watercourses including the River Ore, River Leven and (at the dock area) the Firth of Forth.

- It is assumed that good construction practices would be deployed, appropriate mitigation to prevent pollution of nearby watercourses would be installed and permanent drainage would deploy sustainable drainage techniques such that significant effects on hydrology and water quality from permanent redevelopment of the railway would not be predicted.

- Reinstatement works for the railway formation, bridges over watercourses and associated freight receipt facilities/passenger station(s) have the potential to locally change hydrology along the railway corridor however effects are assumed to be mitigated through measures such as sustainable drainage of the permanent design and significant effects are not predicted.
The areas of the river crossings of the River Ore and River Leven and (downstream of Cameron Bridge) land alongside the River Leven lie within the high risk flood area and railway design would need to accommodate potential inundation during flood events.

Operational impacts from track drainage and leaks/spills from trains would be predicted from train movements, the impacts of which would be dependent on the frequency of railway operations but are not predicted to be significant.

It is predicted that with mitigation measures in place the permanent development and reinstatement of the railway/station(s) and its operation would not have significant effects on water quality and drainage taking account of assumed design and mitigation.

There is a potential for significant effects on flooding (or as a result of flooding on the railway) and this would require more detailed assessment at later design stages. This would also include further assessment to identify the presence of any culverted watercourses.

11.5.40 Overall the option is anticipated to have a minor negative impact (x) on water quality, drainage and flood defence.

Geology

11.5.41 Findings of the appraisal of impacts on geology:

- Reinstatement works for the railway formation and associated freight receipt facilities and passenger stations have the potential to locally affect geological resources although this is mitigated given the existing presence of the (former) railway route and its engineered structure for much of the route of the line.

- It is predicted that with mitigation measures in place the reinstatement of the railway/stations and its operation would not have significant effects on geology. Any excavated material should be re-used for fill in earthworks and landscaping and remaining transferred off site for reuse if of suitable quality.

- There is a potential for construction works to affect areas of potentially contaminated land associated with former industrial areas through which the eastern part of the route passes and this would require more detailed investigation, assessment and if appropriate remediation at later design stages.

11.5.42 Overall the option is predicted to have a minor negative impact (x) on geology features.

Biodiversity and habitats

11.5.43 Findings of the appraisal of impacts on biodiversity and habitats:

- The railway corridor passes through the southern part of the Kennoway – Windygates Wildlife Site and habitat loss (estimated as approximately 0.6ha of riparian habitat) from the railway's reinstatement is predicted to have a minor adverse effect on this site.
Industrial or urban land such as disused rail lines have the potential to contain invasive species therefore an ecological walkover survey would need to be carried out pre-reinstatement works, to confirm presence of any of these species and develop appropriate responses for eradication if necessary.

Reinstatement/construction works for the railway formation and associated freight receipt facilities and passenger station(s) have the potential to result in localised losses of habitat from clearance of scrubby vegetation which has established on some parts of the former railway corridor, and to disturb species using these areas (particularly breeding birds and mammals) and nearby habitats which include areas of ancient woodland adjacent to the railway corridor.

Habitat loss from key habitats including areas designated in the Semi-Natural Ancient Woodlands Inventory (SNAWI), Ancient Woodland Inventory (AWI) and Native Woodland Survey Scotland (NWSS) is estimated as:

- Rail line approximately 2.2ha of SNAWI, 0.4 ha of AWI and 0.3 ha of NWSS woodlands
- Cameron Bridge Freight Facility approximately 0.01ha (SNAWI)
- Cameron Bridge station approximately 0.2ha (SNAWI)
- Total woodland habitat loss of c.2.9ha for Leven Station alone and c.3.1ha for both Leven and Cameron Bridge Station.

Total Habitat loss (from areas of scrubby vegetation, grassland and the wildlife site) is estimated at 3.7ha for Leven Station alone and 3.9ha for both Leven and Cameron Bridge Station.

Works to bridges over the River Ore and River Leven and other former structures have the potential to affect protected species such as bats\(^{26}\) which may have established habitats in suitable structures (e.g. cavities). Further site specific surveys would be required to ascertain the potential for these effects taking account of the extent of any required bridge works.

Potential impacts on freshwater ecology would require to be considered as Atlantic Salmon (*Salmo salar*) is known to be present on the River Leven, however, through adoption of good construction practices, reinstatement is not predicted to have any significant effects on fish and other aquatic ecology.

Otter (*Lutra lutra*) have been recorded within 1km of the railway corridor therefore a pre-construction check would need to be undertaken to ensure otter interests are safeguarded. Any necessary licence would be applied for prior to construction if it was considered that otter could be disturbed.

It is predicted that the reinstatement of the railway and construction of freight facilities and station(s) and its operation has the potential for adverse effects on biodiversity as a result of habitat loss (e.g. scrub woodland), habitat fragmentation or disturbance, potential effects on protected species and effects on the local wildlife site. With mitigation these are not predicted to be significant.

Construction disturbance works close to the coast (for re-establishment of the railway at the Methil Dock area) have the potential to indirectly affect the qualifying interests (wintering and passage bird populations) of the Firth of Forth (SPA) /Ramsar

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\(^{26}\) Pipistrelle bat (*pipistrellus pipistrellus*) and Daubenton’s bat (*Myotis daubentoni*) are present within 1km of the railway corridor and are identified in the Fife Local Biodiversity Plan (LBAP).
Mitigation measures would need to be employed to ensure that disturbance did not adversely affect the qualifying interests of the Natura site and it may be necessary to undertake a Habitats Regulations Appraisal (HRA) at later stages.

11.5.44 The option is predicted to have a **minor negative impact (x)** on biodiversity and habitats.

### Landscape

11.5.45 Findings of the appraisal of impacts on landscape:

- The development proposals are not predicted to directly or indirectly affect any regionally or locally designated landscape areas.
- Construction works could give rise to temporary impacts on landscape from construction activity and associated movements of plant and vehicles although these would be short term and are not predicted to be significant.
- Reinstatement works for the railway formation and the bridges over watercourses and landscape clearing works required for construction of the associated freight receipt facilities and new railway station(s) would locally but permanently change landscape character along the railway corridor primarily through removal of vegetation which has established in the corridor and through the disturbance of areas of grassland and scrubby areas to facilitate the new development.
- The potential for significant landscape effects would be mitigated through the use of former structures (as far as practicable), and ensuring that any new infrastructure was designed sympathetically to fit with the local landscape and townscape.
- Mitigation measures are likely to ensure that the reinstatement of the railway, construction of new infrastructure and train operations would have no significant effects on landscape and townscape character of the route in the longer term.
- There is potential for significant effects on landscape and townscape dependent on the final form and design of railway and freight facility and station infrastructure which would need to be designed sympathetically with the surrounding urban fabric.

11.5.46 Overall the option is predicted to have a **minor negative impact (x)** on landscape.

### Visual amenity

11.5.47 Findings of the appraisal of impacts on visual amenity:

- Railway reinstatement including upgraded and new freight facilities and passenger station(s) has the potential for minor to moderate impacts to visual receptors and key views during construction and from permanent development works.
- Operation of the railway may result in some changes in views when train operations are evident however significant impacts are not predicted.
- Improved freight facilities and passenger rail services are predicted to reduce the number of road based heavy goods vehicle (HGV) freight movements and car journeys on roads in the study area. These are predicted to have minor beneficial visual impacts associated with reduced traffic on key transport routes for local and roadside receptors.
Significant adverse effects on visual amenity are predicted from the permanent development and operation of this option in some locations where receptors or views are particularly close to the railway route (including areas of housing on the edge of Windygates and Leven which have views towards and along the railway).

It may be possible to mitigate some of these effects in the longer term through measures such as screen planting. Some minor positive effects are predicted for visual receptors close to roads where HGV and other traffic movements are reduced as a result of the railway’s operation.

11.5.48 Overall the option is predicted to have a moderate negative impact (xx) in the short term reducing to a minor negative impact (x) on visual receptors in the longer term as mitigation planting matures.

### Agriculture and soils

11.5.49 Findings of the appraisal of impacts on agriculture and soils:

- Reinstatement works for the railway formation and associated freight receipt facilities and passenger station(s) have the potential for minor changes to soil resources from construction works and permanent development which it is assumed would be mitigated with good construction practice and would be limited due to the existing presence of the (former) railway route and its engineered structure.

- The reinstatement of the railway, construction of new stations and railway operations is unlikely to have significant effects on agriculture or soils.

- No effects on agricultural operations or farm units are predicted.

- No new areas of agricultural land are assumed to be required for the proposals and the majority of the redevelopment of the line would be on land which has already been developed in the past for original railway construction.

11.5.50 Overall the option is predicted to have no impact or benefit (-) on agriculture and soils.

### Cultural heritage

11.5.51 Findings of the appraisal of impacts on cultural heritage:

- Reinstatement of the former railway and associated freight handling facilities and passenger station(s) have potential for minor indirect setting effects to historic townscapes (e.g. on the edge of Leven) from construction and permanent development works.

- No direct or setting effects are predicted on any scheduled monument, Conservation Area, or Garden and Designed Landscape.

- The railway route and its structures are not subject to any cultural heritage designations and redevelopment work is not predicted to directly impact on any designated areas of importance for archaeology.

- Development of the new station and freight facilities at Cameron Bridge is predicted to slightly affect the setting of the nearby Category B listed buildings associated with the distillery.
It has been assumed that refurbishment of former structures such as bridges and new infrastructure would be designed sympathetically with the townscape character of the areas through which the line passes.

There is potential for some minor effects from redevelopment of the railway on historic structures associated with the former railway and its ancillary infrastructure, but these are not predicted to be significant.

No significant effects on archaeology and cultural heritage are predicted from reinstatement of the railway taking account of assumed design and mitigation.

11.5.52 Overall the option is predicted to have **no impact or benefit (-)** on cultural heritage receptors.

**Physical Fitness**

11.5.53 Findings of the appraisal of impacts:

- Loss of amenity along parts of the disused track that are currently used for walking, although a significant impact is not expected.
- Stations within walking distance of current and future residential areas, supportive of promoting access by walking and cycling.

11.5.54 Overall the option is predicted to have a **neutral impact (x)** on physical fitness.

**Option B** is predicted to result in a **Minor Negative (x)** Impact on the **Environment** taking account of all the aspects that have been appraised.

**Summary of Environmental Appraisal**

11.5.55 The findings of the environmental appraisal are summarised in Table 28. The results indicate that **Option A** has the least potential for significant adverse environmental impacts. This reflects it does not involve any new development work and the changes in bus services associated with the option are not predicted to have significant effects on traffic related environmental effects such as roadside noise and air quality.

11.5.56 **Option B** involves more significant railway development proposals, but this is based almost entirely on re-opening of a former rail line and is generally not predicted to have significant environmental effects. **Option B** has potential for significant adverse noise impacts from construction and operation on receptors adjacent to the railway line, the extent of which would depend on the frequency and timing of passenger and freight rail operations. With mitigation, it is predicted that these effects would be unlikely to be significant.

11.5.57 The outputs of demand forecasting indicate that **Option B** has a slightly greater potential compared to **Option A** to remove freight and car traffic from the road network as a result of modal shift. This option therefore has greater potential for beneficial impacts on roadside noise, local air quality and global GHG emissions, depending on the degree to which modal shift is achieved and on the nature and frequency of rail operations.
### Table 28. Environmental Appraisal Summary

<table>
<thead>
<tr>
<th>OPTION</th>
<th>NOISE AND VIBRATION</th>
<th>GLOBAL AIR QUALITY</th>
<th>LOCAL AIR QUALITY</th>
<th>WATER QUALITY, DRAINAGE AND FLOOD DEFENCE</th>
<th>GEOLOGY, AGRI-CULTURE AND SOILS</th>
<th>BIO-DIVERSITY AND HABITATS</th>
<th>LANDSCAPE</th>
<th>VISUAL AMENITY</th>
<th>CULTURAL HERITAGE</th>
<th>PHYSICAL FITNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Option B</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>-</td>
</tr>
</tbody>
</table>
11.6 Safety Appraisal

11.6.1 The Safety criteria covers two sub-criteria:
- Accidents - relate to those taking place on all modes, but the advice set out in STAG only effectively requires consideration of accidents taking place on the road network; and
- Security - relates to how safe the transport system is for users, and takes into account the impact of such initiatives as CCTV, help points, lighting, etc.

<table>
<thead>
<tr>
<th>Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPTION A</td>
</tr>
<tr>
<td>£0.9M</td>
</tr>
</tbody>
</table>

11.6.2 An assessment of the accident benefits arising from the options and the resulting change in traffic levels has been calculated as part of Marginal External Benefits for both car-km and HGV-km.

11.6.3 For removed road freight, as part of Option B rail freight facilities, this has been calculated using HGV (Artic) specific Marginal External Costs (MECs) provided by the Department for Transport (DfT) in accordance with TAG Unit A5.3 – Rail Appraisal. For car, values were derived using car MECs as quoted in WebTAG Unit 3.13.2 Table A 5.4.2.

11.6.4 Current Government advice is that accidents on segregated rail-based systems are negligible and so do not need to be considered. Therefore, rail accident rates are not included within the calculation.

11.6.5 The estimated accident benefits, in 2015 market prices, for each option over the 60-year appraisal period are shown in Table 29.
11.6.6 **STAG Table 8.1** identifies the security indicators for public transport passengers as:

- Site perimeters, entrances and exits;
- Formal surveillance;
- Informal surveillance;
- Landscaping;
- Lighting and visibility; and
- Emergency call (facilities).

11.6.7 These factors have been considered in the qualitative assessment of this sub-criteria. **Option A** is likely to have minor security improvements resulting from real and perceived improvements to security in relation to improvements to bus facilities, such as lighting at stops, and increased natural surveillance from increased passenger numbers on-board and at stops. Users are likely to benefit from reduced wait times for services on-street and a reduction in the number of connections required to access rail services, particularly from the Methil and Buckhaven areas.

11.6.8 **Option B** will improve security for public transport users through the inclusion of passenger waiting facilities that will be built to at least minimum safety requirements for factors such as site perimeters, entrances and exits, and lighting. The stations would include the provision of formal surveillance (CCTV) and on-platform emergency call/information facilities.

### Summary of Safety Appraisal

11.6.9 Both options show benefits to safety under the accidents and security sub-criteria as shown in **Table 30**. The benefits for **Option A** are relatively minor. In comparison, **Option B** scores a moderate benefit due to both the greater car-km and HGV-km removed from the roads for the accidents appraisal, as well as the security benefits brought about by the provision of new rail stations, which will be required to provide minimum (or better) standards of security measures as part of their design.

**Table 30. Summary of Safety Appraisal**

<table>
<thead>
<tr>
<th>OPTION</th>
<th>ACCIDENTS</th>
<th>SECURITY</th>
<th>OVERALL APPRAISAL FOR SAFETY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Option B</td>
<td>✓✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
</tbody>
</table>
11.7 Economy

11.7.1 In accordance with STAG, assessment of the economic impact takes into consideration:
- **Transport Economic Efficiency (TEE)** – the benefits ordinarily captured by standard cost-benefit analysis – the transport impacts of a proposal;
- **Wider Economic Benefits (WEBs)** – relate to the notion of wider economic benefits derived from the impact of transport upon agglomeration, and the underlying relationship of impacts of agglomeration upon productivity; and
- **Economic Activity and Location Impacts (EALI)** – allow the impacts of a proposal to be expressed in terms of their net effects on the local and/or national economy.

11.7.2 It is not anticipated the options would have a significant bearing on agglomeration i.e. the benefit businesses may derive from being located near each other. The scope of the economic appraisal, therefore, extends to only consideration of TEE and EALI.

### Economy - Transport Economic Efficiency (TEE)

11.7.3 Transport Economic Efficiency (TEE) takes into consideration the welfare gain resulting from investment in a particular option. The TEE analysis, includes consideration of the net benefit to transport users, comprising:
- Travel time savings;
- User charges including fares, parking charges and tolls;
- Vehicle operating cost changes for road vehicles;
- Quality benefits to transport users; and
- Reliability benefits to transport users.

11.7.4 The analysis also captures benefits to the operator through increased fares and indirect tax revenues resulting from, for example, fuel sales, and monetised carbon and accident savings associated with a change in veh-km. In line with STAG, the benefits are based on a 60-year appraisal period and all benefits are expressed in 2010 prices. Monetary values have been discounted to 2010 at a rate of 3.5% for the first 30 years and 3.0% for the remainder of the appraisal period.

11.7.5 The different benefits and overall Present Value Benefit (PVB) for each option is presented in Table 31 and Table 17 for Options A and B respectively. A breakdown of the TEE is provided in Appendix L.
### Table 31. Option A Benefits (2010 Prices)

<table>
<thead>
<tr>
<th>BENEFITS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>£32M</td>
</tr>
<tr>
<td>Operator</td>
<td>£0M</td>
</tr>
<tr>
<td>Accidents</td>
<td>£0.9M</td>
</tr>
<tr>
<td>Greenhouse Gases</td>
<td>£0.3</td>
</tr>
<tr>
<td>Indirect taxation</td>
<td>-£1.4M</td>
</tr>
<tr>
<td><strong>Present Value Benefits (PVB)</strong></td>
<td><strong>£31.7M</strong></td>
</tr>
</tbody>
</table>

*Total value correct. Small differences due to rounding.

### Table 32. Option B Benefits (2010 Prices)

<table>
<thead>
<tr>
<th>BENEFITS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>£82.1M</td>
</tr>
<tr>
<td>Operator</td>
<td>£10.2M</td>
</tr>
<tr>
<td>Accidents</td>
<td>£4.1M</td>
</tr>
<tr>
<td>Greenhouse Gases</td>
<td>£7.4M</td>
</tr>
<tr>
<td>Indirect taxation</td>
<td>-£24.1M</td>
</tr>
<tr>
<td><strong>Present Value Benefits (PVB)</strong></td>
<td><strong>£79.8M</strong></td>
</tr>
</tbody>
</table>

*Total value correct. Small differences due to rounding.

11.7.6 Both **Option A** and **Option B** have a positive impact in terms of benefits, but the impacts are greater with Option B. This is reflected in the benefits reported, highlighting the significant decongestion benefits and environmental savings on the Scottish and UK road network resulting from Option B.

11.7.7 As noted previously, the assumptions regarding the operating costs of Option B represent our best estimation, based on a service pattern which we believe could be delivered. However, it would require additional detailed rail timetabling, for example as required by the Governance for Railway Investment Projects (GRIP) design and implementation process, to confirm the most cost-effective rail timetable. This additional timetabling analysis will be required if this rail-based option is taken through to a more-detailed design phase.
11.7.8 This additional timetable analysis would confirm the most cost-effective use of existing and new rolling stock. This optimum service pattern may result in changes to the service patterns at existing lightly-used stations, notably Glenrothes-with-Thornton.

11.7.9 However, it may also identify additional benefits, for example from the use of the reopened line to provide an over-night train depot (allowing more efficient operation of the early morning rail services from Fife) and/or to make more-cost-effective use of the limited rail paths across the Forth and/or relieve crowding on the most-heavily used cross-Forth rail services.

11.7.10 We would also recommend the use a detailed multi-modal model of the entire Fife area to appraise the network-wide impacts of the ‘optimum’ rail timetable identified by the detailed rail timetabling study. These Fife-wide impacts could/should include the decongestion benefits of the traffic reductions in the Levenmouth area, elsewhere in central Fife and in the strategically-important cross-Forth corridor.

11.7.11 The level of rail-timetabling detail required to identify the optimum service pattern for the Fife Circle and Levenmouth area and beyond would be disproportionate for this STAG-based consideration of multi-modal alternatives being considered here.

11.7.12 However, until the details of the optimum timetable and its impacts are known, the uncertainty associated with the potential need to reduce the stopping patterns at existing stations to avoid incurring significantly-higher rolling stock costs than assumed here should be viewed as a significant delivery risk affecting the rail-based option (Option B).

11.7.13 Note that the appraisal of the revised timetable changes does not need to consider any disbenefits of the extra station stops on existing through passengers. The two new stations being proposed here as part of Option B are on a reopened branch line and, therefore, do not involve imposing any extra stops on existing local or inter-city rail services.

11.7.14 Further development of the timetable at future stages would require consideration of their integration with current and proposed alterations to Fife services.

### Economic Activity and Location Impact (EALI)

11.7.15 EALI considers the local and national effects in terms of economic variables that are important to local people and local businesses, in particular changes in employment and economic output. A qualitative appraisal has been undertaken in order to understand the potential EALI impact of the options. The assessment has been informed by the consultation activities undertaken during the study.

#### Economic Context

**Economic Activity**

11.7.16 Historically the area was heavily dependent on the mining industry and heavy industry sectors, and the area’s economic performance has worsened since the decline of these sectors. Major employers in the area include Fife Council, Diageo and Sainsbury’s. The
Sainsbury’s store generates a significant local spend and accounts for 76% of Convenience Turnover in the wider Leven town centre area.27

11.7.17 Fife Energy Park is another notable development, which encompasses 54Ha and includes manufacturing and business park activities at Methil Docks. Feedback from the stakeholder workshop suggested that current skills of the labour market in Levenmouth are not suitable for the Energy Park, leading to an influx of skilled professionals working, but not living, in the area. It was noted that due to the nature of the businesses at the Energy Park it often has a transient workforce commuting into the area by car for short periods of time. Fife College is currently offering courses designed to match some of the skill requirements of the Energy Park, however, Fife Chamber of Commerce noted in the consultation that it is important for the area to also seek to diversify the economic opportunities for local residents rather than focusing training only on certain jobs.

11.7.18 Diageo has two sites within the Levenmouth area – distillery facilities at Cameron Bridge and bottling facilities at Leven. Employing over 1,200 permanent members of staff, Diageo is a key employer in the area and also operates an apprenticeship system. Diageo’s logistical operations have recently transferred to WH Malcolm at the Banbeath site in Leven.

11.7.19 In terms of Leven town centre, there have traditionally been low vacancy rates for commercial space, however, there has been a recent increase in vacant space in the area. For example, the town centre has experienced a rising trend in empty retail units, with the vacancy rate increasing from 8.8% in April 2010 to 13% in April 2014.28 Within the neighbourhood centres of Methil and Buckhaven, the vacancy rate is estimated at more than 20%.28 During the stakeholder workshop, the Fife Council Town Centre Development Unit suggested that independent retailers have moved from the area.

**Connectivity**

11.7.20 Consultation with Fife Council and other stakeholders, including Fife Chamber of Commerce, has suggested that there is a problem of perceived lack of investment and willingness to invest in the area, and that the area is viewed as ‘out of the way’ by residents and businesses. It was noted during the stakeholder workshop that Diageo expanded its bonded warehouse/distribution provision off the A92 north of Kirkcaldy with the creation of approximately 40 jobs rather than further expansion of the Levenmouth site. It has though, not been explicitly stated by Diageo that the decision to expand in Kirkcaldy and not Levenmouth is a reflection of the transport connections to the area.

11.7.21 The consultation responses, as discussed in Appendix A, highlighted concerns from businesses around access offered by the current public transport network to existing or new customer bases with services to Edinburgh ranked as the most important improvement required. This supported some views expressed, which emphasised the importance of access to clients in Edinburgh and the rest of Scotland, as well as improving access to the labour market to assist with recruitment. Reliance on freight was also identified by respondents, most notably Diageo as highlighted in Chapter 10, and rail-freight considered a potential benefit by some in the business community.

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27 Fife Retail Capacity Study 2014, MF Planning/CH2M Hill, Appendix B
28 GOAD Experian, 2014
Labour Market

11.7.22 Unemployment levels within Buckhaven, Methil, Methilhill and Leven are 3% greater than the Scottish average rate and four times the Lower Largo and Lundin Links rate of unemployment. Participation in further education is lower than the Scottish average by approximately 3%. This pattern supports the suggestion that employment and educational skills in the area are declining and coupled with high youth unemployment rates.

Future Development and Investment Opportunities

11.7.23 Following on from the Energy Park, an ancillary project is the development of the Low Carbon Investment Park comprising 16Ha of Class 4, 5 and 6 land use. This investment site would be located in Buckhaven, offering industrial and commercial land as part of the Levenmouth SDA funded under the Scottish Government's Tax Incremental Financing initiative.29

11.7.24 Further development also includes the new joint Levenmouth High School and Fife College campus to replace Buckhaven and Kirkland High Schools. Although development in the area is encouraged, it should be noted that related impacts in terms of growing demand on the road and public transport networks together with associated impacts on local congestion, air quality and road accidents require consideration as proposals progress.

11.7.25 The proximity of the Levenmouth area to the East Neuk creates opportunities for opening up tourism benefits, however, they are not fully utilised at present. Although Levenmouth benefits from large-scale events in Fife, such as the golf Open at St Andrews, the area does not yet have a large enough tourist attraction to directly attract tourists. Opportunities do exist for capitalising on tourism within the Levenmouth area, including improving links to the East Neuk, local golf courses, Edinburgh Airport and both the coast and inland routes of the core path network within the area. In addition, the power station site offers long-term potential as a recreation/activity site (although this is currently contaminated land).

Appraisal of the Options

11.7.26 Investment in the local transport infrastructure and services offers improved access to employment, markets and supply chains. This provides the opportunity to increase the attractiveness of the Levenmouth area for business activity, investment and employment opportunities.

11.7.27 Both Option A and Option B offer benefits to varying extents to facilitate access to employment opportunities to the wider Fife region and other parts of the SEStran city-region. Similarly, the options also support access to education as well as healthcare and social opportunities. These are important factors, as the Levenmouth area includes areas with low levels of educational attainment, high levels of unemployment, and high levels of social exclusion. Therefore, many of the benefits relate to promoting Levenmouth as a place to live and work through improved access to education, healthcare, employment and social opportunities. While access to employment is particularly important for economic activity, also of importance is access to education, which helps build a skilled and qualified workforce.

29 Follow-on research found that this will offer 15ha of industrial and commercial land. Funded by Fife Council, Scottish Enterprise, and the European Regional Development Fund.
Similarly, access to healthcare and social opportunities, which promote a physically and mentally healthy workforce, is vital. A strong workforce base can provide the opportunity to help attract investment to an area from both existing and new businesses.

11.7.28 **Option A** offers specific improvements in access to some of the most deprived areas of Levenmouth, including settlements south of the River Leven. It also strengthens links to key employment sites at Cameron Bridge, Fife Energy Park, and the Levenmouth Strategic Development Area, including housing and new educational facilities. The score for this option is a moderate positive, based on the expected impact on economic activity and looking at locational impacts.

11.7.29 **Option B** offers potential benefits related to enhanced connectivity with a number of areas across Levenmouth. Particular benefit is produced by improving links to Edinburgh. Linkages between the national rail network and local area may have a wider strategic benefit, if utilised, as well as the immediate local and wider economy in Fife. Key considerations in terms of rail freight include the provision of benefits to large-scale industry in the area, in particular Diageo operations. The addition of a rail freight link for the area may open up the type and scale of industry that can operate in the Levenmouth area, potentially impacting on inward and external investment levels.

11.7.30 Consultation with Abellio ScotRail noted that there are no current plans to provide a Fife based train crew/stabling facility and a previous review found this would not to be an economically viable proposition. However, if circumstances changed in the future and a Fife based depot was reconsidered, the branch line to Leven could provide a potential location in close proximity to the main line. A depot in the area could be expected to generate local employment opportunities. Non-city based depots currently include Dumfries, Tweedbank and Bathgate, each with a sizeable staff base. A Fife based depot would also provide potential timetable benefits, both to existing and any new service operations.

11.7.31 Table 33 summarises the potential EALI impacts.
### Table 33. EALI Overview

<table>
<thead>
<tr>
<th>SECTOR</th>
<th>LOCAL ECONOMY</th>
<th></th>
<th>NATIONAL ECONOMY</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SECTOR</td>
<td>LOCAL ECONOMY</td>
<td></td>
<td>NATIONAL ECONOMY</td>
</tr>
<tr>
<td></td>
<td>Gains / Gainers</td>
<td>Losses / Losers</td>
<td>Gains / Gainers</td>
<td>Losses / Losers</td>
</tr>
<tr>
<td>Manufacturing and Processing</td>
<td>Potential alternative for road freight supporting operations of Diageo and other large companies in the area.</td>
<td>No significant effects.</td>
<td>No significant effects.</td>
<td>No significant effects.</td>
</tr>
<tr>
<td>Locally Traded Services</td>
<td>Local businesses in a position to harness improved connectivity. Expansion of skilled labour pool available to local business.</td>
<td>No significant effects.</td>
<td>No significant effects.</td>
<td>No significant effects.</td>
</tr>
<tr>
<td>Externally Traded Services</td>
<td>Import/export businesses benefit from enhanced access to markets/suppliers and associated operational efficiencies.</td>
<td>Potential employment impact from the transfer of road to rail freight.</td>
<td>Support to business operations of export/imports of nationally significant goods.</td>
<td>No significant effects.</td>
</tr>
<tr>
<td>Inward/Mobile Investment</td>
<td>Improved transport connectivity would help address the perception of the area ‘being out of the way’ and increase attractiveness for current businesses to expand and new businesses to invest in the area.</td>
<td>No significant effects.</td>
<td>The Levenmouth area, and in particular Fife Energy Park, is at the forefront of activities to support national and local policy drivers towards sustainable economic development and a low carbon economy in particular. Improved connectivity and profile of the area would serve to complement business in these areas and wider policy aspirations.</td>
<td>No significant effects.</td>
</tr>
</tbody>
</table>
## Local Economy

<table>
<thead>
<tr>
<th>Sector</th>
<th>Gains / Gainers</th>
<th>Losses / Losers</th>
<th>Gains / Gainers</th>
<th>Losses / Losers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism</td>
<td>Increased accessibility to the area would help provide a platform to capitalise on the opportunity provided by the coastal setting and surrounding facilities and attractions, such as the local golf courses and Fife Coastal Path. Improved connectivity also needs to be complemented by wider tourism and marketing initiatives to increase the attraction of the area as a visitor destination.</td>
<td>Enhancement of access alongside investment in the tourism offering would complement and add to the attraction of this part of Fife rather than directly compete with other areas.</td>
<td>No significant effects.</td>
<td>No significant effects.</td>
</tr>
<tr>
<td>Day Trips/Shoppers</td>
<td>New opportunities may result from some local retail and leisure expansion.</td>
<td>Some loss of local expenditure may arise from alternative transport options improving access to other retail/leisure destinations in Fife and beyond.</td>
<td>No significant effects.</td>
<td>No significant effects.</td>
</tr>
<tr>
<td>Residents</td>
<td>Improved access to employment and education opportunities, supporting the social and economic well-being of residents and development of a locally based resource pool for local businesses.</td>
<td>No significant effects.</td>
<td>Improved access to employment and education opportunities would help to facilitate a reduction in employment levels in the local area with wider national benefits.</td>
<td>No significant effects.</td>
</tr>
<tr>
<td>SECTOR</td>
<td>LOCAL ECONOMY</td>
<td>NATIONAL ECONOMY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>--------------</td>
<td>-----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gains / Gainers</td>
<td>Losses / Losers</td>
<td>Gains / Gainers</td>
<td>Losses / Losers</td>
</tr>
<tr>
<td>Sector Interactions/Synergies</td>
<td>Rail freight potential maximised by multiple business use.</td>
<td>No significant effects.</td>
<td>Support for sustainable economic development alongside a lower carbon economy in particular.</td>
<td>No significant effects.</td>
</tr>
<tr>
<td>Total Gross Impacts</td>
<td>Qualitative assessment only.</td>
<td>Qualitative assessment only.</td>
<td>Qualitative assessment only.</td>
<td>Qualitative assessment only.</td>
</tr>
<tr>
<td>Overall Impacts</td>
<td>Access to employment and educational opportunities addressing high levels of unemployment and availability of local skill base to businesses. Support to business operations locally as well as access to markets/suppliers.</td>
<td>Potential job impact of transfer of freight from road to rail.</td>
<td>Support of government policies, notably sustainable economic development and low carbon economy. Support to lower unemployment and levels of deprivation to provide a wealthier, fairer and more inclusive population.</td>
<td>No significant effects.</td>
</tr>
<tr>
<td>Summary of Distributional Impacts</td>
<td>Improved connectivity to markets and enhanced access to employment and education opportunities in particular, as well as supporting access to the area to visitors.</td>
<td>No significant effects.</td>
<td>No significant effects.</td>
<td>No significant effects.</td>
</tr>
</tbody>
</table>
11.7.32 Both Option A and Option B have a positive impact in terms of user benefits, but the impacts are greater with Option B. This is particularly reflected in the significant decongestion benefits and environmental savings on the Scottish and UK road network resulting from Option B. Both options also have a positive EALI impact. Again, Option B is expected to achieve greater impact.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>TEE</th>
<th>EALI</th>
<th>OVERALL APPRAISAL FOR ECONOMY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>✔️ ✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Option B</td>
<td>✔️ ✔️ ✔️</td>
<td>✔️ ✔️</td>
<td>✔️ ✔️</td>
</tr>
</tbody>
</table>

11.8 Integration Appraisal

11.8.1 The options have been appraised taking account of integration in relation to:
- Transport integration - consideration of options in terms of services and ticketing, infrastructure and information;
- Transport and land-use integration - an assessment of the impact of options on proposed or existing land-use developments; and
- Policy integration - a check of options against national policy, and also specific accessibility issues such as disability, health, rural affairs and social inclusion.

Transport Integration

11.8.2 The Transport Integration appraisal has been summarised at a high level in Table 35. This highlights a moderate benefit for both Option A and Option B.

11.8.3 Benefits are likely to be associated with service and ticketing integration, especially for Option A which improves existing bus/rail connections by timetable matching and branding, with further integration of ticketing and information. Option B benefits from direct access to the rail network, simplification of ticketing requirements compared to multiple modes, and improved infrastructure and information from new stations. Furthermore, inclusion of a station situated within walking distance of the existing Leven Bus Station would improve integration between these modes.
Table 35. Transport Integration Sub-Category Appraisal

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Services and Ticketing</td>
<td></td>
</tr>
<tr>
<td>Seamless PT Network</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Seamless Ticketing</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Infrastructure and Information</td>
<td></td>
</tr>
<tr>
<td>Quality of Infrastructure</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Layout of Infrastructure</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Information</td>
<td>Moderate benefit</td>
</tr>
<tr>
<td>Visible Staff Presence</td>
<td>Neutral benefit</td>
</tr>
<tr>
<td>Physical Linkage for Next Journey</td>
<td>Minor benefit</td>
</tr>
<tr>
<td>Overall Assessment of Impact</td>
<td>✓✓</td>
</tr>
</tbody>
</table>

Transport and Land Use Integration

11.8.4 The transport and land use sub-objective considers whether:
- There are conflicts with the land requirements for the option;
- The option fits with policy at all levels concerning transport and land use; and
- The option conflicts with any other existing or planned development.

11.8.5 National planning policy advocates a well-connected and integrated approach. This is underpinned by National Planning Framework Three (NPF3) and Scottish Planning Policy (SPP). SPP promotes patterns of development which:
- Optimise the use of existing infrastructure;
- Reduce the need to travel;
- Provide safe and convenient transport opportunities for walking and cycling for both active travel and recreation, and facilitate travel by public transport;
- Enable the integration of transport modes; and
- Facilitate freight movement by rail or water.

SESplan Strategic Development Plan (2013)

11.8.6 The SESplan Strategic Development Plan (2013) sets out to achieve ‘By 2032, the Edinburgh City Region is a healthier, more prosperous and sustainable place which continues to be internationally recognised as an outstanding area in which to live, work and do business’.
11.8.7 The current SDP identifies improvements to transport and other infrastructure required for existing and future development. This includes the re-introduction of the Levenmouth rail link. SESplan is currently in the process of preparing the next Strategic Development Plan which will replace the current plan in 2017. Consultation on the Main Issues Report concluded at the end of September 2015.

**Mid-Fife Local Plan (2012)**

11.8.8 The Mid-Fife Local Plan was adopted in January 2012 and replaced the Adopted Area Local Plan (July 2004). The aim of the plan was to:
- Create sustainable communities;
- Grow the economy; and
- Safeguard and improve the environment.

11.8.9 The Local Plan highlights the decline of traditional industries within the Levenmouth area and its relative isolation with no rail link or dual carriageway link to the primary road network. The Plan emphasises the need for a comprehensive approach to the physical, social, and economic regeneration of the area. The development strategy for the Levenmouth area aims to promote regeneration in the area through a number of proposals:
- The identification of land for 1,650 new homes through the Levenmouth Strategic Land Allocation to help reverse the population decline experienced in the area;
- The re-use of derelict land and buildings in the Levenmouth area to be given priority;
- The identification of 55 hectares of good quality employment land to address the current shortage in the area and aid economic regeneration (40 hectares for the Energy Park Fife at Methil waterfront); and
- Retail provision in the Buckhaven and Methil areas will be boosted by new local retail development within the Strategic Land Allocation.

11.8.10 Potential improvements to the transport network were also proposed, including the following:
- Improvements to the Standing Stane link road;
- Implementation of the Leven Link Road Project (implementing road enhancements to make Lower Methil, the waterfront area and Energy Park Fife more accessible); and
- The proposed reopening of the Levenmouth Rail Link and new rail station at Leven.

**FIFEplan (2014)**

11.8.11 The FIFEplan Proposed Plan (2014) outlines policies and supplementary guidance to be used in determining planning applications. Although the FIFEplan incorporates the three Local Plans, including the Mid-Fife Local Plan it will not replace the Local Plan (described above) until FIFEplan is adopted by Fife Council (likely to be 2016).

11.8.12 FIFEplan’s spatial strategy defines Council planning policy over the 10 years to 2026. It is framed by national and regional policy set by the National Planning Framework and SESplan.
For the Levenmouth area the spatial strategy identifies a number of key proposals for employment, services and transport. These include:

- Methil Energy Park Fife.
- The Fife Energy Corridor, including the Methil Energy Park, is recognised in National Planning Framework 3 as an area of regional importance for the energy sector and where the focus of investing in the energy sector has brought wider economic benefits.
- Levenmouth Strategic Development Area (SDA) with a focus on employment:
  - The Levenmouth SDA will provide 1,650 new homes and community facilities. Improved access to Methil docks and the energy cluster via the A911 will also be investigated as part of the plan.
  - A92 Redhouse roundabout upgrade.
  - Leven rail link
  - FIFEplan safeguards the Thornton to Leven rail link for future reinstatement as a passenger rail line.
  - Levenmouth Link Road.
  - A road network for Levenmouth linking economic regeneration areas and sites.
- Hovercraft Link from Kirkcaldy to Edinburgh.

11.8.13 **Option A**, which includes improvements to integration of bus and rail from both Leven town centre, with a branded bus service, as well as the areas of Methil, Methilhill, Buckhaven, and Windygates, would provide improved access to the Energy Park and the Cameron Bridge (Distillery and Hospital) employment areas. There is no new infrastructure associated with this option and, as such, there is no associated land-take that requires consideration. The service could also be routed to serve future development at the Levenmouth SDA.

11.8.14 **Option B** integrates well with the existing land use and future development proposals identified in the area. Land has been safeguarded for the re-opening of the rail line. The introduction of rail services is likely to help mitigate the travel demand impact of future development proposals in the area such as the significant development within the SDA.

### Policy Integration

11.8.15 The policy integration sub-objective considers the options in the context of the wider Scottish policy context. This includes consideration of the contribution of the options to meeting the Government’s purpose and national transport policy objectives.
Scottish Government’s Statement of Purpose (2007)

11.8.16 The Scottish Government has defined its overall purpose as:

“To focus government and public services on creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth.”

11.8.17 This is supported by the following five strategic objectives:

- Wealthier and Fairer – Enable businesses and people to increase their wealth and more people to share fairly in that wealth;
- Healthier – Help people to sustain and improve their health, especially in disadvantaged communities, ensuring better, local and faster access to health care;
- Safer and Stronger – Help local communities to flourish, becoming stronger, safer place to live, offering improved opportunities and a better quality of life;
- Smarter – Expand opportunities for Scots to succeed from nurture through to life-long learning ensuring higher and more widely shared achievements; and
- Greener – Improve Scotland’s natural and built environment and the sustainable use and enjoyment of it.

National Transport Strategy (2016)

11.8.18 The National Transport Strategy (NTS) refresh reconfirmed the high level objectives set out in the white paper entitled Scotland’s Transport Future (2004), and the National Transport Strategy (2006). They are to:

- Promote economic growth by building, enhancing managing and maintaining transport services, infrastructure and networks to maximise their efficiency;
- Promote social inclusion by connecting remote and disadvantaged communities and increasing the accessibility of the transport network;
- Protect our environment and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy;
- Improve safety of journeys by reducing accidents and enhancing the personal safety of pedestrians, drivers, passengers and staff; and
- Improve integration by making journey planning and ticketing easier and working to ensure smooth connection between different forms of transport.

11.8.19 The NTS also set out three strategic outcomes which are intended to provide the focus for delivering the high level objectives. The strategic outcomes are to:

- **Improve journey times and connections**: to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety;
- **Reduce emissions**: to tackle the issues of climate change, air quality and health improvement which impact on our high level objective for protecting the environment and improving health; and
11.8.20 The NTS also introduced a Refreshed Freight Strategy. The Refreshed Freight Strategy recognises the need to work closely with industry to meet the freight challenges from an environment and business perspective. The objectives include:

- Enhancing Scotland’s competitiveness by encouraging investment in Scotland’s ports and strategic hubs and minimising the negative impact of rising transport costs;
- Supporting the development of the freight industry by enhancing skills and image of freight and logistics;
- Maintaining and improving the accessibility of rural and remote areas by targeting improvements;
- Minimising the adverse impact of freight movements on the environment focusing on reductions in emissions and noise. This involves promoting a modal shift to rail and water and improving efficiency and sustainability of road transport; and
- Ensuring freight policy integration by coordinating with other policy areas and plans in Scotland and the UK.

Strategic Transport Projects Review (STPR) (2008)

11.8.21 The Strategic Transport Projects Review (STPR) was published by Transport Scotland in 2008 and identified recommendations it determined would most effectively contribute towards the Government’s Purpose of increasing sustainable economic growth over the period from 2012 onwards. The study was objective-led, evidence-based and followed STAG methodology.

11.8.22 New passenger (rail) lines to serve St Andrews, Levenmouth, and Glenrothes town centre were identified as an option. However, it was not taken forward as the benefits associated with Levenmouth connections were determined to be local and regional and therefore did not meet the strategic objectives.

SEStran Regional Transport Strategy (2015 – 2025)

11.8.23 The SEStran Regional Transport Strategy (RTS) Refresh 2015 – 2025 pulls together transport considerations from across South East Scotland and presents the following Vision Statement:

‘South East Scotland is a dynamic and growing area which aspires to become one of northern Europe’s leading economic regions. Essential to this is the development of a transport system which enables businesses to function effectively, allows all groups in society to share in the region’s success through high quality access to services and opportunities, respects the environment, and contributes to better health.’

11.8.24 This Vision is realised through the following objectives:

- ‘Economy’ – to ensure transport facilities encourage economic growth, regional prosperity and vitality in a sustainable manner:
- Widening labour markets;
- Improving connectivity;
- Supporting other strategies; and
- Tackling congestion.

- ‘Accessibility’ – to improve accessibility for those with limited transport choice or no access to a car, particularly those who live in rural areas:
  - Targeting improvements in access to employment, health and other services/opportunities; and
  - Addressing barriers to the use of public transport, including cost.

- ‘Environment’ – to ensure that development is achieved in an environmentally sustainable manner:
  - Reducing greenhouse gas emissions and other pollutants; and
  - Enabling sustainable travel/reduce car dependency.

- ‘Safety and Health’ – to promote a healthier and more active SEStran area population:
  - Reducing transport related injuries and deaths;
  - Improving the health of the population; and
  - Tackling local air quality and transport related noise.

**Fife Council Local Transport Strategy (2006)**

11.8.25 The Local Transport Strategy (LTS) for Fife 2006 – 2026 sets the 5-year short-term programme, 10-year medium-term plan and longer-term 20-year vision and objectives for transport delivery in Fife. The plan aspires to ‘develop an integrated and sustainable transport system, which is accessible to all’.

11.8.26 The LTS recognises a range of transportation improvements will be required to enable development to proceed. Some of the major issues within each of the areas include the Strategic Development Areas in West, Mid and East areas of Fife.

11.8.27 In relation to Mid-Fife, requirements identified include improvements to the key linkages to town centres and the public transport network; to the road network around the Redhouse Interchange (which is on the A92 trunk road and under the control of Transport Scotland), including a road link to the Standing Stane road. A possible new rail halt to East Kirkcaldy and promotion of the possible re-opening of the rail link to Levenmouth and a new station in Leven are also highlighted.

11.8.28 All the options promote travel by alternatives to the private car. The rail options would serve to increase the public transport choice to also include rail as well as bus services. All the options would positively impact on encouraging mode shift, with wider benefits provided in terms of health, inclusion and promotion of active travel.

**Appraisal of the Options**

11.8.29 Both Option A and B would promote and encourage sustainable travel and therefore align with national, regional and local transport policy as well as wider policy drivers such as movement towards a lower carbon transport network. Option B is noted to have a larger impact that Option A in relation to sustainable transport impacts.
The options, would also support wider policy drivers. For example, Options A and B would support social and economic prosperity and Option B would provide added benefit of helping to support inward investment and job creation in the local area as well as the transfer of road based freight to rail.

In line with STAG, consideration has also been given to the key areas of:
- Disability;
- Health;
- Rural Affairs; and
- Social inclusion.

Each parameter is discussed below.

**Disability** – the bus services brought forward through Option A would be operated using low-floor vehicles, providing ease of access for all. The design of the rail stations in Option B would be fully compliant with the Equality Act 2010 and provide full access for the mobility impaired as well as young families with pushchairs and the elderly.

**Health** – for both options, the expected mode shift from car to public transport and associated reduction in road vehicle-km would impact positively on reducing emissions, however this impact is largest for Option B. The transfer of freight from road to rail would also have a positive impact for the rail option. Option B would support walking and cycling access to the rail stations (as part of the design and planning process) at Leven and Cameron Bridge, in order to promote active travel where possible and negate the impact of car trips to the stations. Option B would potentially result in the loss of amenity along parts of the disused rail track currently used for walking.

**Rural Affairs** – the study area is not within a rural locale and therefore has no direct bearing on policies relating to retaining and improving the vitality of rural communities.

**Social Inclusion** – as noted in Section 0, social deprivation is an issue within Levenmouth. Based on the current (2016) Scottish Index of Multiple Deprivation, 23 (=44%) of the 52 datazones in Levenmouth’s area are currently among the 20% most-deprived in Scotland, twelve (=23%) of these are in the 10% most deprived and six (=12%) of these are among the 5% most-deprived datazones in Scotland. Levels of social deprivation (based on the Census 2011 social deprivation definition of employment, education, health/disability and housing) in the Levenmouth area are higher compared to other neighbouring settlements. Notable disparities include the low levels of deprivation in the Lundin Links and Lower Largo areas in contrast to Methil, Buckhaven and Kennoway. Each of the options seek to improve public transport services to/from Levenmouth. As rail fares are generally higher than bus, costs may preclude access for some in areas of deprivation; this was raised by some attendees to the public consultation.

**Summary of Integration Appraisal**

Overall, the options positively contribute to integration across transport, land use and policy. Both are scored to offer moderate benefits across each scoring criteria as shown in Table 36.
Table 36. Integration Appraisal Summary

<table>
<thead>
<tr>
<th>OPTION</th>
<th>TRANSPORT</th>
<th>LAND USE AND TRANSPORT</th>
<th>POLICY</th>
<th>OVERALL APPRAISAL FOR INTEGRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>✔️ ✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Option B</td>
<td>✔️ ✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>
11.9 Accessibility and Social Inclusion Appraisal

11.9.1 The Accessibility and Social Inclusion objective covers the following two sub-objectives:
- Community Accessibility - includes consideration of the public transport network coverage and also local accessibility, which is essentially opportunities to walk or cycle to services or facilities; and
- Comparative Accessibility - includes consideration of people groups and the needs of any socially excluded groups, and also geographic consideration of locations relative to proposed interventions.

11.9.2 This has been assessed qualitatively along with accessibility analysis utilising TRACC software as below.

TRACC Accessibility Analysis

11.9.3 Accessibility modelling has focused on the analysis and interpretation of public transport access by utilising TRACC software.

11.9.4 The TRACC accessibility analysis software is essentially a large-scale travel planning tool that calculates the route options and journey times for a large number of origins to a specific, or multiple, destinations. By changing travel option parameters in the software (e.g. new bus or rail services), it is possible to undertake the assessment of accessibility for a number of different scenarios. TRACC’s default setting is to add five minutes to the actual journey time for each interchange, plus wait time, between public transport services. This has been used in the analysis undertaken.

11.9.5 For both the Initial and Detailed Appraisals, TRACC modelling has been run to calculate the route options and journey times for access from the localities within the Levenmouth area to:
- Health (Victoria Hospital);
- Educational establishments (colleges and universities);
- Town centres (including Leven);
- Employment centres (including Edinburgh Park, Central Edinburgh, Dundee, Kirkcaldy and Dunfermline); and to the
- Fife Energy Park from all residential areas in Scotland.

11.9.6 The following modelling runs were undertaken for access via rail, bus, coach (or a combination of these modes) and the walking connections to reach these services at the following travel-time periods:
- Education: 07:00 – 09:00;
- Health: 09:00 – 16:00;
- Town centres: 09:00 – 16:00; and
- Employment: 07:00 – 09:00.
11.9.7 The accessibility analysis was undertaken at the census output area level and built up to represent the Levenmouth settlements. The National Records of Scotland (NRS) definition of localities in the Levenmouth area has been used. The centroid of these output areas was determined and used in TRACC to calculate the accessibility for each output area. In the Initial Appraisal a weighted average accessibility was calculated based on the accessibility and population (or working age population for employment tests) from all the constituent output areas to provide an overall settlement average. This average value was then used to systematically compare the accessibility of different settlements in order to provide a context to the problems, opportunities, issues, and constraints definition.

11.9.8 In this Detailed Appraisal the baseline figures have been compared by coding in service patterns for Options A and B, and repeating these modelling runs. Results of this analysis have informed the appraisal below.

### Community Accessibility

11.9.9 **Option A** would enhance connections to Methil, Windygates and Buckhaven, while boosting access to the rail network at Markinch and through to Glenrothes. The local routing of this service maximises its accessibility (and the onward rail network) by foot and by bicycle, helping to facilitate non-car access to key services and facilities.

11.9.10 This was highlighted in the accessibility analysis, which showed that access to *Edinburgh Park and South Gyle* from Windygates and Methil was particularly improved in terms of journey time. 95% and 37% of the population would experience between 2 and 10 minutes of journey time improvement, respectively, and 17% of the population of Methil would see more than 10 minutes of journey time improvement. Buckhaven would see a marginal improvement of 9% of the population receiving a >0 to 5 minute journey time benefit.

11.9.11 In terms of access to *Central Edinburgh*, 85% of the population of Windygates and 17% of Methil would experience a journey time benefit of between 5 and 10 minutes. Buckhaven would see negligible benefits, with only 2% of the population showing any journey time benefit across the area.

11.9.12 No benefit was shown to *Dunfermline* or *Kirkcaldy*, and negligible benefit to *Dundee* (<2% with any journey time benefit across the area).

11.9.13 Access to *educational facilities* would see a benefit in Methil and Windygates for access to some educational facilities. In terms of colleges within Fife, access to the Dundee School of Nursing and Midwifery (Kirkcaldy Campus) would see journey time improvement of up to 2 minutes for 9% and 40% of the population of Methil and Windygates respectively. No improvement would be seen for other campuses, e.g. Fife College St Brycedale in Kirkcaldy or Halbeath Campus in Dunfermline compared to existing public transport services.

11.9.14 The strong performance of Windygates in this analysis highlights the integration between the bus service and rail provision at Markinch Rail Station.

11.9.15 No improvement would be seen for access to *healthcare facilities* at Victoria Hospital.
11.9.16 **Option B** would help improve accessibility, providing a direct link to the wider rail network from the Levenmouth area at Cameron Bridge and Leven. This includes diversification of mode choice as well as increasing the catchment area that can be accessed by public transport within a set journey time. Interchange at Inverkeithing would provide connection with Fife Circle services in order to access Dunfermline and other destinations in west Fife. Services to the north, for example to Aberdeen, Dundee, Perth would be achieved via Kirkcaldy.

11.9.17 Based on the outcomes of the TRACC analysis, it can be seen that Windygates and Methil would see the largest benefit in public transport journey time benefits (accessed via walking) to employment sites and educational facilities. This is in line with the expected catchments, given the requirement for people to access the new rail services at either Cameron Bridge or Leven Rail Stations (i.e. no local routings, as with bus). The relatively small changes seen for Leven relate to the relatively long walk distance to the station from the majority the population in this area. No journey time improvements were shown for Buckhaven or Kennoway, again, in relation only to pure public transport and walk catchments, tested in order to inform the appraisal of the community accessibility sub-criteria.

11.9.18 Journey time Improvements are seen for **Kirkcaldy**, with 59% of the population seeing a up to 2 minutes improvement, and 14% seeing a 2 to 5 minute improvements from Windygates; these figures are 6% and 1%, and 5% and 9% for Methil and Leven respectively.

11.9.19 Journey time improvements would be seen for **Edinburgh Park and South Gyle** in the order of 21% of the Windygates population seeing a 2 to 10 minute benefit, and 6% seeing a >10% benefit. Small improvements would also be seen from central Leven with 2% of the population seeing 5 to 10 minute benefits, and 4% seeing >10 minute benefits.

11.9.20 For **Central Edinburgh**, Windygates would see the largest improvement with 7% of the population seeing a 5 to 10 minute improvement, and 20% seeing a >10 minute improvement.

11.9.21 For access to **Dundee**, only Windygates shows and improvement, with 14% of the population seeing up to 2 minutes improvements in journey time.

11.9.22 **Access to educational facilities** would see the largest benefit in Methil and Windygates and Leven. In terms of colleges within Fife, access to the Fife College St Brycedale Campus would see journey time improvement of up to 5 minutes for 7% and 29% of the population of Methil and Leven respectively. 14% of the Windygates population would also see an improvement of up to 2 minutes for both the Fife College St Brycedale Campus, in Kirkcaldy, and the Halbeath Campus in Dunfermline. Access to the Dundee School of Nursing and Midwifery (Kirkcaldy Campus) would see journey time improvement of up to 5 minutes for 25%, and 5 to 10 minutes for 16%, of the Methil population.

11.9.23 No improvement would be seen for pure public transport and walking catchment access to **healthcare facilities** at Victoria Hospital.

### Comparative Accessibility

11.9.24 Both options are likely to be of a moderate benefit for comparative accessibility and expected to improve accessibility for a number of socially excluded groups. It was highlighted in the analysis of the problems and opportunities of the Initial Appraisal that the areas affected by
these options are some of the areas within Levenmouth and, to an extent, Fife with the greatest health issues, lowest levels of educational attainment, highest levels of unemployment, and highest levels of social exclusion.

11.9.25 **Option A** improves access to areas with some of the highest levels of the problems noted above, such as Methil and Buckhaven. Fare re-balancing as part of this option to lower rail fares from Markinch to address anomalies and increase its attractiveness compared to Kirkcaldy may also improve access to the rail network for proportions of the community, in terms of affordability.

11.9.26 **Option B** would provide another public transport choice for the communities of Levenmouth. It can also be expected that commuters from the wider area, e.g. from the East Neuk, would be attracted to use the rail services, with stations including Park and Ride facilities. The higher fares associated with rail were highlighted by members of the public during the public consultation events and a potential barrier, particularly for parts of the study area where levels of deprivation are high.

**Equality Impact Assessment**

11.9.27 An Equality Impact Assessment (EIA) considers issues of race, sex, disability, sexual orientation, religion and belief, age, gender reassignment and pregnancy and maternity under the Equality Act 2010. The options assessed as part of this study are not considered to pose any specific impact on these groups that would differ from the wider population.

11.9.28 All the options promote public transport. New infrastructure and operations taken forward would be designed to current standards at the time of construction and implementation. All, infrastructure and services would be progressed in line with providing access for all.

**Summary of Accessibility and Social Inclusion Appraisal**

11.9.29 Both Options score well across each of the Accessibility and Social Inclusion sub-criteria – **Option A**, largely due to its local routing providing a beneficial local catchment coverage, and **Option B** for its direct access to the rail network.

**Table 37. Accessibility and Social Inclusion Appraisal Summary**

<table>
<thead>
<tr>
<th>OPTION</th>
<th>COMMUNITY ACCESSIBILITY</th>
<th>COMPARATIVE ACCESSIBILITY</th>
<th>OVERALL APPRAISAL FOR ACCESSIBILITY AND SOCIAL INCLUSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>✅ ✅</td>
<td>✅ ✅</td>
<td>✅ ✅</td>
</tr>
<tr>
<td>Option B</td>
<td>✅ ✅</td>
<td>✅ ✅</td>
<td>✅ ✅</td>
</tr>
</tbody>
</table>
11.10 Transport Planning Objectives Appraisal

11.10.1 The Transport Planning Objectives (TPO) for this study, as noted in Section 5, are as follows:

- **TPO 1** – Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area.
- **TPO 2** – Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area.
- **TPO 3** – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area.
- **TPO 4** – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk.

11.10.2 The options have been appraised in relation to their role in meeting the study objectives overall and guided by the KPIs. The options score positively overall against the TPOs as shown in Table 38.

![Table 38. Transport Planning Objectives Appraisal Summary](image)

11.10.3 Improving access to employment and other services such as education and healthcare as well as leisure destinations would be supported by **Option B**, delivering a moderate benefit and **Option A** a minor benefit. **Option B** is expected to deliver greater benefit through the wider catchment served by Park and Ride facilities at Cameron Bridge as well as the attractiveness of a shorter journey time by public transport to key services and destinations. **Option A**, while increasing access to the rail network, would not directly enhance the public transport offering direct from the Levenmouth area and locations within an attractive commuting distance.

11.10.4 In relation to encouraging increased sustainable travel modes sure for residents and workforce of the Levenmouth area, **Option A** is scored minor benefit in terms of improving the public transport network and access within the local area as well as onward connections.
to/from the area by rail. The option would however not result in the wider city-region being within a shorter journey time, particularly in terms of attractiveness from an inward and outward commuting point of view.

11.10.5 Option B is scored moderate benefit in terms of encouraging the uptake of sustainable modes. The higher comparable score is reflective of the increased public transport offering presented by rail and associated journey times bringing the wider city-region of Edinburgh in particular within community distance. This option also presents the opportunity for rail freight and associated removal of HGV miles from the local, regional and wider national road network.

TPO 3 – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area.

11.10.6 In terms of attracting investment and encouraging jobs and people to the Levenmouth area, Option A scores a minor benefit. While this option would enhance connectivity to the rail network at Markinch the need to still interchange would not offer significant material impact in terms of journey times in particular and perceptions around the area being ‘out of the way’ to businesses and also associated attractiveness as a place to live and work. Option B is expected to have a greater benefit in terms of attracting inward investment, primarily as a consequence of the shorter journey times and rail freight potential for existing (as well as potential) businesses. Option B would also provide a station at Cameron Bridge which is in close proximity to Levenmouth SDZ – key strategy development area.

TPO 4 – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk.

11.10.7 The Levenmouth area is identified to present a number of tourism related opportunities, which are primarily linked the Fife Coastal setting of the area and proximity to the East Neuk. Key to this is enhancement of access. In this regard, Option B is expected to present moderate benefit through a direct rail link from the area to Edinburgh, including the airport (via the Edinburgh Gateway Station on opening) facilitating access by visitors from further afield. Tourism marketing initiatives would serve to help further encourage tourist travel to the Levenmouth area and complement investment in the local transport network. Option A, while increasing access, would not be expected to have a material impact in terms of tourism to the area with the need for interchange and lengthy journey times to the Levenmouth area expected to be unattractive and result in other destinations which are more readily accessible continuing to be more popular.
12. COST TO GOVERNMENT

12.1 Introduction

12.1.1 STAG requires that the net cost of an option is assessed from a public spending perspective; this is then compared with the total benefits to provide an overall value for money assessment.

12.1.2 Cost to Government refers to all costs incurred by the public sector, net of any revenues. The total net cost comprises:

- Investment costs;
- Operating and maintenance costs;
- Grant/subsidy payments;
- Revenues; and
- Taxation.

12.2 Investment Costs

12.2.1 Investment costs include all infrastructure and other capital costs incurred by public sector operators that are in addition to the Do Minimum. In line with the remit of this study, the scheme costs reported in the Levenmouth Sustainable Transport Study (Scott Wilson, 2008) provide the basis for the development of the rail option costings for this study. There was no bus option included within the previous Detailed Appraisal study and, therefore, these have been developed specifically for this appraisal.

12.2.2 Investment costs for Option A are based on industry standards set out in the Bus Industry Monitor Report: Bus Industry Performance 2014 (TAS Publications). The investment costs are based on up to three additional vehicles operating throughout the day in order to cover additional services, including three extra peak hour services to ‘meet’ all peak period rail services to the south (towards Edinburgh) and north (towards Perth and Dundee). During the off-peak, an hourly service frequency is proposed.

12.2.3 The investment costs for Option B were developed on the following basis:

- Consistency check of Scott Wilson costs reported in the 2008 study with the scope of Option B;
- Application of Retail Price Indices (215.3 at 2008 Q2 and 259.8 at 2015 Aug) to core capital cost, plus an assessment based on current delivery experience;
- Risks added to core capital cost;
- Application of Network Rail design management fee at 12.5% of total capital cost; and
- Inclusion of rail construction inflation (estimated at 1.3% per annum) over and above base inflation.

---

30 Costs in Fife are considered to be similar to the ‘shire’ operator category (Table 7).
12.2.4 In line with STAG, all investment costs should be adjusted for “Optimism Bias”. A 44% uplift for Optimism Bias has been applied to Option A capital costs reflecting the standard level for local authority and public transport schemes. For Option B, the scheme would involve the re-opening of an existing rail line with circumstances that are largely known. As such, Optimism Bias of 50% was applied to the investment cost including risk.

12.2.5 Table 39 outlines the total investment costs associated with each option over the 60-year appraisal period. For Option A, the costs also take account of vehicle replacement every 12 years. Option B is costed on the basis of leasing rolling stock. The lease costs are reflected in the annual operating costs discussed in the next section. A year of opening of 2017 is assumed for Option A, reflecting the relatively short timeframe within which this option could be implemented. Option B assumes an opening year of 2022 in the next rail Control Period (2019 – 2024) and a two-year construction period.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>COST</th>
<th>OPTIMISM BIAS RATE</th>
<th>EXPECTED YEAR OF OPENING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>£2.9M</td>
<td>44%</td>
<td>2017</td>
</tr>
<tr>
<td>Option B</td>
<td>£78.4M</td>
<td>50%</td>
<td>2022</td>
</tr>
</tbody>
</table>

12.2.6 The equivalent current (2015) capital cost for Option A is £3.4M assuming a 2017 year of opening, and £91.1M for Option B assuming a 2022 year of opening.

12.2.7 A summary of the costs for Option B, in relation to the cost development steps described in section 12.2.3, is shown in Table 40. A more detailed breakdown of the cost components is provided in Appendix M.
Table 40. Option B – Summary of Investment Costs (2015 prices, undiscounted)

<table>
<thead>
<tr>
<th>COST ELEMENT</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Cost</td>
<td>£42.2M</td>
</tr>
<tr>
<td>Base Cost + Risk</td>
<td>£49.9M</td>
</tr>
<tr>
<td>Base Cost + Risk + Optimism Bias</td>
<td>£74.9M</td>
</tr>
<tr>
<td>Base Cost + Risk + Optimism Bias + Network Rail Design Management Fee</td>
<td>£84.3M</td>
</tr>
<tr>
<td><strong>Total Cost</strong> (inclusive of additional rail inflation)</td>
<td><strong>£91.1M</strong></td>
</tr>
</tbody>
</table>

12.3 Operating and Maintenance Costs

12.3.1 Operating and maintenance costs include the annual recurring costs incurred in running and maintaining the options considered.

12.3.2 Bus operation costs primarily include staff and fuel expenses. The operating costs for Option A are based on the following units sourced from the Bus Industry Monitor Report: Bus Industry Performance 2014:

- Fuel cost - £19,000 per bus per annum; and
- Driver cost - £69,000 per bus per annum.

12.3.3 As only three new vehicles would be added to an existing fleet, overheads have been assumed at zero for the extra buses. Operating arrangements should be reviewed as services are developed into the future, alongside development in the Levenmouth area.

12.3.4 Rail operational costs for Option B cover factors such as the leasing of trains, track and station access charges, staff and fuel costs. The operating cost assumptions for the rail option are outlined in Table 41. NB If a rail option were to be progressed, (for example through the rail industry’s GRIP design and delivery process), then more-detailed forecasting of the relevant operating costs would be required. This level of rail operations detail would be disproportionate for the multi-modal STAG-based appraisal being reported here. Following discussion with Transport Scotland, testing with the ScotRail Franchise Model, was not considered appropriate at this stage.

12.3.5 As noted in Chapter 10, operating costs are dependent on external factors relating to timetabling changes. At this stage, a best-case scenario of £188k (2012 prices) per annum has been assumed on the basis an extended lay-over at Levenmouth can be resolved.
### Table 41. Option B – Operating Cost Breakdown

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>TOTAL</th>
<th>UNIT COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolling Stock</td>
<td>3-car 170 units for all services.</td>
<td>N/A - diversion of existing service.</td>
<td>N/A</td>
</tr>
<tr>
<td>Staff – Drivers</td>
<td>N/A – diversion of existing service</td>
<td>N/A – diversion of existing service</td>
<td>N/A – diversion of existing service</td>
</tr>
<tr>
<td>Staff – Conductors</td>
<td>N/A – diversion of existing service</td>
<td>N/A - diversion of existing service</td>
<td>N/A – diversion of existing service</td>
</tr>
<tr>
<td>Mileage charges</td>
<td>Inclusive of all train maintenance costs, mileage components of leasing costs, fuel and variable track access charges.</td>
<td>£171k</td>
<td>Commercial sensitivity tbc</td>
</tr>
<tr>
<td>Overheads</td>
<td>Management, station costs. Training cleaning etc</td>
<td>£17.1k</td>
<td>10% direct operating costs</td>
</tr>
</tbody>
</table>

12.3.6 For **Option A**, the maintenance cost is based on £5,000 per vehicle per annum as referenced in the Bus Industry Monitor Report: Bus Industry Performance 2014. This equates to an annual maintenance cost of £15,000 per annum (2012 prices) for the three vehicles required to deliver the new service.

12.3.7 For **Option B**, the maintenance cost has been calculated based on the Office for Road and Rail (ORR) maintenance assessed costs for Scotland in 2018/2019 (£95m) and total track miles in Scotland of 2,754. This provides a unit cost of £34k per track mile (2012/2013 prices). A maintenance cost of £20,000 per annum per station has also been assumed.

12.3.8 A summary of the annual operating and maintenance costs over the 60-year appraisal period is presented in in Table 42. For **Option B**, a best case operating cost is presented. If the extended turn-around time in Leven cannot be resolved, either through eliminating another stop or re-timing the departure from Edinburgh, the operating cost would be higher as additional rolling stock would be required to operate the service.

### Table 42. Annual Operating and Maintenance Costs (2010 Prices, undiscounted)

<table>
<thead>
<tr>
<th>OPTION</th>
<th>COST</th>
<th>OPTIMISM BIAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>£257,000</td>
<td>1.6%</td>
</tr>
<tr>
<td>Option B</td>
<td>£404,000</td>
<td>1.6%</td>
</tr>
</tbody>
</table>
12.4 Revenue

12.4.1 Public sector revenues relate to user charges, which represent monetary transfers from the users to the Government. **Option A** and **Option B** are both predicted to generate a reduction in parking revenue of £1.1M and £4.0M (2010, discounted) respectively.

12.4.2 Table 43 outlines the estimated revenue arising from additional fare box fares for each option. This is additional revenue generated by fares, so would not be a direct benefit to Government.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>REVENUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>£4.6M</td>
</tr>
<tr>
<td>Option B</td>
<td>£22.1M</td>
</tr>
</tbody>
</table>

12.5 Grant and Subsidy Payments

12.5.1 Grant and subsidy payments can be made by the Government to private sector operators when revenues do not cover investment and operating costs. **Option A** would require subsidy of £100,000 per annum (2010 prices, undiscounted), amounting to £3.8M (2010 prices, discounted) in total over the 60-year appraisal period. There would be no grant or subsidy payments required for **Option B** as the additional public transport revenue exceeds the assumed operating cost. Further details of the operating costs and fare box revenues for the two options are provided in the Part 2 TEEs in Appendix L.

12.6 Cost-Benefit Analysis

12.6.1 The economic appraisal has been based on a 60-year appraisal period from the year of opening (2017 for **Option A** and 2022 for **Option B**) and all benefits are expressed in 2010 prices. Monetary values have been discounted to 2010 at 3.5% for 30 years and 3.0% for the remainder of the evaluation period. The results of the cost-benefit analysis are presented in Table 44 and Table 45 for **Option A** and **B** respectively.

<table>
<thead>
<tr>
<th>BENEFIT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present Value of Transport Benefits (PVB)</td>
<td>£31.7M</td>
</tr>
<tr>
<td>Present Value of Costs to Government (PVC)</td>
<td>-£6.1M</td>
</tr>
<tr>
<td>Net Present Value (NPV)</td>
<td>£25.6M</td>
</tr>
<tr>
<td>Benefit-Cost to Government (BCR)</td>
<td>5.19</td>
</tr>
</tbody>
</table>
Table 45. Option B Cost-Benefit Analysis (2010 Prices, discounted)

<table>
<thead>
<tr>
<th>BENEFIT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present Value of Transport Benefits (PVB)</td>
<td>£79.8M</td>
</tr>
<tr>
<td>Present Value of Costs to Government (PVC)</td>
<td>-£61.0M</td>
</tr>
<tr>
<td>Net Present Value (NPV)</td>
<td>£18.8M</td>
</tr>
<tr>
<td>Benefit-Cost to Government (BCR)</td>
<td>1.31</td>
</tr>
</tbody>
</table>

12.6.2 Both Option A and Option B would achieve a Benefit Cost Ratio (BCR) greater than one. The BCR for Option A is higher reflecting the low investment and maintenance costs. Option A would, however, require ongoing subsidy for the additional operating costs in excess of the surplus revenue. While Option B would not achieve as high a BCR the impacts are greater and the smaller return reflects higher investment, maintenance and operating costs.

12.7 Implementability and Public Acceptability

12.7.1 The deliverability potential of the options has been a key consideration throughout the study. Deliverability has been discussed below, covering the following headings:

- Technical Feasibility – assessment, from a technical viewpoint, of how straightforward it will be to implement the proposal;
- Operational Feasibility – factors which may impact on the ability to operate a proposal;
- Financial Feasibility – the scale of the capital costs and methods of funding; and
- Public Acceptability – the likely public acceptability of the proposals.

12.7.2 Option A, bus and rail integration, is expected to be technically feasible, however, it would require discussion with public transport operators regarding provision of the services. Fare equalisation proposals for this option, while not representing technical feasibility issues, will also require significant effort in terms of negotiation and agreement.

12.7.3 Re-opening of the existing out-of-use rail line to passenger rail and potentially freight rail use (Option B), would require re-design and construction of the line to bring it up to passenger rail standard. While this is a major undertaking, the option is technically feasible with a live line having operated previously and known circumstances (subject to full detailed investigation of the existing line were this option taken forward).

12.7.4 Existing maintenance budgets for Leven Railway Bridge involve the propping of the structure, however, the re-instatement of the rail track (as per Option B) would preclude this action. If Option B were to be taken forward, consideration of the structure would form part of the detailed design work undertaken, as would the consideration of all structures along the extent of the rail line. For the purpose of this appraisal, deck replacement has been assumed as
required at Leven Railway Bridge. Any future decking proposals taken forward independent of Option B should be progressed with due account of the specification of the new rail line. This should ensure that any future changes to the bridge are aligned to these specifications and provide appropriate flexibility, for example with regard to clearance and headroom.

**Operational Feasibility**

12.7.5 **Option A** would be delivered by the existing bus fleet supplemented by new vehicles to serve the additional 44B equivalent services. At present, the X4 vehicles are used across multiple routes. As such, there may be a requirement to review the fleet scheduling so branded vehicles were to operate only on their dedicated route. Continued collaborative working would be required between Fife Council and Stagecoach in the provision of bus services to and from the Levenmouth area.

12.7.6 In terms of train operations for **Option B**, diversion of the Edinburgh to Glenrothes with Thornton terminating service, could require an extended layover at Leven and also slightly reduce the service frequency at Glenrothes with Thornton. Glenrothes with Thornton would however, still be served by Fife Circle services and is one of the lesser used stations in Fife, as its walk-in catchment area does not include any of the main travel generators in Glenrothes. The impact of this change on existing passenger numbers is therefore likely to be minimal, but this should be confirmed when the relevant detailed timetabling study has been completed.

12.7.7 One alternative to overcoming the extended layover would be the potential removal of a call from an intermediate station. The introduction of this change may not be without challenge and may require a review of the Fife Circle to provide sufficient capacity and suitable evening peak operations. If a rail option were progressed, detailed timetabling would be required in consultation with Abellio and Network Rail in order to understand the resilience within the network to accommodate a rail operation to Leven and potential impact on existing services and related passenger journey times resulting from a change in service pattern to provide a rail service to Levenmouth.

12.7.8 Furthermore, future proposals, including the opening of the Edinburgh Gateway Station, enhanced signalling between Edinburgh and Inverkeithing, and replacement of the Class 170 diesel-multiple units with high speed units on express services, all have the potential to impact on what service operations are feasible in the future. The Strategic Transport Projects Review (STPR) included proposals committing to electrification of the rail network. Longer-term proposals, extending into the period beyond STPR, include electrification of routes between Edinburgh, Perth and Dundee which would incorporate the Fife Circle. Associated impacts on journey times would have a direct consequent on service operations within the Fife area. If a rail option were progressed, operational considerations and future timetables should be advanced in the context of wider changes that would have a direct impact on the operation of a rail service to and from Levenmouth.
12.7.9 **Option A**, bus and rail integration, would be relatively affordable, although there would be costs associated with improved service frequency and implementation and maintenance of the branding exercise. Fare equalisation may also incur a cost in terms of a reimbursement agreement, and would need to be further investigated if taken forward to the detailed appraisal.

12.7.10 For **Option B** there would be significant costs associated with maintenance and operation of the line and changes to rail franchise agreements would also need to be considered. Provision of rail freight facilities may also incur ongoing associated costs. Maximising the number of freight users would support the viability of the line in terms of costs and benefit from the level of freight movement occurring. Depending on the type of service introduced, operating costs may require subsidy.

### Public Acceptability

12.7.11 In terms of public acceptability, **Option A** is not expected to receive public opposition. However, it is noted that implementation of this option alone may come under criticism as it may not be seen to be doing enough to overcome the problems and issues identified.

12.7.12 **Option B** would involve re-opening of an existing rail line that is safeguarded in local development plans, negating much of the additional land take requirements that would be required with the opening of a completely new line. Within the local community, comment forms and verbal feedback received at the consultation undertaken in October 2015, noted that there was support for the re-opening of the rail line. The associated connectivity enhancements were viewed to provide benefit in terms of access to employment, education, health, and leisure facilities, as well as stimulating business activity and investment in what is a deprived area. The higher cost of rail fares was also raised by some at the public consultation drop-in events as a potential barrier, especially for parts of the study area where levels of deprivation are particularly high.
13. RISK AND UNCERTAINTY

13.1 Introduction

13.1.1 Risk and uncertainty should be taken into account as part of the appraisal. This helps to ensure that the best possible estimate of the costs and benefits associated with each option is presented.

13.2 Risk Management Process

13.2.1 Risk management is a structured approach to identifying, assessing, and controlling risks that emerge during the course of an option. This helps to develop a more thorough understanding of the risks inherent within an option and of and their likely impact, in turn, supporting better decision-making. Risk management involves:

- Identifying risks in advance;
- Assessing their likelihood of occurring and impact to ascertain the overall significance of each risk;
- Identifying and putting in place potential mechanisms to mitigate each risk; and
- Ongoing monitoring and review to identify potential new risks and also where risks may have been successfully mitigated and therefore no longer a concern for consideration.

13.2.2 A proactive approach to risk management from the outset helps facilitate bringing more certainty to a project at an earlier stage. This, in turn, can help to provide greater confidence and reduced requirement for optimism bias to address potential under-estimation of costs and delivery timeframe, and over-statement of benefits.

13.3 Optimism Bias

13.3.1 As noted in Chapter 12, investment costs have been adjusted for Optimism Bias. For Option B, the scheme would involve the re-opening of an existing line with known circumstances. As such, optimism bias of 50% (Level 2 Project Definition) was applied to the total investment cost including risk. A 44% Optimism Bias has been applied to Option A capital costs reflecting the stage 1 level for local authority and public transport schemes.

13.4 Project Risk Register

13.4.1 At this stage, an initial Risk Register has been developed that highlights the key risks that could affect the delivery and operation of the options. This has been provided alongside the probability of their occurrence and the magnitude of their potential impact. The Risk Register is presented in Table 46 and should be continuously reviewed and updated throughout the risk management process as the detailed design of options taken forward progressed.
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>RISK DESCRIPTION</th>
<th>RISK ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholders</td>
<td><strong>Statutory</strong> – the introduction of a new rail line serving Levenmouth is not supported by key stakeholders - Transport Scotland, Network Rail and Abellio.</td>
<td>4  5  20</td>
</tr>
<tr>
<td>Resource/Financial</td>
<td><strong>Availability</strong> – high demand for design resource in Control Period 6, may result in a premium cost for design services.</td>
<td>4  5  20</td>
</tr>
<tr>
<td>Financial</td>
<td><strong>Funding</strong> – progressing the options beyond the STAG (particularly a rail-based option, which would need to be taken through the Governance for Railway Investment Projects (GRIP) process) will require further funding by Fife Council. Uncertainty over future budgets may impact on and delay potential options being brought forward to improve the sustainable transport offering to and from Levenmouth.</td>
<td>4  5  20</td>
</tr>
<tr>
<td>Operation</td>
<td><strong>Rail Timetable</strong> – capacity on the network is constrained to facilitate diversion of existing services or the introduction of new services to operate to Levenmouth. This may also affect resilience of the rail network in the area. The level of impact and associated risk would require further discussion with Network Rail, Abellio and Transport Scotland if a rail proposal were progressed.</td>
<td>4  5  20</td>
</tr>
<tr>
<td>Financial</td>
<td><strong>Rail Fare Equalisation</strong> – re-balancing of rail fares so the cost of rail from the Fife area is in line with the cost from other stations in Central Scotland is unachievable due to</td>
<td>3  4  12</td>
</tr>
<tr>
<td>CATEGORY</td>
<td>RISK DESCRIPTION</td>
<td>RISK ASSESSMENT</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk Likelihood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1 – 5)</td>
</tr>
<tr>
<td>Financial</td>
<td>cost considerations and complexities associated with the Franchise model. This would potentially compromise the attractiveness of rail, even with a direct link from the Levenmouth area. As a consequence, projected demand may be lower than forecast.</td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td><strong>Unrealistic Capital Costs</strong> – this is particularly pertinent where new infrastructure is being built. Capital costs for the options allow for Optimism Bias in line with the parameters set out in STAG for public transport and rail-based options. An 18% risk allowance was also applied to the rail capital costs (prior to optimism bias). Network Rail design charges of 12.5% were also applied to the capital cost (inclusive of risk and optimism bias).</td>
<td>2</td>
</tr>
<tr>
<td>Financial</td>
<td><strong>Inflation</strong> – rate of construction higher than rate assumed (delay to programme would also impact).</td>
<td>2</td>
</tr>
<tr>
<td>Political</td>
<td><strong>Independence referendum</strong> – potential second referendum post-2016 Scottish Parliamentary elections plus vote to leave the EU may delay delivery of proposals. If there was a vote in favour of independence this would have direct consequence on all aspects of Government, including funding and delivery of future transport infrastructure and services.</td>
<td>2</td>
</tr>
<tr>
<td>Land</td>
<td><strong>Land Possession</strong> – significant objections received to unforeseen and additional land requirements.</td>
<td>2</td>
</tr>
<tr>
<td>CATEGORY</td>
<td>RISK DESCRIPTION</td>
<td>RISK ASSESSMENT</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Stakeholder/</td>
<td><strong>Rail Freight</strong> – Diageo/ WH Malcolm or other freight operations do not materialise, affecting the benefits realised.</td>
<td>Risk Likelihood</td>
</tr>
<tr>
<td>Operation</td>
<td></td>
<td>(1 – 5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Operation</td>
<td><strong>Bus operations</strong> – private run services can change based on the requirements of operators. While Stagecoach are upgrading their fleet to ensure they can still continue to serve south Levenmouth via Bawbee Bridge/ Levenmouth Railway Bridge, this does mean that express bus services operating through south Levenmouth could be moved to the A915 if the operator chooses to. As with all key services, continued collaborative working would be required between Fife Council and operators in the provision of bus services to and from the Levenmouth area.</td>
<td>Risk Likelihood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Operation</td>
<td><strong>Rail operations</strong> - a rail service to Levenmouth may impact on current passenger services, in particular Glenrothes with Thornton, to deliver the timetable considered as part of the study. The proposal to divert the existing Edinburgh – Glenrothes (via Kirkcaldy) service would reduce service frequency, but the station would still be served by the Fife Circle service. A full timetabling exercise would be undertaken as part of GRIP and provide the basis to identify the optimum integrated timetable for current and proposed alterations to Fife services. This analysis would confirm costs associated with retaining the current level of service at Glenrothes with Thornton.</td>
<td>Risk Likelihood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Freight Demand</td>
<td><strong>Rail freight</strong> – the opportunity for rail freight is not realised, reducing the benefit offered by re-opening of the rail line and associated removal of freight from road to rail.</td>
<td>Risk Likelihood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CATEGORY</td>
<td>RISK DESCRIPTION</td>
<td>RISK ASSESSMENT</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Passenger Demand</td>
<td>Patronage – demand forecasts for new bus and rail services are under or over</td>
<td>Risk Likelihood</td>
</tr>
<tr>
<td></td>
<td>estimated.</td>
<td>(1 – 5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Stakeholders</td>
<td>Public – significant objection from the public to any proposal taken forward.</td>
<td>2</td>
</tr>
<tr>
<td>Design</td>
<td>Design standards – there is a significant unforeseen change in standards which</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>would have a direct consequence on design related costs.</td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>Programme – over-run in construction of new rail line resulting in increased</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>costs and disruption to local communities and commuters and visitors to the area.</td>
<td></td>
</tr>
</tbody>
</table>
13.5 Sensitivity Testing

13.5.1 Sensitivity testing is undertaken to test the future vulnerability of options to uncertainties that are unavoidable as well as potential changes in delivery circumstance. The risk identification process, described in Section 13.2, has informed the sensitivity tests considered. This chapter presents the results from a number of sensitivity tests undertaken to determine the following:

- Sensitivity of a faster line speed between Thornton North Junction and Cameron Bridge; and
- Impact of enhancing the public transport network through both bus and rail investment.

13.5.2 The results of the tests are discussed in the following sections.

### Sensitivity of a faster line speed between Thornton North Junction and Cameron Bridge.

13.5.3 A faster average line speed between Thornton North Junction and Leven could be achieved with the straightening of the line from Thornton North Junction to Windygates with the remainder of the line following the existing alignment to Leven as shown in Figure 37. Sectional Running Times (SRTs) were calculated based on an average running speed of 60mph along the straightened section. This resulted in a journey time saving of approximately 30 seconds in each direction of travel compared to services operating on the existing alignment in full.

13.5.4 This option would involve a higher capital cost compared to Option B. This reflects the additional construction work involved, as well as associated land-take to provide the new section of track. The journey time saving is not at a level where it would impact significantly on overall benefits to off-set the higher cost.

13.5.5 A higher line speed may be worthy of further investigation as part of a detailed timetabling exercise if a rail option were taken forward. A faster line speed may offer additional flexibility to address capacity constraints on the network, to the benefit of service frequency and resource requirements to operate a rail service to Levenmouth.
13.5.6 As noted in STAG, it is plausible that the packaging of measures may help reinforce, extend or complement the impact of a particular measure. With this in mind, a further sensitivity test was undertaken which was based on combining Option A and Option B to deliver investment in both bus and rail. This was developed as a sensitivity in order to respond to potential delivery timescale risks associated with Option B and to address the study objectives in the short term should Option B be taken forward. It also reflects that development of either of the options considered in this study does not preclude the development of the other. Compared to Options A and B in isolation, this combined option would offer:

- Improved access from communities to the south of Levenmouth to Markinch to connect by bus with rail services;
- Improved access from south Levenmouth to Glenrothes;
- Better access to additional rail services to Edinburgh, Perth and Dundee via Markinch; and
- The opportunity to further build-up the public transport demand.

13.5.7 This combined option would deliver additional demand and user benefits, resulting in Benefit-cost to Government ratio of 1.48. The combined option would also serve to strengthen the combined public transport offering in the longer-term. This would help to improve the network and further increase transport choice for the local communities of Levenmouth. Since neither option precludes the other, consideration may be given to implementing Options A and B in parallel. This would bring forward a ‘quick win’ and improvements in the short-term with further strengthening of the public transport network by a rail in the longer-term. Further development of these proposals will be required in line with industry standards and statutory process, namely the Governance for Railway Investment Projects (GRIP) if a rail-based component is to be progressed.
14. MONITORING AND EVALUATION

14.1 Introduction

14.1.1 Monitoring and evaluation is integral to the appraisal process. Within the context of STAG, these activities are defined as follows:

- Monitoring is the process of gathering and interpreting information on the performance of a project post implementation. This process should be ongoing and will usually take place in conjunction with other information gathering exercises being undertaken by a local authority or other organisation implementing a project; and

- Evaluation forms an essential part of the policy cycle, demonstrating what has been achieved with public resources and providing evidence and learning points for future interventions and investments. This chapter sets out the recommended approach to be adopted during the monitoring and evaluation exercise and information requirements to inform this process.

14.2 Monitoring Framework

14.2.1 Regular monitoring should be undertaken to assess the ongoing performance of a project following implementation. An initial study level monitoring framework is presented in 0. This is based on assessing performance in relation to the study objectives through a number of Key Performance Indicators (KPIs).

14.2.2 It is important a baseline is established to provide for a before and after comparator. Baseline data should be collected before a change is introduced and ahead of any associated construction activities to ensure a representative baseline is established. The baseline should draw on primary data collection activities and also be supplemented by secondary data collected as part of ongoing activities to avoid unnecessary duplication and cost.
### Table 47. Monitoring Framework

<table>
<thead>
<tr>
<th>TRANSPORT PLANNING OBJECTIVE</th>
<th>INDICATOR</th>
<th>MEASUREMENT/SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPO 1 – Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area.</td>
<td>Average peak-period public transport journey times to Kirkcaldy, Dunfermline, Glenrothes, and Edinburgh.</td>
<td>Journey time surveys in the AM and PM peak.</td>
</tr>
<tr>
<td></td>
<td>Average journey time to key further educational facilities.</td>
<td>TRACC accessibility analysis to key destinations as per SEStran RTS monitoring.</td>
</tr>
<tr>
<td></td>
<td>Average journey time to the closest hospital.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average journey time to the closest community leisure facility.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average journey time to strategic employment sites.</td>
<td></td>
</tr>
<tr>
<td>TPO 2 – Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area.</td>
<td>Public transport mode share into and out of Levenmouth.</td>
<td>Scottish Household Survey.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Census Travel to Work data.</td>
</tr>
<tr>
<td>TPO 3 – Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area.</td>
<td>Labour market catchment population of the Levenmouth area.</td>
<td>Journey time isochrones to key destinations.</td>
</tr>
<tr>
<td></td>
<td>Retail and business unit occupancy rates.</td>
<td>Fife Retail Capacity Surveys.</td>
</tr>
<tr>
<td>TPO 4 – Enhance the Levenmouth area’s role as a tourist destination and a gateway to the East Neuk.</td>
<td>Average journey time to Edinburgh Airport and Edinburgh City Centre.</td>
<td>Journey time surveys in the AM and PM peak.</td>
</tr>
<tr>
<td></td>
<td>Overnight stay in the Levenmouth area.</td>
<td>No. overnight stays.</td>
</tr>
<tr>
<td></td>
<td>Fife Coastal path counts.</td>
<td></td>
</tr>
</tbody>
</table>

### 14.3 Evaluation Framework

14.3.1 Evaluation is undertaken at an appropriate time (for example, one and three or five years after opening of trunk road schemes). An early evaluation allows a check on key performance and that the project is operating as expected providing the opportunity for issues to be identified at an early stage and mitigated as far as possible. A further evaluation allows for a more detailed consideration of how the project is performing.
14.3.2 In summary, the evaluation process sets out to capture:

- Whether the project was delivered on time;
- Outturn costs compared to estimated cost;
- The performance of the project to achieving the Transport Planning Objectives; and
- How actual impacts compare to forecasts.

14.3.3 Rail Evaluation guidance\(^{31}\) has been developed by Transport Scotland to inform the evaluation of rail projects. The guidance sets out the key issues to consider and suggested steps to follow drawing on case study examples where possible. If a rail scheme were taken forward, the project should be evaluated in accordance with the rail evaluation guidance promoted by Transport Scotland.

15. SUMMARY AND CONCLUSIONS

15.1 Summary of Appraisal

15.1.1 The Levenmouth Sustainable Transport Study has been undertaken in accordance with STAG to identify options to improve sustainable transport to and from the Levenmouth area of Fife.

15.1.2 The Option Summary Tables (OSTs) in Table 48 and Table 49 summarise the result of the appraisal for Options A and B respectively. The sections below provide a discussion of the key findings.
### Option Summary Table

**Study Title:** Levenmouth Sustainable Transport Study  
**Option title:** Option A

<table>
<thead>
<tr>
<th>Summary of Impact on the five STAG criteria</th>
<th>Accessibility and Social Inclusion</th>
<th>Environment Integration</th>
<th>Safety</th>
<th>Economy</th>
<th>Impacts (Monetary and Non-Monetary)</th>
<th>Monetary only (£m)</th>
<th>Monetary impact ratio (if relevant)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>- - - - 0 + ++ +++</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td></td>
<td>0.3</td>
<td>0.05</td>
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<td></td>
<td></td>
<td>0.9</td>
<td>0.15</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>32.0</td>
<td>5.25</td>
</tr>
<tr>
<td></td>
<td>NPV: 25.6</td>
<td>BCR: 5.19</td>
<td></td>
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</tr>
</tbody>
</table>

Including Wider Economic Benefits

**Assessment against Transport Planning Objectives**

<table>
<thead>
<tr>
<th>TPO 1:</th>
<th>TPO 2:</th>
<th>TPO 3:</th>
<th>TPO 4:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

**Contribution toward the Government Purpose:**

- Improved access to local and wider city-region employment centres and education opportunities.
- Enhancement of public transport access to and from areas with levels of social deprivation below the national average, and including some of the most deprived areas of Scotland.
- Improved travel opportunities by public transport, supportive of an integrated transport network and integration between land use planning and the transport network.

**Capital Costs/grant (2010 Prices)**
- £1.2M

**Annual Revenue Support (2010 Prices)**
- £100K

**Present Value (FV) of Cost to Government**
- £6.1M
### STAG Criteria

<table>
<thead>
<tr>
<th>Accessiblity &amp; Social Inclusion</th>
<th>Implementability Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>The local routing of the services would enhance connections within the local area which includes some of the most deprived areas of Levenmouth to local employment areas, while also boosting access to the rail network at Markinch and through to Glenrothes.</td>
<td>Expected to be technically feasible, however, discussion would be required with public transport operators regarding provision of the services. Agreement would also be required with relevant parties concerning the fare adjustment.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety</th>
<th>Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved integration between bus and rail services would reduce wait time for connecting services. Real and perceived safety benefits from increased natural surveillance by an increase in service users. Minor impact on accident levels.</td>
<td>The existing bus fleet would require up to three new vehicles to cover the expanded service offering. At present, the X4 and 44B vehicles are used across multiple routes. As such, fleet scheduling may require review so branded vehicles are only operated on their dedicated route.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th>Financial</th>
</tr>
</thead>
<tbody>
<tr>
<td>As well as providing a link to Markinch Rail Station, this option would also strengthen links from some of the most deprived areas in Levenmouth to key employment sites within the area, including Cameron Bridge, Fife Energy Park and the Levenmouth SDA.</td>
<td>Relatively low cost to implement, although an annual subsidy would be required to operate the additional services.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Integration</th>
<th>Public Acceptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive of policies to promote access by alternative modes to the private car. No conflict with local plans and would complement access to future development sites.</td>
<td>Public opposition not expected. However, in isolation, this option may come under criticism of not doing enough to improve sustainable access to and from the Levenmouth area.</td>
</tr>
</tbody>
</table>

### Environment

Key baseline sensitivities and designations include a Candidate Noise Management Area (CNMA) in Glenrothes; proximity to the Firth of Forth Special Protection Area/Ramsar site and Site of Special Scientific Interest; Gardens and Designed Landscape at Bilbirnie and Letham Glen in Leven and conservation areas at Links Road, Markinch and Cadham Village. Key mitigation would also be expected to take account of the use of low emission vehicles to operate the new services to reduce emissions compared to current services/vehicles.

Overall, this option is expected to have neutral impact across the environmental sub-criteria. This reflects the option does not involve any new infrastructure and the changes in bus services associated with the option are not predicted to have significant effects on traffic related environmental effects such as roadside noise and air quality.

### Transport Planning Objectives

<table>
<thead>
<tr>
<th>Objective:</th>
<th>Description of Objective</th>
<th>Objective:</th>
<th>Description of Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPO 1:</td>
<td>Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area</td>
<td>TPO 3:</td>
<td>Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area</td>
</tr>
<tr>
<td>TPO 2:</td>
<td>Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area</td>
<td>TPO 4:</td>
<td>Enhance the Levenmouth area’s role as a tourist destination and a gateway to East Neuk.</td>
</tr>
</tbody>
</table>
Table 49. Option Summary Table – Option B

<table>
<thead>
<tr>
<th>Summary of impact on the five STAG criteria</th>
<th>Study Title: Levenmouth Sustainable Transport Study</th>
<th>Option title: Option B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option description:</strong> Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction.</td>
<td>Capital Costs/grant (2010 Prices)</td>
<td>£65.0M</td>
</tr>
<tr>
<td></td>
<td>Annual Revenue Support (2010 Prices)</td>
<td>£0</td>
</tr>
<tr>
<td></td>
<td>Present Value (PV) of Cost to Government</td>
<td>£61.0M</td>
</tr>
<tr>
<td><strong>Accessibility and Social Inclusion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Impacts (Monetary and Non-Monetary)</strong></td>
<td><strong>Monetary only (£m)</strong></td>
<td><strong>Monetary impact ratio (if relevant)</strong></td>
</tr>
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<td>- - - - 0 + ++ +++</td>
<td>7.4</td>
<td>0.12</td>
</tr>
<tr>
<td>- - - ++</td>
<td>4.1</td>
<td>0.07</td>
</tr>
<tr>
<td>- - - ++</td>
<td>92.3</td>
<td>1.51</td>
</tr>
<tr>
<td><strong>NPV:</strong></td>
<td>18.8</td>
<td><strong>BCR:</strong></td>
</tr>
<tr>
<td><strong>incluing Wider Economic Benefits</strong></td>
<td><strong>NPV(WEB):</strong></td>
<td><strong>BCR(WEB):</strong></td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td><strong>Assessment against Transport Planning Objectives</strong></td>
<td></td>
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</tr>
<tr>
<td>TPO 1:</td>
<td></td>
<td></td>
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<tr>
<td>TPO 2:</td>
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<td>TPO 3:</td>
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<td>TPO 4:</td>
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<td>- - - 0 + ++ +++</td>
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</tbody>
</table>

**Contribution toward the Government Purpose:**
Improved access to local and wider city-region employment centres and education opportunities.

Enhancement of public transport access to and from areas with levels of social deprivation below the national average, and including some of the most deprived areas of Scotland.

Improve travel opportunities by public transport and supportive of an integrated transport network and integration between land use planning and the transport network.

Support for inward investment and business activity through the provision of rail-freight opportunity.
<table>
<thead>
<tr>
<th>STAG Criteria</th>
<th>Implementability Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accessibility &amp; Social Inclusion</strong></td>
<td>Improved access with a direct link to the rail network, providing increased mode choice as well as increasing the catchment area that can be accessed by public transport within journey time thresholds.</td>
</tr>
<tr>
<td><strong>Safety</strong></td>
<td>Removal of car and HGV-km from the road network would offer accident benefits, combined with improved security for public transport users with waiting facilities designed to meet minimum design standards, including safety parameters in relation to, for example, CCTV provision.</td>
</tr>
<tr>
<td><strong>Economy</strong></td>
<td>Improved access to employment opportunities for the local population. Enhanced access to resource pool and suppliers/markets for businesses. Rail freight potential.</td>
</tr>
<tr>
<td><strong>Integration</strong></td>
<td>Supportive of policies to promote access by alternatives to the private car. Rail line safeguarded in local plans and would complement access to future areas identified for development.</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>Key baseline sensitivities and designations include a Candidate Noise Management Area (CNMA) close to the rail line in Kirkcaldy; proximity to the Firth of Forth Special Protection Area/Ramsar site and Site of Special Scientific Interest; sensitive receptors (residential properties) adjacent to the line of the railway; crossing of the railway line over the River Leven and River Ore; areas of land downstream of Cameron Bridge within the floodplain of the River Leven; Kennoway - Windygates Wildlife Site; conservation area at Links Road in Leven, areas of ancient and native woodland and listed building status of Cameron Bridge Distillery. Overall, this option is expected to have minor negative impact across the environmental sub-criteria (with the exception of local and global air quality). This reflects the option does involve the re-opening of a rail line and stations with associated construction work within the local area. Air quality benefits are primarily a consequence of forecast changes in vehicular and HGV traffic on the local road network.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Transport Planning Objectives</strong></th>
<th><strong>Objective:</strong></th>
<th><strong>Description of Objective</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>TPO 1:</td>
<td>TPO 2:</td>
<td>TPO 3:</td>
</tr>
<tr>
<td>Improve access to employment, education, healthcare and leisure destinations, both within and outwith the area, for the population of the Levenmouth area.</td>
<td>Encourage increased sustainable travel mode share for the residents and workforce of the Levenmouth area.</td>
<td>Ensure that transport infrastructure and services encourage investment in, and attract jobs and people to, the Levenmouth area.</td>
</tr>
</tbody>
</table>
Summary of Environmental Appraisal

15.1.3 The findings of the environmental appraisal indicate that Option A has the least potential for significant adverse environmental impacts. This reflects it does not involve any new development work and the changes in bus services associated with the option are not predicted to have significant effects on traffic related environmental effects such as roadside noise and air quality.

15.1.4 Option B involves more significant railway development proposals, but this is based almost entirely on re-opening of a former rail line and is generally not predicted to have significant environmental effects. Option B has potential for significant adverse noise impacts from construction and operation on receptors adjacent to the railway line, the extent of which would depend on the frequency and timing of passenger and freight rail operations. However, with mitigation, it is predicted that these effects would be unlikely to be significant.

15.1.5 The outputs of the demand forecasting indicate that Option B has a slightly greater potential compared to Option A to remove freight and car traffic from the road network as a result of modal shift. This option therefore has greater potential for beneficial impacts on roadside noise and local air quality and on global air quality, depending on the degree to which modal shift is achieved and on the nature and frequency of rail operations.

15.1.6 Overall, Option A is predicted to result in Neutral impact and Option B a Minor Negative impact on the Environment taking account of all the aspects that have been assessed.

Summary of Safety Appraisal

15.1.7 Both options show benefits to safety under the accidents and security sub-criteria; however, the benefits for Option A are relatively minor. In comparison, Option B scores a moderate benefit due to both the greater car km and HGV km removed from the roads for the accidents appraisal, as well as the security benefits brought about by the provision of new rail stations, which will be required to provide minimum (or better) standards of security measures as part of their design.

Summary of Economy Appraisal

TEE

15.1.8 Both Option A and Option B have a positive impact in terms of user benefits, but the impacts are greater with Option B. This is reflected in the benefits, particularly the significant decongestion benefits and environmental savings on the Scottish and UK road network resulting from Option B.

EALI

15.1.9 Investment in the local transport infrastructure and services to improve access to employment, markets, and supply chains provides the opportunity to increase the
attractiveness of the Levenmouth area for business activity, investment and employment opportunities. In terms of Economic Activity and Locational Impacts (EALIs) Option A scored a moderate benefit and Option B scored a major benefit.

15.1.10 Option A offers specific improvements in access to some of the most deprived areas of Levenmouth, including settlements south of the River Leven. It also strengthens links to key employment sites at Cameron Bridge, Fife Energy Park, and the Levenmouth Strategic Development Area, including housing and new educational facilities. The score for this option is a moderate positive, based on the expected impact on economic activity and looking at locational impacts.

15.1.11 Option B offers potential benefits related to enhanced connectivity with a number of areas across Levenmouth. Particular benefit is produced by improving links to Edinburgh. Linkages between the national rail network and local area may have a wider strategic benefit, if utilised, as well as the immediate local and wider economy in Fife. Key considerations in terms of rail freight include the provision of benefits to large-scale industry in the area, in particular Diageo operations. The addition of a rail freight link for the area may open up the type and scale of industry that can operate in the Levenmouth area potentially impacting on inward and external investment levels.

15.1.12 Consultation with Abellio ScotRail noted that there are no current plans to provide a Fife based train crew/stabling facility and a previous review found this would not to be an economically viable proposition. However, if circumstances changed in the future and a Fife based depot was reconsidered, the branch line to Leven could provide a potential location in close proximity to the main line. A depot in the area could be expected to generate local employment opportunities. Non-city based depots currently include Dumfries, Tweedbank and Bathgate, each with a sizeable staff base. A Fife based depot would also provide potential timetable benefits, both to existing and any new service operations.

### Summary of Integration Appraisal

15.1.13 Overall, the options positively contribute to integration across transport, land use, and policy. Both Options A and B are scored to offer moderate benefits overall.

15.1.14 For Transport Integration, benefits are likely to be associated with service and ticketing integration, especially for Option A which improves existing bus/rail connections by timetable matching and branding, with further integration of ticketing and information. Option B benefits from direct access to the rail network, simplification of ticketing requirements compared to multiple modes, and improved infrastructure and information from new stations. Furthermore, inclusion of a station situated within walking distance of the existing Leven Bus Station would improve integration of these modes.

15.1.15 For Land Use Integration, Option A, which includes improvements to integration of bus and rail from both Leven town centre, with a branded bus service, as well as the areas of Methil, Methilhill, Buckhaven, and Windygates, would provide improved access to the Energy Park and the Cameron Bridge (Distillery and Hospital) employment areas. There is no new infrastructure associated with this option and, as such, there is no associated land-take that
requires consideration. The service could also be routed to serve future development at the Levenmouth SDA.

15.1.16 Option B integrates well with the existing land use and future development proposals identified in the area. Land has been safeguarded for the re-opening of the rail line. The introduction of rail services is likely to help mitigate the travel demand impact of future development proposals in the area such as the significant development within the SDA.

15.1.17 In relation to Policy Integration both Option A and B would promote and encourage sustainable travel and therefore align with national, regional and local transport policy as well as wider policy drivers such as movement towards a lower carbon transport network. Option B is noted to have a larger impact that Option A in relation to sustainable transport impacts.

15.1.18 The options would also support wider policy drivers. For example, Options A and B would support social and economic prosperity and Option B would provide added benefit of helping to support inward investment and job creation in the local area as well as the transfer of road based freight to other modes.

Summary of Accessibility and Social Inclusion Appraisal

15.1.19 Both options score well across the Accessibility and Social Inclusion appraisal criteria, each achieving a moderate positive scoring.

15.1.20 Option A would enhance connections to Methil, Windygates and Buckhaven, while boosting access to the rail network at Markinch and through to Glenrothes. The local routing of this service maximises its accessibility (and the onward rail network) by foot and by bicycle, helping to facilitate non-car access to key services and facilities.

15.1.21 Option A also improves access to areas with some of the highest levels of the problems noted above, such as Methil and Buckhaven. Fare re-balancing as part of this option may also improve access to the rail network for proportions of the community, in terms of affordability.

15.1.22 Option B would help improve accessibility, providing a direct link to the wider rail network from the Levenmouth area at Cameron Bridge and Leven. This includes diversification of mode choice as well as increasing the catchment area that can be accessed by public transport within a set journey time. Interchange at Inverkeithing would provide connection with Fife Circle services in order to access Dunfermline and other destinations in west Fife. Services to the north, for example to Aberdeen, Dundee, Perth would be achieved via Kirkcaldy.

15.1.23 It can also be expected that commuters from the wider area, e.g. from the East Neuk, would be attracted to use the rail services, with stations including Park and Ride facilities. The higher cost of rail fares was raised by some at the public consultation drop-in events as a potential barrier, especially for parts of the study area where levels of deprivation are particularly high.

Summary of Transport Planning Objectives Appraisal

15.1.24 For TPO 1, which centred on improving access to employment, education, health and leisure Option B scores a moderate benefit while Option A would achieve minor benefit. Similar
impacts are expected in relation to TPO 2 with regard to promoting mode shift towards sustainable mode share. The difference in scoring reflects the expected wider catchment of rail supported by Park and Ride facilities at Cameron Bridge.

15.1.25 For TPO 3, **Option A** scores a minor impact in terms of attracting inward investment. **Option B** is expected to have a larger benefit in terms of attracting inward investment, primarily as a consequence of the rail-freight potential this option would bring to the area and support activities of current as well as potential new businesses.

15.1.26 In relation to the tourism TPO 4, **Option A** scores a minor benefit as it offers a longer distance connectivity benefit to the central Levenmouth area. **Option B**, as well as supporting local and regional access, provides the opportunity for a direct rail link from the area to Edinburgh, including the airport (via the Edinburgh Gateway Station on opening) and therefore scores a moderate benefit in terms of attracting tourists to the area. Tourism marketing initiatives would serve to help further encourage tourist travel to the Levenmouth area and complement investment in the local transport network.

**Cost-Benefit Analysis**

15.1.27 Both **Option A** and **Option B** would achieve a Benefit Cost Ratio (BCR) of 5.19 and 1.31 respectively. The BCR for **Option A** is higher reflecting the low investment and maintenance costs, but an annual operating subsidy would be required to cover costs associated with the additional service operations not covered by revenue generated. While **Option B** would not achieve as high a BCR the overall benefits and contribution to the study objectives is greater and the smaller return reflects the higher investment, operating and maintenance costs.

15.1.28 A sensitivity test was also undertaken to assess the impact of enhancing the public transport network by investment in both bus and rail. The sensitivity test reported a BCR of 1.48. The option would serve to provide further increased choice into the public transport network and help to strengthen access across communities in the Levenmouth area to employment, education, health and leisure opportunities and further build up demand for public transport.

**Technical Feasibility**

15.1.29 **Option A**, bus and rail integration, is expected to be technically feasible, however, it would require discussion with public transport operators regarding provision of the services. Fare equalisation proposals for this option, while not representing technical feasibility issues, will also require significant effort in terms of negotiation and agreement.

15.1.30 Re-opening of the existing out-of-use rail line to passenger rail and potentially freight rail use (**Option B**), would require re-design and construction of the line to bring it up to passenger rail standard. While this is a major undertaking, the option is technically feasible with a live line having operated previously and known circumstances (subject to full detailed investigation of the existing line were this option taken forward). As noted in Section 12.7, maintenance issues around Leven Railway Bridge also require consideration.
Operational Feasibility

15.1.31 **Option A** would be delivered by the existing bus fleet supplemented by new vehicles to serve the additional 44B equivalent services. At present, the X4 vehicles are used across multiple routes. As such, there may be a requirement to review the fleet scheduling so branded vehicles were to operate only on their dedicated route. Continued collaborative working would be required between Fife Council and Stagecoach in the provision of bus services to and from the Levenmouth area.

15.1.32 In terms of train operations for **Option B**, a number of operational considerations have been highlighted, such as removal of intermediate stops to avoid the extended layover at Leven, and integration with other future rail proposals. Section 12.7 explores these issues in more detail. If a rail option were progressed, operational considerations and future timetables should be advanced in the context of wider changes that would have a direct impact on the operation of a rail service to and from Levenmouth.

Financial Feasibility

15.1.33 **Option A**, bus and rail integration, would be relatively affordable, although there would be costs associated with improved service frequency and implementation and maintenance of the branding exercise. Fare equalisation may also incur a cost in terms of a reimbursement agreement, and would need to be further investigated if taken forward to the detailed appraisal.

15.1.34 For **Option B** there would be significant costs associated with maintenance and operation of the line and changes to rail franchise agreements would also need to be considered. Provision of rail freight facilities may also incur ongoing associated costs. Maximising the number of freight users would support the viability of the line in terms of costs and benefit from the level of freight movement occurring. Depending on the type of service introduced, operating costs may require subsidy.

Public Acceptability

15.1.35 In terms of public acceptability, **Option A** is not expected to receive public opposition. However, it is noted that implementation of this option alone may come under criticism as it may not be seen to be doing enough to overcome the problems and issues identified.

15.1.36 **Option B** would involve re-opening of an existing rail line that is safeguarded in local development plans, negating much of the additional land take requirements that would be required with the opening of a completely new line. Within the local community, comment forms and verbal feedback received at the consultation undertaken in October 2015, noted that there was support for the re-opening of the rail line. The associated connectivity enhancements were viewed to provide benefit in terms of access to employment, education, health, and leisure facilities, as well as stimulating business activity and investment in what is a deprived area. The higher cost of rail fares was also raised by some at the public
consultation drop-in events as a potential barrier, especially for parts of the study area where levels of deprivation are particularly high.

15.2 Conclusions

15.2.1 This report has presented the findings of the Levenmouth Sustainable Transport Study.

15.2.2 One of the fundamental purposes of the STAG process is to ensure consideration of the wider picture encompassing all of the STAG criteria, Transport Planning Objectives, Implementability, and Public Acceptability.

**Option A - Integration of bus services in the Levenmouth Area with existing rail provision at Markinch.**

15.2.3 **Option A** performs positively across the different STAG criteria, showing a moderate benefit to integration and accessibility and social inclusion as outlined above. However, in relation to safety and each of the four Transport Planning Objectives of the study, this option only represents a minor benefit. It is expected to have a neutral environmental impact.

15.2.4 In relation to **Option A’s** economy scoring and its value for money, the positive BCR reflects the associated low investment and operating costs of this option. However, it should be noted that the economic benefits and monetised benefits of the option are significantly lower than **Option B**. This option would require an annual subsidy to offset the additional operating costs not covered by revenue generated.

15.2.5 While **Option A** would be positive for Levenmouth area, the scale of these benefits are unlikely to be sufficient to have a major, or even a moderate, impact on achieving the objectives set in this study and tackling the significant problems of the Levenmouth area (as outlined in Section 3.2 of this report).

**Option B - Provision of a rail line along the alignment of the existing, but out-of-use, rail line between Thornton North Junction and Leven.**

15.2.6 **Option B** performs well across the different STAG criteria, showing a moderate benefit to integration, safety, and accessibility and social inclusion as outlined above. It also scores a moderate benefit to each of the four Transport Planning Objectives of the study. It is expected to have a minor negative environmental impact overall.

15.2.7 The higher investment costs in **Option B** result in the scheme providing a lower, yet positive, benefit-cost ratio than Option A at this stage. The scheme also scores as being of major positive economic benefit to the Levenmouth area, with the potential to significantly benefit users and enhance business activity, investment and employment opportunities.

15.2.8 **Option B** would have a significant positive impact on the Levenmouth area, including tackling the significant problems outlined in Section 3.2 of this report and the delivery of the planning objectives identified for the study.
15.2.9 In summary, while either option could be progressed independently to the benefit of the Levenmouth area, only **Option B** offers the potential to deliver the study’s Transport Planning Objectives to a significant degree. Therefore, if a single Option was to be chosen to help deliver the TPOs identified for this Study, then we would recommend the rail option (Option B).

15.2.10 However, it should be noted that neither of these two Options preclude the other, so that both could be progressed in parallel. Bus services play an important role in the transport network, particularly in areas of deprivation, and rail would expand the public transport offering and freight connections to markets and suppliers. This would provide additional bus services south of Levenmouth to access local destinations as well as strengthen the bus-rail integration at Markinch to bring forward a ‘quick win’ in the short-term, followed by the more-expansion of the public transport offering to/from Levenmouth through the re-opening of the rail line in the longer-term.

15.2.11 We would strongly recommend that Transport Scotland and Fife Council work together to commission a Level 3 Governance for Railway Investment Projects (GRIP3) design as soon as possible, to address the uncertainties over the timetabling and the costs of the rail infrastructure and to enable the level of optimism bias uplift which is applied to these costs to be reduced (from 50% to 18%).
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For more information visit www.systra.co.uk

SYSTRA Ltd Offices

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

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

**Edinburgh**
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

**London**
Seventh Floor, 15 Old Bailey
London EC4M 7EF United Kingdom
T: +44 (0)20 7529 6500

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

**Newcastle**
PO Box 438, Newcastle upon Tyne, NE3 9BT
United Kingdom
T: +44 (0)191 2136157

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

**Selected SYSTRA Group Offices**

**Abu Dhabi**
AS Business Centre, First Floor, Suites 201-213,
Al Ain Road, Umm al Nar, P.O. Box 129865,
Abu Dhabi, UAE
T: +971 2 558 3809

**Hong Kong**
14th Floor West, Warwick House, TaiKoo Place,
979 King's Road, Island East, Hong Kong, China
T: +852 2529 7037

**Lille**
86 Boulevard Carnot, 59000 Lille, France
T: +33 (0)3 74 07 00

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

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

**Mumbai**
Antriksh, Unit no. 301, 3rd Floor, CTS Nos. 773, 773/1 to 7, Makwana Road, Marol, Andheri East, Mumbai 400069, India
T: +91 22 2647 3134

**New Delhi**
5th Floor Guru Angad Bhawan, 71 Nehru Place,
New Delhi 110019, India
T: +91 11 2641 3310

**Paris**
72 rue Henry Farman, 75015 Paris, France
T: +33 (0)1 53 17 36 00

**Wroclaw**
ul. Świętego Antoniego 2/4 Brama B
50-073 Wroclaw, Poland
T: +48 71 73 36 470