



SEStran Clackmannanshire Bus Study  
Final Report

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## Final Report

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## SEStran Clackmannanshire Bus Study

### Report

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# Contents

1	INTRODUCTION .....	1
	Purpose of the Study .....	1
	Appraisal Process .....	1
	Report structure .....	1
	Study Methodology .....	2
2	BACKGROUND INFORMATION.....	4
	Introduction .....	4
	Social, Economic and Environmental Context .....	5
	Transport Network .....	9
	Development Proposals .....	29
	Participation and Consultation.....	31
3	ESTABLISHED POLICY DIRECTIVES .....	36
	Scotland's National Transport Strategy .....	36
	SEStran Regional Transport Strategy (RTS) 2008-22 .....	37
	Clackmannanshire Local Transport Strategy (LTS) 2006-09 .....	38
	Clackmannanshire Council Local Plan .....	40
	Objective.....	40
	Clackmannanshire and Stirling Structure Plan.....	40
	Summary .....	41
4	SURVEYS.....	42
	Questionnaire Results .....	42
5	SUMMARY OF KEY ISSUES.....	44
6	TRANSPORT PLANNING OBJECTIVES .....	46
	Links to criteria within STAG .....	48
	Links to criteria within NTS .....	49
	Links to SEStran Regional Transport Strategy.....	50
	Links to Local Transport Strategy.....	53
	Links to Consultation Objectives .....	55
7	OPTION GENERATION, SIFTING AND DEVELOPMENT.....	57
	Do-Minimum and Reference Cases .....	57
	Option Generation .....	57
8	DEVELOPMENT OF PREFERRED OPTIONS.....	66
	Participation and Consultation.....	66
	Option Development.....	68
9	DETAILED APPRAISAL .....	75
	Appraisal of Preferred Packages against Transport Planning Objectives .....	75
	Appraisal against STAG Criteria .....	81

Environment .....	81
Safety.....	83
Economy.....	85
Integration.....	91
Accessibility and Social Inclusion.....	93
10 LIABILITIES TO CLACKMANNANSHIRE COUNCIL.....	97
11 RISK AND UNCERTAINTY .....	99
12 SUMMARY .....	101
13 IMPLEMENTATION PROGRAMME.....	103

## Tables

Table 2.1 Summary of Bus Services serving Alloa Town Centre .....	11
Table 2.2 Bus Frequencies to Alloa from Clackmannanshire Villages (per hour) .....	14
Table 2.3 Estimated Annual Patronage for Alloa Rail Station (2008-12).....	19
Table 2.4 Draft Timetable Stirling - Alloa prior to Stirling Middle junction remodelling .....	22
Table 2.5 Draft Timetable Stirling - Alloa after Stirling Middle junction remodelling .....	23
Table 2.6 Main off Street Car Parks, Alloa Town Centre .....	28
Table 2.7 Consultation Comments.....	32
Table 3.1 Clackmannanshire Action Plan .....	39
Table 4.1 Settlements by zone.....	43
Table 5.1 SWOT Analysis .....	45
Table 6.1 Links between Outcome and Transport Planning Objectives .....	47
Table 6.2 Links between Transport Planning Objectives and criteria within STAG.....	48
Table 6.3 Links between Transport Planning Objectives and objectives within National Transport Strategy.....	49
Table 6.4 Links between Transport Planning Objectives and objectives set within Regional Transport Strategy.....	52
Table 6.5 Links between Transport Planning Objectives and objectives set within Clackmannanshire LTS.....	54
Table 6.6 Links between Transport Planning Objectives and objectives set within initial Stakeholder consultation.....	56
Table 7.1 Initial Option Sift Against Output Objectives .....	59
Table 8.1 Preferred packages of measures.....	74
Table 9.1 Walking Distances from Public Transport locations to Key Town Centre Destinations (metres).....	76
Table 9.2 Peak Time Bus Journey Time Summary .....	79
Table 9.3 Capital and Operating Costs (£000) .....	85
Table 9.4 Predicted number of users of Alloa Station.....	86
Table 9.5 Predicted Bus/Rail Interchangers in Year 60 .....	87
Table 9.6 60 Year Discounted Operator Benefits (£000s).....	88
Table 9.7 Values of Interchange Station Facilities .....	89
Table 9.8 Value of Journey Time Effects (£000s).....	89
Table 9.9 Summary of Economy Indicators (60-year present value).....	90
Table 9.10 Bus/Rail Co-ordination – Monday-Friday .....	94
Table 9.11 Bus/Rail Co-ordination: Saturday.....	95
Table 9.12 Bus/Rail Integration - Sunday .....	96
Table 10.1 Costs to Clackmannanshire Council (£000).....	98
Table 12.1 Summary of Contributions to Planning Objectives.....	102

## Figures

Figure 2.1 Shillinghill Bus Stance, Alloa.....	16
Figure 8.1 Junction Place: Maclays 'Still' .....	70
Figure 8.2 King Street Car Park .....	72
Figure 8.3 Leven Bus Station.....	73
Figure 9.1 Journey Time Section .....	79

## Appendices

Maps	
Social & Environmental Context Tables	
Consultees	
Option Plans	
Surveys	
Modelling Report	
Capital Costs	
Clackmannanshire Bus Frequencies	
AST Tables	
Benefit: Cost Analysis	

# 1 Introduction

## Purpose of the Study

- 1.1 The Stirling – Alloa corridor is currently the subject of significant capital investment with the re-opening of the Stirling – Alloa – Kincardine rail line. This has seen the resumption of direct rail passenger service between Alloa – Stirling – Glasgow, with good connection at Stirling and Larbert for onward travel to Edinburgh.
- 1.2 An important element of the success of the new rail service is seen to be the integration between bus and rail in Alloa. JMP was commissioned by SEStran to undertake a study to investigate how to improve access to Alloa and the rail network by bus, including what impact such changes or additions may have, and on the level of financial support that may be required.
- 1.3 This study, therefore, assesses the potential for linking local bus services with rail at the new Alloa station. It assesses what impact this may have on the bus network and existing passengers as well as what level of patronage is likely to interchange between bus and rail at Alloa.
- 1.4 Additionally, the study investigates the potential alterations to the management of the road network and the provision of bus infrastructure and facilities in Alloa town centre, to allow better integration between bus and rail and to improve access to the town centre by bus.

## Appraisal Process

- 1.5 The method we have chosen to develop our options where appropriate follows the process defined in STAG to ensure an objective led approach. We have, therefore, undertaken considerable pre-appraisal work and have continued this with more detailed appraisal work relative to the options being developed. The method applied and detail of assessment are proportionate to the scale of impacts being considered.
- 1.6 Appraising the options in this manner will enable the Council to have all the necessary information presented in a form to enable them to consider the recommended proposals further and include them in their Local Transport Strategy.

## Report structure

- 1.7 The first eight chapters report the extensive pre-appraisal work which we undertook to get to our preferred options. Chapter 9 to 11 appraise these options in detail and these are then summarised in the Appraisal Summary Tables (ASTs) in Appendix I. Chapter 12 outlines our recommended option and a realistic implementation plan follows in Chapter 13.
- 1.8 Additional technical reports providing further background data including the report of the VISSIM modelling exercise, the questionnaire results and consultation responses are included in the technical appendices along with plans of the different final options.

# Study Methodology

## Data Collection

- 1.9 A number of methods were used to obtain the data required for the study, including the following:

## Stakeholder Engagement

- 1.10 The initial inception meeting with representatives from SEStran and Clackmannanshire Council clarified the key stakeholders (as listed in appendix C) that would be consulted as part of the study. Consultation of this key group was by face-to-face interviews in order to obtain a clearer picture of the current use of bus as well as identify key issues that could lead to improve bus/rail integration. Details are reported in chapter 2.

## Modelling

- 1.11 JMP have replicated Alloa town centre using VISSIM v5 based on a model supplied by Clackmannanshire Council, which was initially built and developed by Jacobs.
- 1.12 The Jacobs model has been developed to provide a tool to assess options. The model provides output characteristics which allow option comparisons particularly related to journey times (see appendix F)
- 1.13 It is the purpose of this report to compare the journey time results between each of the developed options and the base model which represents the existing situation. The results of this comparison will show which options are most effective.

## Bus Data

- 1.14 We sought electronic ticket machine (ETM) data from bus operators and Clackmannanshire Council for services using the stance at Shillinghill, Alloa. Stagecoach in Fife supplied, in commercial confidence, patronage data from their main commercial route, but no data was supplied from any other source. The data was therefore supported by surveys of both rail and bus passengers, which took place following the introduction of rail services<sup>1</sup>. The purpose was to ascertain origin, destination, journey purpose and mode as well as a number of stated preference questions to determine what would improve interchange. Details are reported in chapter 4 and Appendix E of this report. The data collated from these surveys was used predominantly to develop quantitative analysis of proposals outlined in the detailed appraisal.
- 1.15 Details of all registered local bus services were provided by Stirling and Clackmannanshire Transport Co-ordination Centre and were used to determine if there were any gaps in the existing bus network. Information was also supplied by the Council on existing passenger information units.

## Bus Infrastructure

- 1.16 Stirling and Clackmannanshire Transport Co-ordination Centre supplied full details of all bus infrastructure in Clackmannanshire, detailing bus stops, bus shelters and bus information units, outlining their condition.

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<sup>1</sup> Surveys undertaken by SEStran and Clackmannanshire Council staff between 25 – 29 August 2008



### Rail Data

- 1.17 Data relating to the rail industry was collected from First ScotRail and Network Rail. First ScotRail were able to supply patronage forecasts for the first four years of operation of the rail service, this has since been updated with actual figures from the first three four week periods of the line's operation.

## 2 Background Information

### Introduction

- 2.1 Rail passenger services were introduced between Stirling and Alloa in May 2008. The last passenger services had been withdrawn 40 years ago. The project has included 13 miles of newly reinstated line from Stirling to Kincardine with passenger services being provided on that part of the line between Stirling and Alloa.
- 2.2 The case for reopening the railway was made to improve public transport accessibility to Alloa, reduce pressure on the Forth Bridge, and improve efficiency and increase capacity transporting coal to Longannet Power Station. Other stated benefits included the opportunity to attract inward investment to the area, increase integrated transport opportunities for commuting, education, leisure and tourism and promote modal shift therefore reducing congestion and improving air quality.
- 2.3 The new line is served by a new passenger train station in Alloa close to the former structure at Alloa. The new service will provide an hourly direct link to Glasgow seven days a week, taking 12 minutes to travel to Stirling and approximately 55 minutes direct to Glasgow. Edinburgh is served by changing at Stirling; overall journey time from Alloa to the capital city is 80 minutes.
- 2.4 The impact and influence of transport on Clackmannanshire continues to be a major factor in ensuring that the area remains vibrant and an attractive location for businesses. The completion of the Stirling-Alloa-Kincardine railway and Clackmannanshire Bridge west of Kincardine will provide Clackmannanshire with strategic transport links required to stimulate investment and employment opportunities. Both are of critical importance to the regeneration of Alloa, and Clackmannanshire in general. These major transportation projects will provide a further boost to the economy by increasing the accessibility of the area and ease pressure on the Stirling – Alloa A907 corridor
- 2.5 The economy of Clackmannanshire has undergone a massive restructuring following the gradual loss of its three main industries, mining, textiles and brewing. This restructuring has led to a dramatic change in the economy with the area being transformed. Much of the employment base is no longer concentrated in the traditional sectors but in a growing number of small businesses that are being established leading to Clackmannanshire recording the third highest economic growth rate in Scotland (7.1% from 2001 - 2006).
- 2.6 Although the overall economic growth rate is on the increase there are still severe economic difficulties throughout the area, particularly in pockets such as South and East Alloa and Tullibody. Unemployment rates at 2.6% in April 2008 are higher than those for Forth Valley and Scotland, although the gap has been narrowing in recent years.
- 2.7 Alloa is seen as a strategic shopping centre for Clackmannanshire and its development is key to enable Alloa to compete effectively with the strong retail attraction of towns such as Stirling and Falkirk.
- 2.8 However, within the Clackmannanshire Council area there is a housing shortage. The Clackmannanshire and Stirling Structure Plan estimated there will be a demand for over 3,500 additional houses in the Clackmannanshire Housing Market Area between 1998 and 2017. This demand is mainly driven by a national trend towards fewer people living in each household, despite a local trend of declining population in Clackmannanshire.

- 2.9 New housing development over recent years has been concentrated to the west of Alloa in both Menstrie and Tullibody. Future areas of larger development have been identified around Clackmannan, to the east of Alloa town centre, and in Forestmill where development of a 'Leisure and Energy Conservation Village' is planned.

## **Social, Economic and Environmental Context**

- 2.10 This section details the social and environmental issues that are relevant to the study. For full details see Appendix B.

### **Social**

#### **Population**

- 2.11 Clackmannanshire covers an area of 159 square kilometres, making it the smallest council in mainland Scotland. The population of Clackmannanshire is just over 48,000 recorded at the mid 2006 estimates by Scottish Registration Office. Alloa is the main town with a population of 19,000 people. Clackmannanshire's population equates to a density of 3.03 people per hectare.
- 2.12 The breakdown of the population by age shows that it is similar to the Scottish average. As with the rest of Scotland the national projections outline there is expected to be a significant growth in population over 65, that part of the population which is more reliant on public transport. (See Appendix B, Table B.1)

#### **Social Exclusion**

- 2.13 The Scottish Government's "Scottish Index of Multiple Deprivation (SIMD) 2006" website was consulted to determine the deprivation characteristics within Clackmannanshire.
- 2.14 The SIMD 2006 divides Scotland up into 6,505 small geographical areas (called 'data zones'), with a median population size of 769. These are ranked from 1 (most deprived) to 6,505 (least deprived) using 37 indicators of deprivation across seven categories or domains: current income, employment, health, education, geographic access to services, housing and crime. In terms of public transport, time taken to access GPs, shopping facilities and Post Office by this mode are all taken into account.
- 2.15 Local authority areas with the largest local share of the 15% most deprived in SIMD 2006 are Glasgow City (48%), Dundee City (30%), West Dunbartonshire (28%), with Clackmannanshire ranked just behind these authorities on 23%.

#### **Car Availability**

- 2.16 The availability of a car to householders in Alloa is slightly below the national average (65.3% compared to 65.8%). The figure in Clackmannanshire as a whole is higher at 70.5% partly due to the high average figure (85.3%) in Dollar; this is believed to reflect the dispersed settlement pattern rather than high average incomes. (See Appendix B, table B.2)

#### **Health**

- 2.17 Just over 24% of Clackmannanshire's population are classed as economically inactive people who are permanently sick or disabled; this is approximately 3% higher than the national average (21.25%).

- 2.18 A limited long term illness (LLTI) covers any long term illness, health problem or disability which limits the daily activities or work a person can do. It is often the case that people within this category are more reliant on public transport. Walking distances to and from the stops as well as any interchange becomes a greater issue for those with mobility problems compared to more able bodied people. Clackmannanshire is similar to Scotland overall with 21.60% having an LLTI compared to Scotland with 20.31%. However the figure for Alloa is higher with 23.40%. (See Appendix B, Table B.3 & B.4)

## **Economy/Employment**

### ***Travel to Work***

- 2.19 Population by settlement within Clackmannanshire (See Appendix B, Table B.5) reveals a predictable reliance on the private car, with driver and passenger far above all other modes. This reflects the area's classification within the Scottish Executive Urban/Rural Classification Statistics by Local Authority as 'Other urban area'.
- 2.20 Out of the 7,507 residents of Alloa who are currently in employment, 73.7% use the car to travel to work, as driver or passenger. For Clackmannanshire the overall figure is higher still at 74.95% compared to Scotland as a whole at 64.43%.
- 2.21 Bus use compares with other small accessible towns in Scotland at 6% against the national average of 7%<sup>2</sup>. Bus usage, however, as the preferred mode of travel to work is highest in Clackmannan at 16.9%. Prior to the reintroduction of rail services within Clackmannanshire the nearest rail head was Stirling with 0.8% travelling to work by rail from Stirling. A higher percentage for train use was seen from the western Hillfoots villages of Menstrie and Alva where distance to the rail head is shorter.
- 2.22 A large proportion of residents walk to work, reflecting the local based economy in some of the outlying settlements. Within Alloa this accounts for 25% of travel to work figure.
- 2.23 The distance travelled to work within Clackmannanshire is comparable with the figure nationally with 38% travelling less than 2km to work. (See Appendix B, Table B.6)

### **Road Safety**

- 2.24 Across Clackmannanshire and Scotland the number of road accidents is decreasing, despite the increase in traffic levels. Past initiatives such as drink driving and seat belt campaigns have had considerable influence over the number and severity of accidents, as have recent improvements to in-car safety and vehicle design. Clackmannanshire is progressing regarding casualty reduction; however because of the small size of the council the number of accidents resulting in KSI casualties (Killed and Seriously Injured) is quite small but large fluctuations may arise from year to year, consequently five year averages are normally used for comparison. (See Appendix B, Table B.7).

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

2.25 The Council's Road Safety Plan 2006-2009 outlines the way forward with a series of aims and objectives:

*"In order to contribute to meeting the national road safety targets and to carry out the Council's statutory duties, the overall objectives of the road safety plan are to:*

- Improve the transport environment to reduce actual and perceived safety hazards.
- Determine the types and extent of the road safety issues.
- Identify a programme of measures to address them.
- Inform local people and businesses about road safety and the measures they can take to improve their own safety and the safety of others."

### **Environment**

2.26 This section summarises the key environmental attributes within the study area as follows:

- Noise and vibration;
- Air quality;
- Water quality, drainage and flood defence;
- Geological features;
- Biodiversity and habitats;
- Visual amenity;
- Agriculture and soils;
- Cultural heritage; and
- Landscape.

### **Noise and vibration**

2.27 Transport is a major source of noise. Noise exposure can have an adverse impact on human health and the perceived quality of life. Nuisance arising from noise exposure varies greatly between individuals, but generally at the community level there is a reasonable correlation between physical measurements of noise and annoyance response. However, people react differently to noise from different modes of transport and at the strategic level effects will be more difficult to quantify because the relationship between the key variables of source and receiver will be unclear.

2.28 The interventions under consideration are aimed at improving integration with the rail station and access to the town centre. These may lead to an alteration in the volume and classification of traffic over certain areas and therefore increase noise and vibration. This criterion should therefore have further analysis to ensure that the developed options are not severely affected by increase in noise and vibration.

### **Air Quality**

2.29 The Council has a duty to monitor local air quality, in order to ensure the various air standards specified in legislation are achieved. The data available to date indicates that the air quality standards, as specified in the legislation, are being achieved, with monitoring ongoing.

### *Water quality, drainage and flood defence*

- 2.30 Parts of Clackmannanshire are prone to flooding, particularly on land around the main rivers: the Devon, the Black Devon, the Forth and their tributaries. None of the potential areas are within Alloa town centre. It is therefore unlikely to be of major significance in the decision making process on any of the options. No further detailed assessment is required.

### *Geological features*

- 2.31 No sites were discovered of particular importance or with significant mineral reserves within the specific area of the study. It is therefore unlikely to be of major significance in the decision making process and no further detailed assessment is required.

### *Biodiversity and habitats*

- 2.32 The development of transport infrastructure has a number of potential effects on biodiversity, including direct damage to important nature conservation sites or the habitats of protected species as well as disturbance of habitats and species due to factors such as noise, light pollution and contaminated run-off which may depress populations.
- 2.33 Clackmannanshire has many areas that are recognised as being of national or international importance, protected by European and UK laws. This is reflected in the policies of the Local Plan which also seeks to ensure that valuable local ecological resources are not diminished or lost while justifiable development is not precluded. It is also recognised that nature conservation interest is not confined to designated sites. Sites such as Local Nature Reserves (LNRs), Listed Wildlife Sites (LWSs) (often on privately owned land closed to the public, identified following consultation with Scottish Natural Heritage and the Scottish Wildlife Trust) and long established woodlands can all have great local significance. The Council also contains a number of SSSI sites, although these should not be affected by the scope of this study.
- 2.34 Currently there are no areas of environmental concern or specific nature sites that would be affected within Alloa town centre. It is therefore unlikely that the consideration of biodiversity and habits will be of major significance in the decision making process for the study. No further detailed assessment is required.

### *Visual amenity*

- 2.35 Transport options can have a significant impact on the quality of panoramas, specific views and the visual environment of sensitive receptors. This is particularly so where new infrastructure is introduced into an established scene, where the intensity of traffic movements increases or where new lighting is provided in formerly "dark" areas. The visual amenity should be considered in more detailed appraisal of specific options.

### *Agriculture and Soils*

- 2.36 The loss or severance of agricultural land by new transport infrastructure was not considered to be an issue so it is unlikely to be of major significance in the decision making process. Further detailed assessment will not be required.

### **Landscape**

- 2.37 The visual appearance of linear transport infrastructure (both the infrastructure itself and the traffic it carries) can have a major impact on the existing landscape. Major trunk roads and railways must have gentle curves and gradients consequently they often need long, high and visually dominant bridges, cuttings, embankments, etc. The built environment and townscape character might also be affected. Overall the change in visual appearance will have negligible impact and no further appraisal is required.

### **Cultural Heritage**

- 2.38 Clackmannanshire's Local Plan states that:

*“Clackmannanshire has a rich built heritage representing many periods of Scotland's past and comprises an essential component of the landscape of the area, helping to give Clackmannanshire its identity. The protection and enhancement of this heritage is vitally important. Development Plan policies will ensure the preservation, conservation and enhancement of Listed Buildings, Conservation Areas, Nationally Important Gardens and Designed Landscapes, notable archaeological remains and other valuable elements of the built heritage.”*

- 2.39 Within Alloa town centre there are a number of listed buildings and these will need to be taken into consideration in further development of options.

### **Summary**

- 2.40 After examining the environmental attributes and characteristics of the study we consider that those of water quality, drainage and flood defence, geological features, biodiversity and habitats, agriculture and soils and landscape will have negligible or no impact on the options to be considered and do not need to be considered in more detailed appraisal.

## **Transport Network**

- 2.41 This section summarises the existing transport network and use in the Alloa area.

### **Bus Services**

#### **Bus Network**

- 2.42 There are five operators of scheduled bus services within Clackmannanshire. The main operator is First Edinburgh, a subsidiary of First Group. The subsidiary of the Stagecoach Group, Stagecoach in Fife, operates both commercial and supported services within the Council area. Locally owned Mackies of Alloa competes with First Edinburgh along the key Alloa – Stirling corridor while the two remaining operators (Wheelchair Accessible Vehicles Enterprises Ltd (WAVE) and Hunter's Executive Coaches) operate supported services on behalf of the Council. A list of bus frequencies can be found in table 2.1. In summary:

- the majority of services in Clackmannanshire serve the main town of Alloa;
- all the major settlements of the Clackmannanshire Council area have direct bus links to Stirling;
- 85% of the services are commercially operated by First Edinburgh, Mackies of Alloa and Stagecoach which reduces the opportunity to revise the network unless viability of bus services can be maintained;

- the network comprises predominately inter-urban commercial services operating along two key corridors, Kincardine – Stirling (A907) and Tillicoultry – Stirling (A91) with the gaps being filled by Clackmannanshire Council supported services;
- north-south movements are restricted by the lack of bridge crossings over the river Devon, the main route is via A908 Moss Road at Tillicoultry;
- free travel on buses for elderly and disabled people will reduce those willing to change to the train for journeys to Stirling;
- First Edinburgh operates a 20 minute circular service from Stirling via Hillfoots and the University then to Alloa and Tullibody and provides a similar frequency on the Stirling – Alloa – Clackmannan corridor;
- Mackies of Alloa provide a half hourly service competing with First Edinburgh and Stagecoach on the Stirling – Alloa – Clackmannan corridor;
- services operate directly into the centre of Alloa via Drysdale Street and Shillinghill with all services stopping at the main town centre bus stance in Shillinghill; and
- services travelling westbound (to Stirling) from Clackmannan or Tillicoultry are required to use the former Ring Road (now King Street) twice to serve Shillinghill Bus Stance as Shillinghill is one way for all traffic. This provides limited possibilities to divert services without severe financial penalties to the operators.
- frequencies of bus services at the AM and PM peaks Monday to Saturday are adequate from most settlements in Clackmannanshire (highlighted in table 2.2). This level of service is maintained throughout the off peak during the day. Services in line with demand decline in the evening and particularly on Sunday. The low frequency of service is particularly evident along the Clackmannan to Alloa corridor.



**Table 2.1 Summary of Bus Services serving Alloa Town Centre**

Service No.	Origin	Destination	Route Description	Operator	No of services per hour (weekday – between 7 and 9am)	No of services per hour (weekday – between 9am – 3pm)	No of services per hour (weekday – between 3 and 6pm)	No of services per hour (weekday – after 6pm)	No of services per hour (Saturday)	No of services per hour (Sunday)
MA1	Stirling Bus Station	Clackmannan Main St	via Tullibody & Alloa	Mackies	1	2	2	0	2	0
MA2	Tillicoultry	Tullibody	via Sauchie & Alloa	Mackies	1	1	1	0	1	0
MA3	Stirling Bus Station	Alloa (Shillinghill)	via Menstrie, Alva, Tillicoultry & Sauchie	Mackies	0	1 jny	0	1 jny	1 jny	0
162	Sauchie	Stirling Bus Station	via Tillicoultry, Alva & Menstrie	Hunters Executive	1 jny	0	0	0	0	0
15/15A	Falkirk Bus Station	Stirling Bus Station	via Carronshore, Kincardine, Alloa & Tullibody	First South East & Central Scotland	1	1	1	1	1	0.5
60	Stirling Bus Station	Clackmannan Main St	via Tullibody & Alloa	First South East & Central Scotland	1	3	3	0	3	0
62	Stirling Bus Station	Alloa (Shillinghill)	via University, Menstrie, Alva Tillicoultry & Sauchie	First South East & Central Scotland	2	3	3	2	3	1

Service No.	Origin	Destination	Route Description	Operator	No of services per hour (weekday – between 7 and 9am)	No of services per hour (weekday – between 9am – 3pm)	No of services per hour (weekday – between 3 and 6pm)	No of services per hour (weekday – after 6pm)	No of services per hour (Saturday)	No of services per hour (Sunday)
63	Stirling Bus Station	Alloa (Shillinghill)	via Tullibody, Alloa, Sauchie, Tillicoultry, Alva, Menstrie & University	First South East & Central Scotland	3	3	3	3	3	1
64	Alloa, (Claremont)	Sauchie	via Caledonian Road, Alloa (Shillinghill) & Sauchie (Parkhead Road)	First South East & Central Scotland	0	4	4	0	4	0
65	Alva	Yetts O'Muckhart	via Tullibody, Alloa, Tillicoultry & Dollar	Stagecoach Fife	0.5	0.5	0.5	0.5	0.5	0.5
65A	Alloa	Dollar	Alloa, Tillicoultry & Dollar	Wheelchair Access Vehicle Enterprise (WAVE)	1 jny	0	0	0	0	0
68/70	Clackmannan	Cambus	via Alloa & Tullibody	Wheelchair Access Vehicle Enterprise (WAVE)	0	1	1	1	1	0

Service No.	Origin	Destination	Route Description	Operator	No of services per hour (weekday – between 7 and 9am)	No of services per hour (weekday – between 9am – 3pm)	No of services per hour (weekday – between 3 and 6pm)	No of services per hour (weekday – after 6pm)	No of services per hour (Saturday)	No of services per hour (Sunday)
68N	Stirling (Rail Station) Circular night service	Stirling (Rail Station)	via University, Menstrie, Alva Tillicoultry & Sauchie	First South East & Central Scotland	0	0	0	1 jny*	1 jny	0
74	Dunfermline Town Centre	Stirling (Bus Station)	via Oakley, Blairhall, Clackmannan, Alloa & Cambus	Stagecoach Fife	1 jny	0	0	0	0	0

Not included First South East & Central Scotland 325, 368 Schooldays service

\* Friday nights only

**Table 2.2 Bus Frequencies to Alloa from Clackmannanshire Villages (per hour)**

Clackmannanshire Village	AM Peak	Off Peak	PM Peak	Saturday	Sunday
Alva	2 + 1 journey	3	3	3	1
Cambus	2.5	2.5	2	2 + 2 Journeys	1
Clackmannan	4	6.5	6.5	6.5	0.5
Coalsnaughton	2	3	3	3	1
Devon Village	1.5	2.5	2.5	2.5	0.5
Dollar	0.5	0.5	0.5	0.5	0.5
Fishcross	4	5.5	5.5	5.5	1.5
Glencohil	0.5	0.5	0.5	0.5	0.5
Kennet	1	1	1	1	0.5
Menstrie	2	3	3	3	1
Muckhart	-	0.5	0.5	0.5	0.5
Sauchie	4	8.5	4.5	8.5	1.5
Tillicoultry	3.5	5.5	5.5	5.5	1.5
Tullibody	8	11.5	11.5	11.5	2.5

Job No

Issue no

Report Name

SEStran Clackmannanshire Bus Study/SEStran Clackmannanshire Bus Study

### *Bus Infrastructure*

- 2.43 All bus routes operating to Alloa town centre use the bus stance in Shillinghill. The stance is made up of three stops for specific directions of travel, though all three are adjacent on the north side of the street:
- 1st stop: Westbound to Stirling;
  - 2nd stop: Northbound to Sauchie & Eastbound to Clackmannan & Falkirk;
  - 3rd stop: Remainder of services including local services.
- 2.44 The current operation of competing services means that two buses can be stationary at a stop which can result in congestion at other stops.
- 2.45 The stance was constructed in 2001 following the introduction of a one-way system along Drysdale Street and Shillinghill. Previously, when the streets operated as two-way, bus stops were located on Drysdale Street. The construction of the stance in Shillinghill saw all stops move location apart from a setting down unmarked stop in Drysdale Street.
- 2.46 The one way system within the town centre has a significant impact on bus operators, as westbound services are forced to operate twice along King Street, extending journey times by up to three minutes. Services travelling eastbound travel a more direct route via Drysdale Street and Shillinghill only.
- 2.47 Although traffic using Shillinghill is predominately bus it has to share its space with all other traffic. Buses, however, are given priority (via a bus lane) when exiting the stance onto the carriageway and onto the Shillinghill Roundabout.
- 2.48 Bus priority measures in Alloa are limited to three small stretches of bus lane on the approaches to the Shillinghill roundabout. Previously at the Marshill roundabout at the end of King Street from Shillinghill a stretch of bus lane was tested but was not found to have any significant benefits for bus movement.
- 2.49 Within the town centre there are currently no stops on King Street but there is a pair of bus stops on Whins Road, 200m from the station, separated from the station by the Asda superstore. Services to Sauchie, Tillicoultry, Alva and Dollar as well as the longer route to Stirling (via Tillicoultry) use these stops. In total, 70% of services operating in Alloa serve these stops. Those are the services operating along the A907 corridor from Clackmannan to Alloa and onwards via the shorter, more direct, route to Stirling via Tullibody.
- 2.50 Nearly all bus stops<sup>3</sup> within Clackmannanshire Council have fixed information units showing bus times and final destination of all services passing the stops. An electronic travel guide was erected on street at the Shillinghill stance but due to vandalism this unit has been removed. There are no real time or scheduled display screens available at the Shillinghill stance although the expansion of real time information is currently being investigated throughout the SEStran area.

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<sup>3</sup> Actual stops exclude 'both-ways' and 'hail and ride' stops where there is no physical bus stop. For both-ways stops the bus stop information is provided in the adjacent stop. For 'hail and ride' no information is provided.

**Figure 2.1 Shillinghill Bus Stance, Alloa**



***First Group Bus Undertakings***

- 2.51 The First ScotRail franchise to operate passenger services on the rail network in Scotland commenced in October 2004 for a period of seven years. Prior to the award of the franchise, the Competition Commission had found that the award of the Scottish Rail Passenger Franchise to FirstGroup would lead to a risk of higher bus fares, reduced headways and a reduction in choice available to passengers because of a 'serious lessening of competition' in some areas where the company would be providing both rail and bus services.
- 2.52 In order to secure the franchise, FirstGroup and its subsidiary bus and rail companies gave the Commission a number of undertakings concerning routes, service levels, fares, ticketing and the provision of information on commercially operated bus services. The controls do not apply to socially necessary bus services secured under contract to local authorities.
- 2.53 There are no services in the Alloa area where restrictions now apply as a result of these undertakings, but service 60 from Stirling to Clackmannan via Alloa has been designated as a "possible" service. This means that depending on what changes take place in the local bus market in the future it may become a controlled service.
- 2.54 In terms of this study, the key issue is the extent to which compliance with the undertakings will limit the ability of First to make changes to the routes, timetables, fares and ticketing on their commercially operated bus services in the Alloa area after the extension of rail passenger services from Stirling to Alloa.

- 2.55 The ability of the company to revise bus fares and the price and availability of different types of bus ticket will be limited, although First Group's bus subsidiaries can participate in ticketing schemes specified in the Scottish Rail Franchise Agreement provided that participation would not make the bus operator financially worse off. These include One-Ticket (valid throughout the SEStran area), Day Tripper and Plusbus Stagecoach, First Edinburgh and First ScotRail as well as Clackmannanshire and Stirling Council are all signed up to the One-Ticket scheme.

#### **Rail Services**

- 2.56 Rail passenger services returned to the Alloa line on 19 May 2008 with the introduction of the new summer timetable.
- 2.57 Further remodelling of Middle Junction to the south of Stirling, due for completion in summer 2009, will allow a regular clock face timetable to operate. At the start of operation an uneven timetable is operating.
- 2.58 The initial service operates as per table 2.4. This is the extension of the existing Glasgow – Stirling semi fast service that terminated at Stirling. A 50 minute wait at Stirling has been built into the timetable for the last two years in preparation for the introduction of services to Alloa.
- 2.59 The terminus at Alloa is the only station on the reopened line, a 165 metres length single platform able to accommodate six coaches (or two three car unit trains). It is unmanned but has recently had an automatic ticketing machine installed.
- 2.60 The station is centrally located approximately 500m from its original location on the former Carlsberg-Tetley site north of King Street and adjacent to the new ASDA superstore (see figure 2.2). A population of 2,861 live within 500m of the station, increasing to 21,432 within 3km of the station.
- 2.61 Separate car parking (55 spaces), cycle stands and taxi stances are provided at the station. In addition there are an additional 252 free car parking spaces provided in the existing nearby King Street car park (See Appendix A, figure 2). Space has been made available within the station forecourt to accommodate a bus, though entry and exit routes for buses are shared with other vehicles creating potential conflicts.

**Figure 2.2 Alloa Rail Station, Bus Bay**



**Figure 2.3 Alloa Rail Station**



Source: JMP



- 2.62 For passengers travelling from Alloa to Edinburgh, connections are available at Stirling, although until the completion of track remodelling next summer the service will continue to use the far island platforms (9 and 10) of Stirling station. These platforms do not currently have lift access so passengers with disabilities will find connections to Falkirk and onwards to Edinburgh are more easily made at Larbert.
- 2.63 The station is centrally located 440 metres from the current bus stance at Shillinghill and 550 metres from Drysdale Street.
- 2.64 Initial estimated demand for the rail service from May 2008, from figures supplied by First ScotRail, show an estimated usage of Alloa Station by 155,000 passenger journeys in its first year of operation. Actual figures supplied for the initial three four week periods up to August 2008 show total journeys to/from Alloa rail station to be 100,221. It is evident that the initial usage of the line is considerably higher than had been predicted and an estimated figure has been calculated for this and the following three years as shown in the table below.
- 2.65 Annual patronage was estimated to grow to a quarter of a million passengers per annum by 2010/2011 before levelling out, however, on confirmation of the current patronage these figures may be doubled.

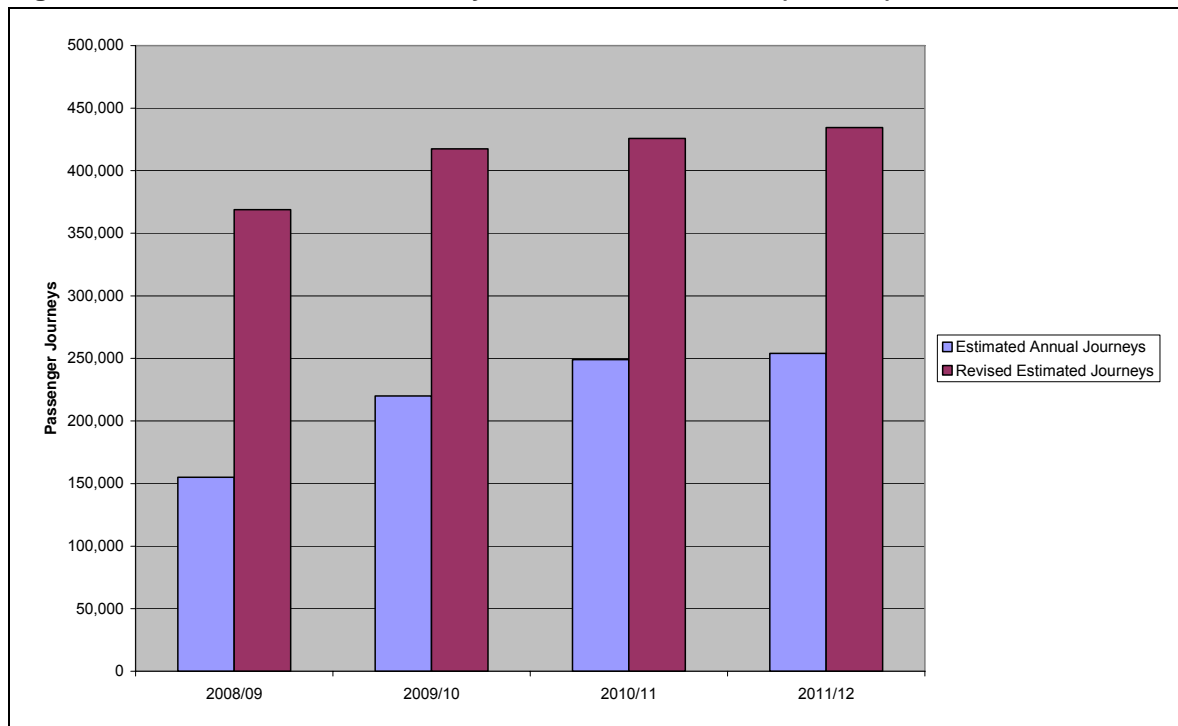
**Table 2.3 Estimated Annual Patronage for Alloa Rail Station (2008-12)**

Year	Estimated Annual Journeys (May 2008)	Revised Estimated Journeys
2008/09	155,000	368,863
2009/10	220,000	417,486
2010/11	249,000	425,870
2011/12	254,000	434,421

Source: First ScotRail

NOTE: Revised figures based on first three months operation with a 15% reduction to allow for abstraction from Stirling which has not yet been calculated.

**Figure 2.4 Estimated Annual Journeys for Alloa Rail Station (2008-12)**



*First ScotRail/JMP*

## Walking and Cycling

### Walking

- 2.66 Cars have full access to the town centre although limited by traffic management measures and limited parking. There is a degree of car / pedestrian conflict despite improvements having been made to reduce the conflicts. Improvements include the construction and redevelopment of walkways and cycleways e.g. the walkway from Alloa Tower (close to Tesco Superstore) into the town centre and the walkway between the station and King Street (see Figure 2.6).
- 2.67 Pedestrian links between Shillinghill Bus Stance and the new rail station are good. A puffin crossing across King Street (see figure 2.5) links the town with the walkway to the station but it still provides a psychological barrier between the town and the rail station.

### Cycling

- 2.68 Overall on a national basis cycling is declining even though it offers a good alternative to the private car for short and medium length journeys. Cycling can also form part of longer journeys when combined with train journeys. However opportunities are limited as the current space available on First ScotRail stock is only three bikes per three car unit, but facilities are provided at Alloa station for storage of bikes along with secure cycle parking in the town centre
- 2.69 In addition, junction improvements and on-street cycle lanes have been implemented at locations throughout Clackmannanshire to promote cycle use.
- 2.70 Cycle use in Clackmannanshire is currently low, with only 1.06% of journeys to work undertaken by cycling compared to the Scottish average of 1.44% (2001 census). Only 1% of school journeys are made by bicycle. The Council has recently been working with Sustrans to complete the cycle route NCN76 that links Alloa with Fife and Stirling and the 'Round the Forth' cycle route.

2.71 The Council's policy to promote cycling is to encourage public transport operators to provide appropriate facilities such as secure parking and links to nearby cycle routes. The NCN76 route passes close to the station and facilities will be provided at the site.

**Table 2.4 Draft Timetable Stirling - Alloa prior to Stirling Middle junction remodelling**

<b>Monday-Saturday: Glasgow – Stirling – Alloa / Alloa – Stirling – Glasgow</b>																
Glasgow		0613		0718	0818	0918	1018	1118	1218	1318	1418	1518	1618	1718	1818	1918
Stirling (arr)		0652		0759	0902	0959	1059	1159	1259	1359	1459	1559	1700	1759	1901	1959
Stirling (dep)		0653		0805	0904	1001	1101	1201	1301	1401	1501	1601	1705	1801	1903	2001
Alloa (arr)		0706		0817	0916	1013	1113	1213	1313	1413	1514	1613	1717	1814	1915	2013
Alloa (dep)	0611	0710	0754	0835	0935	1041	1141	1241	1341	1441	1535	1635	1741	1835	1941	2041
Stirling (arr)	0621	0720	0804	0845	0945	1051	1151	1251	1351	1451	1545	1645	1751	1845	1951	2051
Stirling (dep)	0623	0721	0810	0853	0953	1053	1153	1253	1353	1453	1553	1653	1753	1852	1953	2053
Glasgow	0703	0803	0852	0933	1033	1133	1234	1333	1433	1534	1633	1733	1833	1933	2033	2134
<b>Monday-Saturday: Glasgow – Stirling – Alloa / Alloa – Stirling - Glasgow</b>																
Glasgow	2018	2118														
Stirling (arr)	2059	2158														
Stirling (dep)	2101	2200														
Alloa (arr)	2113	2212														
Alloa (dep)	2136	2241														
Stirling (arr)	2146	2251														
Stirling (dep)	2153	2253														
Glasgow	2233	2333														
<b>Sunday: Glasgow – Stirling – Alloa / Alloa – Stirling - Glasgow</b>																
Glasgow	1015	1115	1215	1315	1415	1515	1615	1715	1815	1915	2015	2115	2215			
Stirling (arr)	1054	1154	1254	1354	1454	1554	1654	1758	1854	1954	2054	2154	2254			
Stirling (dep)	1055	1155	1255	1355	1455	1555	1655	1759	1855	1955	2055	2155	2255			
Alloa (arr)	1107	1207	1307	1407	1507	1607	1707	1811	1907	2007	2107	2207	2307			

Alloa (dep)	0913	1013	1113	1213	1313	1413	1513	1613	1713	1815	1913	2013	2113
Stirling (arr)	0923	1023	1123	1223	1323	1423	1523	1623	1723	1825	1923	2023	2123
Stirling (dep)	0925	1025	1125	1225	1325	1425	1525	1625	1725	1825	1925	2025	2125
Glasgow	1008	1108	1205	1305	1406	1506	1609	1706	1806	1907	2006	2105	2206

**Table 2.5 Draft Timetable Stirling - Alloa after Stirling Middle junction remodelling**

<b>Monday-Saturday: Glasgow – Stirling – Alloa / Alloa – Stirling – Glasgow</b>																
Glasgow		0613		0718	0818	0918	1018	1118	1218	1318	1418	1518	1618	1718	1818	1918
Stirling (arr)		0652		0759	0902	0959	1059	1159	1259	1359	1459	1559	1700	1759	1901	1959
Stirling (dep)		0653		0805	0904	1001	1101	1201	1301	1401	1501	1601	1705	1801	1903	2001
Alloa (arr)		0706		0817	0916	1013	1113	1213	1313	1413	1514	1613	1717	1814	1915	2013
Alloa (dep)	0611	0710	0754	0841	0941	1041	1141	1241	1341	1441	1541	1641	1741	1838	1941	2041
Stirling (arr)	0621	0720	0804	0851	0951	1051	1151	1251	1351	1451	1551	1651	1751	1848	1951	2051
Stirling (dep)	0623	0721	0810	0853	0953	1053	1153	1253	1353	1453	1553	1653	1753	1852	1953	2053
Glasgow	0703	0803	0852	0933	1033	1133	1234	1333	1433	1534	1633	1733	1833	1933	2033	2134
<b>Monday-Saturday: Glasgow – Stirling – Alloa / Alloa – Stirling - Glasgow</b>																
Glasgow	2018	2118														
Stirling (arr)	2059	2158														
Stirling (dep)	2101	2200														
Alloa (arr)	2113	2212														
<i>NOTE: No information available for Sunday service</i> <b>Source: Network Rail &amp; First ScotRail</b>																
Alloa (dep)	2141	2241														
Stirling (arr)	2151	2251														
Stirling (dep)	2153	2253														
Glasgow	2233	2333														

## Road Network

- 2.72 The Ring Road (A907) carries the majority of the traffic through the town. In August 2007 this road was renamed from the Ring Road to King Street. Due to the current redevelopment in Alloa the road no longer by-passes the town but instead is seen to be the main access route to the heart of Alloa. However, King Street does divide the town, with the rail station to the north and the core town centre to the south.
- 2.73 Within the town centre there are a number of traffic management measures that limit traffic movement in terms of one-way operation and speed restraints but no streets are closed to traffic resulting in reasonable access for the car to all streets.
- 2.74 There have been significant changes in the road network as a result of the reintroduction of the rail service through Alloa. In introducing the new rail line a number of level crossings have been removed to be replaced by overbridges and new roads, although the majority of the new construction is outwith the town centre. Grange Road has been closed to through traffic at its junction with Stirling Road. Eastern Relief Road, a new single carriageway road that links the A907 east of Clackmannan Road Roundabout with Whins Road Roundabout has been built. This involved the construction of a new roundabout at the junction with the A907 and new overbridge resulting in the closure to through traffic at the former level crossing.

## Road Constraints

- 2.75 *Shillinghill Roundabout:* The roundabout is made up of five arms, three are single carriageways (leading northwards to Whins Road, eastwards to Clackmannan Road and southwards to Auld Brig Road & Greenside Street) and there are the dualled King Street and one-way Shillinghill. As a result of high traffic volumes from Clackmannan Road and Auld Brig Road/Greenside Street, buses have difficulty in exiting from Shillinghill onto the roundabout, particularly in the afternoon peak. (See Appendix A, Figure 1).
- 2.76 *One-way system:* The town centre has been subject to a number of traffic management changes in the last few years. The most recent saw the implementation of the one-way system. The main thoroughfares of Drysdale Street and Shillinghill were altered from two way operation to one-way. Following the introduction of one-way operation there were regular occurrences of traffic queues forming in Shillinghill and Greenside Street as drivers left the town centre onto Shillinghill roundabout. The Council has examined alternative exits from the town but the only effective option is to limit the traffic exiting Shillinghill. This has partly been achieved by preventing through traffic from travelling from Bank Street along Mill Road to Shillinghill by reversing the traffic flow between High Street and Mill Road. (See Appendix A, Figure 3).
- 2.77 The introduction of the one-way system achieved significant improvements in traffic flow as well as increased on-street residential and disabled parking without any serious road accident casualties being reported since its implementation.
- 2.78 One significant disadvantage of the one way system was the effect on bus operators, as westbound services are forced to operate twice along King Street, extending journey times by up to three minutes.
- 2.79 Further suggestions have been raised that the proximity of the bus stance to the exit onto Shillinghill roundabout is another cause of the queuing. Subsequently a proposal was mooted to relocate the bus station into the King Street (Ring Road) car park but this was not progressed in detail.

2.80 It has already been identified that the introduction of the one-way system in Alloa resulted in a significant reduction in road accidents with no serious accidents being reported.

**Figure 2.5 Stairway and Ramp from King Street Car Park to King Street Pedestrian Puffin Crossing**



**Figure 2.6 Pedestrian Walkway to Alloa Rail Station**



**Figure 2.7 Drysdale Street – King Street Car Park Walkway**



**Above left:** The narrow walkway from Drysdale Street to King Street Car Park. Direct access is blocked by a private car park owned by the TSB. The King Street car park is beyond the LloydsTSB

car park but can only be accessed by a right hand turn (see above right)

**Above right:** The narrow walkway to the King Street Car Park from Drysdale Street.



- 2.81 Pedestrian links are provided between Shillinghill, Drysdale Street and Primrose Street to the King Street car park. As can be seen from Figure 2.6 showing the link between Drysdale Street and King Street car park, the facility is of poor quality and unwelcoming. It currently provides an unattractive and potentially unsafe link to the car park and onwards to the walkway to the station. The removal of the stagger in the path would improve visibility and would do a lot to alleviate the perceived concerns over safety. It is understood that initial discussions have been held between the Council and landowners to resolve this issue.
- 2.82 The link from Shillinghill to the King Street car park does not provide the same kind of risks and provides an attractive and safe pedestrian link.
- 2.83 CCTV coverage throughout the town centre is good but there remain some areas where coverage together with improved street lighting could create a safer environment for public transport users.

#### **Car Parking**

- 2.84 There is a plentiful supply of free car parking throughout the town centre, approximately 1,400 spaces, much of which is close to the station. There are no on or off-street charges for parking. Time restrictions only apply to on-street parking, but enforcement remains an issue. The main car parks are currently as per table 2.6 below and highlighted in Appendix A, Figure 2.

**Table 2.6 Main off Street Car Parks, Alloa Town Centre**

Name	Location	Capacity	Owner	Comment
King Street	Off King Street	252	Council/Co-operative	A section of the car park remains under the ownership of the Co-operative but they have passed control to the Council.
				Access is directly off King Street
				Space is available in King Street Car Park to develop a facility to reduce walking distance between rail and bus station and improve integration.
Aldi	Whins Road	c50	Aldi	
Greenside Street	Greenside Street at Lidl's	c150	Council	Used for weekly Thursday market.
Tesco	Tesco at Greenside Street	c500	Tesco	
Kilncraigs	Clackmannanshire Council offices	100	Council	
Asda	Whins Road, Asda	c300	Asda	
Alloa Station	Alloa Station Car Park	55	Council	

*Clackmannanshire Council/JMP*

## Development Proposals

- 2.85 There are a number of committed and proposed developments that could have a significant impact on the demand for public transport in Alloa and the surrounding area. This section draws together information on those developments that are anticipated to have a significant impact.

### Retail/Residential

#### *Former Co-operative store*

- 2.86 The Council was unable to confirm, but the recent sale of the Co-operative Household store in Primrose Street is likely to lead to redevelopment of the site. This is a prime site within Alloa and backs on to the rear of the King Street Car Park and Drysdale Street. It is not known if this will be for residential or retail use. The store had ownership of a section of the King Street car park but allowed the council to use it as part of the free facility.

#### *Spiers Centre*

- 2.87 Currently one of the Council offices, the former Victorian bath building, the Spiers Centre in Primrose Street is proposed to be extended to include the town's library. The proposed extension would be to the rear and into the King Street car park, therefore improving further the outlook of the King Street site for potential future development.

#### *Forthside Development, Stirling*

- 2.88 Forthside is Stirling's multi-million pound waterfront development. According to Stirling Council it will double the size of the city centre by providing a multi-screen cinema, hotel and conference centre, offices and residential developments. The 40-acre development to regenerate the banks of the River Forth also includes a new city square, enhanced landscaping, riverbank walkway and a new public transport route, the Forthside Busway, that provides improved journey times from Clackmannanshire to Stirling. A landmark bridge will provide pedestrian access into the heart of the development over the rail lines to the south of Stirling railway station.

Source: JMP

### Health

#### *NHS Forth Valley Acute Hospital Larbert*

- 2.89 A new NHS Forth Valley Acute Hospital is to be built at Larbert on the former RNSH site at an estimated cost of £300million. It was decided to bring services together in one new hospital in Larbert, replacing the existing hospitals at Stirling and Falkirk. The new hospital will be supported by a range of community hospitals and enhanced community health facilities which will create flexibility of healthcare provision.
- 2.90 To protect hospital services until the new acute hospital is opened, a range of temporary changes were implemented which saw Falkirk Royal Infirmary become the centre for planned care and rehabilitation in Forth Valley, and Stirling Royal Infirmary become the centre for emergency care.
- 2.91 Currently no direct bus service exists between Alloa and the new site. The new rail service from Alloa serves Larbert directly and an NHS Forth Valley funded shuttle bus service is planned to operate from Larbert Rail station to the hospital.

#### *Community Hospital and replacement Alloa Health Centre*

- 2.92 The new community hospital and replacement Alloa Health Centre for Clackmannanshire situated off Hallpark Road, Alloa is due for completion in late 2008 at an estimated cost of £20million.

## Transport

### *Forthside Busway*

- 2.93 In line with the development at Forthside in Stirling, and following formal adoption by the local authority, bus journey times from Alloa to Stirling will be reduced by use of the Forthside Busway. Services will be diverted from Causewayhead to operate via a section of bus only road from Springkerse Retail Park through to Forthside. In order to maintain links between Clackmannanshire and Stirling University not all services are likely to be diverted via the busway.

### *Quality Bus Corridors*

- 2.94 The Council are currently carrying out a programme of transport infrastructure improvements along the Hillfoots villages of Tillicoultry, Alva and Menstrie. These improvements include bus boarders, shelters and bus information and form part of a quality bus corridor.

### *Clackmannanshire Bridge*

- 2.95 The existing Kincardine Bridge opened in 1936 and at the time was the furthest-downstream road link across the Forth Estuary, reducing the travel distance from Edinburgh to Dunfermline by 20 miles. The bridge remains the furthest-downstream all-weather road crossing of the Forth, and acts as a diversionary route during bad weather when the Forth Road Bridge is closed to high-sided vehicles. The existing crossing will remain and in tandem with the new crossing (opened in November 2008) will limit traffic through Kincardine to local and Fife to Alloa traffic. The new crossing, along with the railway, will provide additional opportunities for investment in Clackmannanshire.

### *Summary*

- 2.96 There are some major developments that will alter travel demand to the periphery of Clackmannanshire in terms of new Forthside development in Stirling and NHS Forth Valley Acute Hospital in Larbert. These developments will provide new shopping, employment and healthcare facilities in locations that are attractive to Clackmannanshire residents but in the case of Larbert are not well served by the existing public transport network.
- 2.97 There are some schemes of regional significance such as that of the Clackmannanshire Bridge that may provide new opportunities for employment in the area.

## Participation and Consultation

2.98 A list of appropriate stakeholders to approach as part of the study was agreed at the inception meeting. Where appropriate face to face discussions were held or where this could not be scheduled telephone discussions were held instead. Full contact details are included in Appendix C. Discussions were held with:

- All bus operators operating scheduled bus services in Alloa town centre;
- Dial-a-Journey manager (representing the Council supported accessible transport service and as a Community Transport Association member);
- First ScotRail and Network Rail;
- NHS Forth Valley;
- Alloa Traders Association;
- Clackmannanshire Council; and
- Transport Scotland.

2.99 Central Scotland Police were approached but discussions never took place.

2.100 Comments from these discussions are recorded in Table 2.7. A number of key themes developed from the consultation exercise and these were developed into a set of consultation objectives as listed below.

- Improve journey times & reliability;
- Improve access to employment & services;
- Maintain existing links;
- Ensure services are socially inclusive;
- Improve bus/rail integration;
- Provide a safe environment;
- Maintain the existing number of parking places; and
- Provide information on public transport services.

Table 2.7 Consultation Comments			Consultation objectives									
Representative		Comments	Improve Journey Times & Reliability	Improve Access to Employment & Services	Maintain existing links	Ensure services are socially Inclusive	Improve Bus/Rail Integration	Provide a safe environment	Maintain the existing number of parking places	Provide Information on all PT services		
Bus Operators	Constraints of road network	Delays occur at PM peak with buses exiting Shillinghill onto Shillinghill roundabout from 1500 to 1700.	●									
		Consideration should be given to part time priority lights on Shillinghill roundabout to enable buses to make use of the roundabout at peak times.	●									
		One-way operation of Drysdale Street and Shillinghill means westbound services operate twice along King Street adding up to 3 minutes to journey time.	●									
	Demand	Little or no passenger growth anticipated from diversion of existing services		●								
		Problems with competition commission making it difficult or impossible to integrate bus and rail services					●					
		Station better served by diverting existing local services rather than diversion of inter-urban services	●									
		Concern that additional time penalties dissuade passengers of existing services	●									
		Concern that additional time penalties put the viability of some services into doubt	●									
		Little abstraction from existing services apart from evenings and Sundays	N/A									
		The majority of the traffic for rail is anticipated to arrive at the station by car or foot.					●					
Once passengers have boarded a bus, the tendency is to	N/A											

		then stay on the bus for the rest of their journey.												
		Recognised there would be demand for longer journeys such as Alloa – Glasgow which the bus network no longer provides						●						
	Infrastructure		Mixed view of resiting of bus stance into King Street car park. Some operators favoured the potential time savings while others felt there would be a loss of accessibility to passengers. Nobody agreed it would improve bus/rail integration.	●										
			Any time savings by incorporating stops on King Street were welcomed as they could maintain the current network within current resources.	●										
			Concerns over terminating services at the Alloa station that insufficient space for vehicles to wait and potential conflicts with car park traffic.									●		
			Full enforced bus priority on King Street to improve journey times would be welcomed.	●										
			Consideration to one-way operation King Street for westbound services and Drysdale Street for Shillinghill)	●										
	Fares & Ticketing		Major operators were happy to develop Plusbus (Bus add on scheme).						●					
			Bus operators happy to join in with ticketing initiatives, as long as it was legal to do so.						●					
			Lead in ticket initiatives would be taken by bus operators						●					
	Other Issues		All traffic management measures should be backed up by improved parking enforcement	●										
		Adoption of busway into Forthside, (Stirling) will mean more services diverting along this route and therefore a more competitive route along the Alloa-Stirling corridor.	●											
Rail Industry	Demand	Due to signalling and remodelling issues south of Alloa and some contractual issues with EWS, reliability of the passenger services may be affected until completion of the work in summer 2009. The timetable currently operates on an uneven headway to overcome some of these issues.	N/A											

		Best way to integrate with services is via a dedicated bus shuttle meeting every train.					●			
		Restricted space on forecourt raised concerns over operating a terminating service to Alloa station.					●			
	Information	Information on onward bus services can be placed in rail publicity material								●
		Information on onward bus services and map of area showing links to bus stances and stop is a requirement of the franchise agreement.								●
Health Sector	Demand	When planning new services, safeguards are put in place to ensure the current services to and from Shillinghill and the Clackmannanshire Community Hospital remain.			●	●				
		The new services should allow frequent connections between outlying areas, that are currently poorly served and the railway station.				●				
		If the aspiration for new services is not possible, any changes to the local bus network should not result in a loss of access to the Clackmannanshire Community Hospital.			●					
		Additionally due regard should be paid to services from the outlying areas to allow access to the railway station and to ensure that arrival and departure times for staff and patients to the new acute hospital at Larbert are co-ordinated.				●	●			
Alloa Town Centre		There should be no reduction in car parking spaces								●
		It should not be a wasted opportunity and where possible bus and rail integration should take place					●			
		The majority of rail users will walk or arrive at the station by car not by bus					●			
		The current road network is working acceptably since the Council adopted changes to Mill Road allowing left and right hand exit from High Street into Mill Road. This has eliminated through traffic from Bank Street to Shillinghill and therefore reduces traffic using Shillinghill from roundabout. The traffic system should not be changed again.			●					



Clackmannanshire Council	<p>Congestion in the evening peak remains an issue and a number of solutions should be sought to ease the problem, including part-time lights, redesigning the roundabout and replacement by fully signalised junction.</p>	●							
	<p>The pedestrian walkways at Maple Court and off Drysdale Street are recognised as in need of improvement.</p>						●		
	<p>The loss of parking spaces in King Street car park may be seen to outweigh the benefits that can be achieved by re-siting the Shillinghill stance in this location.</p>							●	
	<p>Concern that limited space within the rail station car park, means it may be unable to cope with terminating services.</p>							●	
	<p>Potential site to the north of the line to develop more car parking.</p>							●	

### 3 Established Policy Directives

- 3.1 This section draws together some of the key relevant policy context of transport issues that affect public transport issues in Clackmannanshire.

#### Scotland's National Transport Strategy

- 3.2 Scotland's Transport Strategy was published in December 2006, against the background of the vision for Scotland in 2025. The vision and objectives for transport in Scotland were set out in the 2004 white paper 'Scotland's Transport Future', which identified the need to produce a national transport strategy.

- 3.3 The vision is as follows:

*"An accessible Scotland with safe, integrated and reliable transport that supports economic growth, provides opportunities for all and is easy to use; a transport system that meets everyone's needs, respects our environment and contributes to health; services recognised internationally for quality, technology and innovation, and for effective and well-maintained networks; a culture where fewer short journeys are made by car, where we favour public transport, walking and cycling because they are safe and sustainable, where transport providers and planners respond to the changing needs of businesses, communities and users, and where one ticket will get you anywhere"* (Scotland's Transport Future 2004).

- 3.4 The Scottish Government's high level objectives for Transport, as set out in the White Paper, are as follows:

- 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, cyclists, 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.

- 3.5 There are stated to be three strategic outcomes that must be focused on to achieve this vision. They 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.
- 3.6 These strategic outcomes will set the context for transport policy making and inform decision making for the next 20 years for the Government and its key partners. They should become the guiding principles when developing strategy and prioritising resources.

## SEStran Regional Transport Strategy (RTS) 2008-22

### Objectives

- 3.7 Objectives in the SEStran RTS that are relevant to this study include the following, the numbers in brackets refer to their location in the RTS document:-
- To maintain and improve the labour market accessibility to key business / employment locations, from all localities and communities (1.1)
  - To support other strategies, particularly land-use planning and economic development (1.3)
  - To reduce the negative impact of congestion, in particular to improve journey time reliability for passengers and freight (1.4)
  - To improve access to employment (2.1)
  - To improve access to health facilities (2.2)
  - To improve access to other services, such as retailing, leisure / social and education (2.3)
  - To make public transport more affordable and socially inclusive (2.4)
  - To contribute to the achievement of the UK's national targets and obligations on greenhouse gas emissions (3.1)
  - To minimise the negative impacts of transport on natural and cultural resources (3.2)
  - To promote more sustainable travel (3.3)
  - To increase transport choices, reducing dependency on the private car (3.5)
  - To improve safety (accidents) and personal security (4.1)
  - To meet or better all statutory air quality requirements (4.3), and
  - To reduce the impacts of transport noise (4.4)

## Policy

3.8 The main policies to deliver these objective are:

- Policy 1 – There will be a general presumption in favour of schemes that improve the efficiency and effectiveness of public transport, and make it a more attractive option for existing car users.
- Policy 2 – Support will be given to the improvement of all aspects of bus services (services, vehicle quality, fares, infrastructure, bus rapid transit, and integration) as a means of reducing congestion and enhancing accessibility.
- Policy 17 – SEStran will seek to ensure that communities with poor access to employment by PT and low car ownership / high deprivation will be the subject of targeted measures to address this.
- Policy 18 – In selecting interventions as part of the RTS, SEStran will seek to pay particular regard to the need to reduce problems by peripherality in rural and other areas of the region that are less well served by public transport.
- Policy 19 – Where improvements in accessibility are found to be required, the RTS will seek, in the first instance, to deliver these by enhancing the conditions for pedestrians, cyclists and public transport users (including community transport / DRT).
- Policy 22 – Support will be given to interventions which reinforce and strengthen the role of Edinburgh city centre and of other town centres, as centres of economic activity including retailing and tourism
- Policy 23 – Schemes that improve the accessibility by public transport, walking and cycling of key development areas will be afforded higher priority for implementation.
- Policy 24 – The RTS will prioritise the interventions that promote the use of more sustainable modes of transport.

## Clackmannanshire Local Transport Strategy (LTS) 2006-09

### Objectives

3.9 Beside the SEStran Regional Transport Strategy, the relevant objectives in the current Clackmannanshire Local Transport Strategy affecting public transport that promote the potential of linking local bus services with the new rail line at Alloa are as follows:

- Increase the bus patronage for travel to work and leisure;
- Reduce social exclusion and increase access to jobs by providing an integrated public transport system;
- Improve the passenger rail service for Clackmannanshire to include additional Park and Ride at Cambus;
- Work with public transport operators to develop accessible services for those with disabilities;
- Improve access to information regarding public transport services;
- Assess and improve existing infrastructure to identify measures which would give bus services priority over the private car; and
- Work in partnership with transport providers to improve the quality of transport corridors.

## Policy

3.10 These objectives are set against the background of the following policies:

- PT1. The Council will continue to assist in improving access to public transport in partnership with operators by matching investment in accessible vehicles with provision of improved infrastructure. The Council will also continue to improve and maintain bus shelters and timetable information.
- PT3. The Stirling-Alloa-Kincardine railway line will continue to be promoted by the Council, to improve passenger travel and freight movements from the Clackmannanshire area to the wider rail network. The Council will safeguard the opportunity for future park-and-ride stations.
- PT4. The Council will protect any former railway lines that have the potential to be reinstated in the future, for rail or other modes e.g. cycling. Any proposals to develop in the vicinity of a former railway line shall demonstrate appropriate measures to safeguard access and future provision of the route.

3.11 The LTS outlines an Action Plan for the way forward. See table 3.1.

**Table 3.1 Clackmannanshire Action Plan**

Ref	Scheme	Details
4	Integrating Alloa	Fully accessible, direct pedestrian link between Alloa bus stance and new railway station, across Ring Road.
24	SAK – Railway	Re-opening of passenger rail service line between Alloa and Glasgow via Stirling with connections to Edinburgh/Perth.
37	Bus Quality Corridors	Improved shelters, access and facilities at all bus stops. Implementation of park and ride at Tillicoultry Bus Stance
41	Real Time Information	Feasibility study into the introduction of real time information for public transport, for future implementation
49	Rail Halt Cambus	Feasibility study of Park and Ride station at Cambus
50	Bus Priority	Junction improvements at key locations.
62	Alloa – Larbert Bus	Introduction of bus service to provide a direct link between Clackmannanshire and the new Forth Valley Hospital

## Clackmannanshire Council Local Plan

### Objective

#### *Promoting Integrated Transport*

- 3.12 The objectives outlined in the Clackmannanshire Local Plan specifically linked to the promoting of integrated transport are as follows:
- Enhancing the quality and viability of public transport services;
  - Improved access to and information about bus services; and
  - Better facilities at bus stops and continuing investment in pedestrian and cycle facilities

## Clackmannanshire and Stirling Structure Plan

### Policy

- 3.13 This Structure Plan sets out the long-term vision for sustainable development of the Clackmannanshire and Stirling area. The Structure Plan supports the objectives and targets of the Local Transport Strategies.
- 3.14 The Councils promote an integrated transport policy and wider choice of transport within the Structure Plan and seek to encourage people to use their cars less by making the alternatives more attractive. Accessibility to rail services is important for all parts of the area, so the integration between rail services and other public transport modes is particularly important to ensure a reliable service for residents, commuters and other passengers travelling within and outwith the area. To achieve this the strategy outlines its transport policy as follows:

#### **Policy TR1 – Integrated Transport:**

- Reduce the need to travel by requiring developments which generate a large number of trips to locate within or adjacent to town centres. Where this is demonstrated not to be appropriate, development will require to be located in areas which have good public transport access and additionally may have access to the major road network, and are supported by appropriate local facilities.
- Improve transport choice and accessibility through promotion of alternatives to the car including cycling, walking and public transport whilst seeking to improve road and personal safety.
- Sustain and enhance town and local centres through comprehensive traffic management and clear parking policies.
- Ensure appropriate developer responsibility for transport assessments, with appropriate mitigation of adverse impacts and the preparation and implementation of green transport plans. Section 75 agreements (or other legal agreements) will be used where appropriate.
- Reduce environmental impact through appropriate monitoring and management of air quality, noise pollution and congestion.

## Policy TR2 – Transport:

The Councils will promote a wider choice of transport by:

- Requiring developers to consider provision for public transport, pedestrian and cycle access as part of any development proposal in order to ensure that new development integrates with and where possible enhances the wider transport network linking key services and facilities;
- Requiring developers, where appropriate, to contribute to the cost of providing and operating public transport services and facilities as part of a managed approach to their transport needs;
- Promoting integration between all transport modes including a comprehensive park and ride strategy; and
- Only supporting new road schemes identified in the Development Plan and those which positively contribute to the integrated transport strategy.

## Summary

3.15 In summary, this section has drawn together the key relevant policy context that affects public transport issues in Clackmannanshire. It has highlighted that all of these policies support investment in sustainable transport, improvements in quality, affordability, that are accessible to all and improving transport choice through promotion of alternatives to the car including cycling and walking as well as public transport whilst seeking to improve road and personal safety.

## 4 Surveys

- 4.1 It had been intended that collection of bus data would be mainly from electronic ticket machine (ETM) data; however this data was not readily available from all sources so to obtain reliable bus data surveys were undertaken.
- 4.2 The surveys for both rail and bus took place following the introduction of rail services<sup>4</sup> for passengers. The purpose was to ascertain origin, destination, journey purpose and mode as well as a number of stated preference questions to determine what would improve interchange. Full details of the results of the surveys are in Appendix E of this report.
- 4.3 The data was not fully available during the pre appraisal but did inform the quantitative analysis for the detailed appraisal section of this report.
- 4.4 The surveyors questioned departing passengers only, the rail user surveys generally taking place in the morning, the bus surveys in the afternoon. The first rail departure was not surveyed which meant that recording of commuting journeys may be slightly low.
- 4.5 Additional information was obtained from First ScotRail from previous studies as well as the modal split at Stirling rail station. This information has been included for comparison.

### Questionnaire Results

- 4.6 The Key Outcomes of the Survey were:
- Rail passengers travel less frequently than bus passengers.
  - Majority (77%) of rail passengers are travelling between 0.5 and 3.0km to the station of these 46% walk to the station (table 4.1 highlights the settlements within the 0.5-3km zone from Alloa rail station).
  - 6% of passengers are travelling over 5km to the station of which 88% are travelling from Dollar or Muckhart. Of these 21% are bus users where there is only one direct service per hour.
  - Major destination for rail passengers is Stirling (44%), then Glasgow (32%). 11% of passengers were changing at Stirling for Edinburgh and a further 6% were travelling to Falkirk.
  - 70% of rail users had previously made the journey, 34% of these by car and 40% by bus. Of these 70% nearly half (49%) were travelling to Stirling. The remaining rail users that previously travelled were travelling to Glasgow (34%), Edinburgh (7%) and 10% 'Other'. These figures may suggest that over a year, probably up to 100,000 car trips will have been taken off the road network.
  - Of those who have changed mode to rail, the greatest percentage (40%) travel no more than 3km to the station.
  - The remaining 30% of rail users had not made the similar journey before (generated trips). 33% of those users were now travelling to Stirling, Glasgow 28% and Edinburgh 21% with 'Other' 19% (including those travelling to Falkirk and those beyond Glasgow).
  - 46% of rail users had walked to the station against 12% by bus. 33% had accessed the station by car.

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<sup>4</sup> Surveys undertaken by SEStran and Clackmannanshire Council staff between 25 – 29 August 2008



4.7 Current and potential users accessing the rail station were asked what change would make them use the bus (or use it more).

- The highest percentage (37%) responded that having bus stops closer would make them use the bus or use it more. However 25% said nothing would make them alter from their current mode or make them use the bus more.
- 60% of those that currently do not travel by bus would do so if improvements were made.
- Just over 40% of bus passengers travel no more than 3km to their destination.
- 43% of passengers were using a National Concessionary travel pass.
- Even with nearly half of passengers travelling free, bus passengers ranked cheaper fares as highest factor that would make them travel more by bus (33%), then services operating more directly (16%) and 12% of users ranked reduced journey time as the most important factor.

**Table 4.1 Settlements by zone**

Distance to Station	Distance	Distance	Distance	Distance
	Up to 0.5km	0.5 to 3.0km	3.0 to 5km	Greater than 5km
Settlements	Alloa Town Centre	Clackmannan	Alva	Dollar
	Bowhouse Road, Alloa	Claremont	Cambus	Forestmill
	Ashley Terrace, Alloa	Inglewood, Alloa	Coalsnaughton	Kennet
	Caledonian Road, Alloa	Fishcross	Devon Village	Menstrie
		Sauchie	Glenochil	Muckhart
			Tillicoultry	Stirling
			Tullibody	

## 5 Summary of Key Issues

- 5.1 This section contains a summary of the key points raised in the previous sections of this report in the form of a Strength Weaknesses Opportunities and Threats (SWOT) analysis table in terms of bus/rail integration at Alloa Station and improved bus access to Alloa town centre.

**Table 5.1 SWOT Analysis**

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• The majority of Clackmannanshire’s bus services operate to Alloa (Shillinghill Bus Stance).</li> <li>• Existing stops are available on Whins Road 200m from the station with direct services to and from Sauchie, Tillicoultry, Alva and Dollar.</li> <li>• Good pedestrian links already between Shillinghill Bus Stance and Rail Station.</li> <li>• A population of 2,861 within 0.5km of station and 21,432 within 3km.</li> <li>• Rail station is located in a central location for Alloa town centre.</li> </ul>	<ul style="list-style-type: none"> <li>• 440m from Shillinghill Bus Station to Alloa Rail Station</li> <li>• A well developed competitive bus market providing direct links from the majority of Clackmannanshire villages with Stirling therefore reducing the need for passenger to break the journey at Alloa or to switch mode for onward to travel to Stirling.</li> <li>• Limited possibilities to divert services without financial penalties to the operators.</li> <li>• Operators believe demand for bus/rail integration would be low.</li> <li>• Westbound services operating twice along King Street significantly extends journey times.</li> <li>• Congestion at Shillinghill roundabout leads to unreliable bus operation.</li> <li>• Limited river crossings on north-south movements restrict direct links to Alloa.</li> <li>• King Street and King Street car park act as a barrier between the town and the station.</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Existing network of services via Whins Road.</li> <li>• Flexibility to alter current supported services to operate via station.</li> <li>• Space is potentially available in King Street Car Park to develop a facility to reduce distance between rail station and bus facilities and therefore improve integration.</li> <li>• Significant time savings for operators by relocating Shillinghill Stance.</li> <li>• Relocating Shillinghill Stance closer to rail station may also provide improved access to Alloa town centre.</li> <li>• Stagecoach in Fife, First Edinburgh and First ScotRail are already part of the SEStran One-Ticket (valid throughout the SEStran area) initiative.</li> <li>• The expansion of Real Time information throughout the SEStran is currently being put out to tender.</li> <li>• Public transport usage is relatively low in the area, therefore providing an opportunity to develop market.</li> </ul>	<ul style="list-style-type: none"> <li>• Extensive free car parking within close proximity of the station.</li> <li>• First Group Franchise undertakings may limit potential opportunities to develop or revise the network.</li> <li>• High car ownership in Clackmannanshire.</li> <li>• Free travel on buses for the elderly and disabled will reduce those willing to change to the train for journeys to Stirling.</li> <li>• High level of commercial bus operation reduces the opportunity to revise the network unless viability of bus services can be maintained.</li> <li>• Conversion of car parking areas into bus stances/bus station maybe met with public/political opposition.</li> </ul>

## 6 Transport Planning Objectives

- 6.1 Within this section, transport planning objectives are developed and checked to confirm they link appropriately to other relevant policies, including the criteria within STAG, local and regional and national strategies, and consultation objectives.
- 6.2 The outcome and transport planning objectives have been developed in response to:
- The findings of the consultation process with key stakeholders as reported in chapter 2;
  - The relevant existing objectives for transport in the area as summarised in chapter 3; and
  - The key issues pertinent to the study as summarised in chapter 5.
- 6.3 Objectives are listed under the two headings of outcome and transport planning objectives. Outcome objectives set the overarching framework for any enhancements, and give the long-term aspirations that a successful proposal will help to achieve. The output objectives enable testing of specific options.

### Outcome Objectives

- To contribute to the economic vitality of Alloa and improve its environment.
- To maximise the use of buses to access the new rail service from Alloa.
- To improve access by bus to Alloa town centre.

### Transport Planning Objectives

- To minimise walk distances between bus and key town centre destinations, including the station
- To minimise time and cost penalties of interchange – including bus / bus and bus / rail.
- To maximise awareness of sustainable travel options.
- To minimise delays to buses in Alloa town centre.
- To minimise disadvantages to non-users of public transport.
- To minimise the number and severity of road accidents.
- To minimise cost to the public purse of transport infrastructure and services.

- 6.4 Links between Outcome and Transport Planning Objectives are highlighted in Table 6.1.

**Table 6.1 Links between Outcome and Transport Planning Objectives**

<b>Outcome Objectives</b>  <b>Transport Planning Objectives</b>	To contribute to the economic vitality of Alloa and improve its environment	To maximise use of bus to access the new rail service from Alloa	To improve access by bus to Alloa town centre
To minimise walk distances between bus and key town centre destinations, including the station	○	✓✓	✓✓
To minimise time and cost penalties of multi-modal interchange	○	✓✓	✓
To maximise awareness of sustainable travel options	○	✓✓	✓
To minimise delays to buses in Alloa town centre	✓	✓	✓
To minimise disadvantages to non-users of public transport	✓	○	○
To minimise the number and severity of road accidents	✓	○	○
To minimise cost to the public purse of transport infrastructure and services	✓	✓	✓

Key to Table	✓✓	Strong correlation	○	No, or negligible, correlation
	✓	Weaker correlation	✕	Weaker conflict
			✕✕	Strong conflict

6.5 We therefore consider that achievement of the transport planning objectives makes a contribution to each of the output objectives, with no conflicts arising.

## Links to criteria within STAG

- 6.6 Table 6.2 shows the links between the transport planning objectives and the five core criteria for transport as set out in the STAG guidance.

**Table 6.2 Links between Transport Planning Objectives and criteria within STAG**

Transport Planning Objectives	Criteria within STAG				
	Environment	Safety	Economy	Integration	Accessibility and Social Inclusion
To minimise walk distances between bus and key town centre destinations, including the station	✓	✓	✓	✓✓	✓✓
To minimise time and cost penalties of multi-modal interchange	✓	○	✓	✓✓	✓✓
To maximise awareness of sustainable travel options	✓	○	○	✓	✓✓
To minimise delays to buses in Alloa town centre	✓	○	✓	✓	✓✓
To minimise disadvantages to non-users of public transport	✓	○	✓	○	✓
To minimise the number and severity of road accidents	○	✓✓	✓	○	✓
To minimise cost to the public purse of transport infrastructure and services	○	○	✓	○	✓

Key to Table	✓✓	Strong correlation	○	No, or negligible, correlation
	✓	Weaker correlation	✖	Weaker conflict
			✖✖	Strong conflict

- 6.7 We are thus confident that the transport planning objectives contribute to the criteria within STAG without conflicts arising.

## Links to criteria within NTS

6.8 Table 6.3 outlines the links between the transport planning objectives and the Scottish Governments high level objectives for transport.

**Table 6.3 Links between Transport Planning Objectives and objectives within National Transport Strategy**

<b>Links with NTS Objectives</b>  <b>Transport Planning Objectives</b>	Promote economic growth	Promote social inclusion	Protect our environment and improve health	Improve safety of journeys	Improve integration
To minimise walk distances between bus and key town centre destinations, including the station	✓	✓✓	✓	✓	✓✓
To minimise time and cost penalties of multi-modal interchange	✓	✓✓	✓	○	✓✓
To maximise awareness of sustainable travel options	○	✓✓	✓	○	✓
To minimise delays to buses in Alloa town centre	✓	✓✓	✓	○	✓
To minimise disadvantages to non-users of public transport	✓	✓	✓	○	○
To minimise the number and severity of road accidents	✓	✓	○	✓✓	○
To minimise cost to the public purse of transport infrastructure and services	✓	✓	○	○	○

Key to Table	✓✓	Strong correlation	○	No, or negligible, impact
	✓	Weaker correlation	✖	Weaker conflict
			✖✖	Strong conflict

6.9 The NTS objectives are as follows:

- **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, cyclists, 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.

### Links to SEStran Regional Transport Strategy

- 6.10 Strong correlations exist between the transport planning objectives and the RTS objectives. The only exception highlighted is the affect on non-users of potential schemes to improve bus journey times and reliability which in the majority of cases will be by bus priority schemes that restrict the road infrastructure available for non public transport users.
- 6.11 However, overall we consider that transport planning objectives makes good contribution to each of the regional transport objects, with few conflicts arising.
- 6.12 Table 6.4 shows the links between the transport planning objectives and the relevant objectives outlined in SEStran's Regional Transport Strategy. The objectives are listed below with the text highlighted in bold referring to that in the table:



- To maintain and improve the **labour market accessibility to** key business / **employment locations**, from all localities and communities (1.1)
- To support other strategies, particularly **land-use planning** and economic development (1.3)
- To reduce the negative impact of **congestion**, in particular to improve journey time reliability for passengers and freight (1.4)
- To improve **access to employment** (2.1)
- To improve **access to health** facilities (2.2)
- To improve **access to** other services, such as **retailing, leisure /** social and education (2.3)
- To make public transport more **affordable and socially inclusive** (2.4)
- To contribute to the achievement of the UK's national targets and obligations on **greenhouse gas emissions** (3.1)
- To minimise the negative impacts of transport on **natural and cultural resources** (3.2)
- To promote more sustainable travel (3.3)
- To increase transport choices, reducing dependency on the private car (3.5)
- To improve safety (accidents) and personal security (4.1)
- To meet or better all statutory air quality requirements (4.3), and
- To reduce the impacts of transport noise (4.4).

**Table 6.4 Links between Transport Planning Objectives and objectives set within Regional Transport Strategy**

Transport Planning Objectives	Links with RTS Objectives													
	Labour market accessibility to employment locations	Land Use Planning	Congestion	Access to employment	Access to health	Access to Retail/leisure	Affordable and socially inclusive	Reduce greenhouse gas emissions	Natural and cultural resources	Sustainable Travel	Transport choice	Safety and personal security	Air Quality	Noise
RTS No.	1.1	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.5	4.1	4.3	4.4
To minimise walk distances between bus and key town centre destinations, including the station	✓	✓	○	✓	✓	✓	✓	○	○	✓✓	✓✓	✓	○	○
To minimise time and cost penalties of multi-modal interchange	✓	○	✓✓	✓	✓	✓	✓	✓	○	✓✓	✓✓	○	○	○
To maximise awareness of sustainable travel options	○	○	✓	✓	✓	✓	✓	✓	✓	✓✓	✓✓	○	○	✓
To minimise delays to buses in Alloa town centre	✓	○	✓✓	✓	✓	✓	✓	✓	○	✓	✓	○	✓	✓
To minimise disadvantages to non-users of public transport	✓	○	×	○	○	○	○	○	○	✓✓	○	○	○	○
To minimise the number and severity of road accidents	✓	○	○	○	○	○	○	○	○	○	✓	✓✓	○	○
To minimise cost to the public purse of transport infrastructure and services	✓	○	○	○	○	○	○	○	○	○	○	○	○	○
Note:	See Table 6.3 for key													

## Links to Local Transport Strategy

- 6.13 Table 6.5 shows the links between the transport planning objectives and the relevant objectives outlined in the Council's Local Transport Strategy. For clarity these are repeated below:
- Increase the bus patronage for travel to work and leisure;
  - Reduce social exclusion and increase access to jobs by providing an integrated public transport system
  - Improve the passenger rail service for Clackmannanshire to include additional Park and Ride at Cambus;
  - Work with public transport operators to develop accessible services for those with disabilities
  - Improve access to information regarding public transport services
  - Assess and improve existing infrastructure to identify measures which would give bus services priority over the private car;
  - Work in partnership with transport providers to improve the quality of transport corridors.
- 6.14 Strong correlations exist between the transport planning objectives and the Council's local transport strategy objectives apart from the affect on non-users of implementation of bus priority schemes
- 6.15 However, overall we consider that transport planning objectives makes good contribution to each of the local transport objectives, with few conflicts arising.

**Table 6.5 Links between Transport Planning Objectives and objectives set within Clackmannanshire LTS**

Transport Planning Objectives	Links with LTS Objectives						
	Increase the bus patronage for travel to work and leisure;	Reduce social exclusion and increase access to jobs by providing an integrated public transport system	Improve the passenger rail service for Clackmannanshire to include additional Park and Ride at Cambus;	Work with public transport operators to develop accessible services for those with disabilities	Improve access to information regarding public transport services	Assess and improve existing infrastructure to identify measures which would give bus services priority over the private car;	Work in partnership with transport providers to improve the quality of transport corridors
To minimise walk distances between bus and key town centre destinations, including the station	○	✓	○	✓	○	○	○
To minimise time and cost penalties of multi-modal interchange	✓	✓✓	✓	✓✓	✓	✓	○
To maximise awareness of sustainable travel options	✓	✓	✓	✓	✓✓	✓	○
To minimise delays to buses in Alloa town centre	○	○	○	○	○	✓✓	✓
To minimise disadvantages to non-users of public transport	○	○	○	○	○	✘	○
To minimise the number and severity of road accidents	✓	✓	○	✓	✓	○	✓
To minimise cost to the public purse of transport infrastructure and services	○	○	○	✓✓	○	○	✓✓

Key to Table	✓✓	Strong correlation	○	No, or negligible, impact
	✓	Weaker correlation	✘	Weaker conflict
			✘✘	Strong conflict

## Links to Consultation Objectives

- 6.16 When undertaking the initial stakeholder consultation, the comments were grouped into a number of heading which are repeated below and link to the transport planning objectives.
- 6.17 Table 6.6 outlines these links. For clarity these are listed below:
- Improve Journey Times & Reliability
  - Improve Access to Employment & Services
  - Maintain existing links
  - Ensure services are socially Inclusive
  - Improve Bus/Rail Integration
  - Provide a safe environment
  - Maintain the existing number of parking places
  - Provide Information on all PT services.
- 6.18 Strong correlations exist between the transport planning objectives and those objective developed from the consultation exercise.
- 6.19 However, overall we consider that transport planning objectives makes good contribution to each of the local transport objectives, with few conflicts arising.

**Table 6.6 Links between Transport Planning Objectives and objectives set within initial Stakeholder consultation**

Transport Planning Objectives	Links with Consultation objectives							
	Improve Journey Times & Reliability	Improve access to employment and services	Maintain existing links	Ensure services are socially Inclusive	Improve Bus/Rail Integration	Provide a safe environment	Maintain the existing number of parking places	Provide Information on all PT service
To minimise walk distances between bus and key town centre destinations, including the station	○	✓	✓	✓	✓✓	✓✓	○	○
To minimise time and cost penalties of multi-modal interchange	✓	✓	✓	✓	✓✓	✓	○	✓
To maximise awareness of sustainable travel options	✓	✓	✓	✓	✓	✓	○	✓✓
To minimise delays to buses in Alloa town centre	✓✓	✓	✓	✓	✓✓	○	○	✓
To minimise disadvantages to non-users of public transport	✘	○	○	○	○	○	✓✓	○
To minimise the number and severity of road accidents	○	○	○	○	○	✓✓	○	○
To minimise cost to the public purse of transport infrastructure and services	○	○	○	○	✓	○	○	○

Key to Table	✓✓	Strong correlation	○	No, or negligible, impact
	✓	Weaker correlation	✘	Weaker conflict
			✘✘	Strong conflict

## 7 Option Generation, Sifting and Development

- 7.1 This chapter summarises and sifts potential options that could contribute to the transport planning objectives as set out in the previous section of this report. First, however, do-minimum and reference cases are described, based on background information as summarised in chapter 2.

### Do-Minimum and Reference Cases

- 7.2 The do-minimum scenario for this appraisal is considered to be:
- an hourly rail service operating direct from Alloa to Glasgow.
  - The new hospital for NHS Forth Valley acute services at Larbert with the first patients being seen there in the summer of 2010 and the last phase will be completed by 2011
  - the replacement for Alloa Health centre and the new Clackmannanshire community hospital will open by the end of 2008
  - the Clackmannanshire Bridge is open for general traffic but that traffic management and infrastructure for pedestrians and cyclists are unchanged.
- 7.3 The reference case is considered additionally to include the Forthside development in Stirling (which would speed bus journey times into Stirling on the corridor from Clackmannanshire) and some major developments in Alloa from which the Council has aspirations that new/enhanced bus services will be available to the town centre and station.

### Option Generation

- 7.4 This section summarises options that could potentially help to meet the objectives of the study and includes an initial sift of them. The options have been developed in order to reflect the full range of interventions that could potentially be implemented to contribute to the transport planning objectives.
- 7.5 Options have been identified from the consultation undertaken as part of this study and an option development workshop attended by SEStran and Clackmannanshire Council staff and the study team.
- 7.6 The listed options have been subjected to an initial appraisal against the planning objectives, their financial sustainability and implementability criteria.
- 7.7 The options for consideration have been grouped into five categories as follows:
- Road network and traffic management;
  - Bus network;
  - Infrastructure;
  - Public transport information; and
  - Parking.

7.8 The process adopted has considered ability of the options contribute to the planning objectives individually. In reality the options will be delivered as a package of measures, and packaging is considered later in this appraisal.

Key (for Table 7.1)

✓✓✓	Significant benefit
✓✓	Moderate benefit
✓	Slight benefit
○	No, or negligible, impact
xxx	Significant disbenefit
xx	Moderate disbenefit
x	Slight disbenefit
●●●	Difficult
●●	Some difficulty
●	Little or no difficulty



**Table 7.1 Initial Option Sift Against Output Objectives**

Intervention		Minimise walk distances	Minimise penalties of interchange	Awareness of sustainable travel options	Minimise delays to buses	Minimise disadvantages to non-users of public transport	Minimise road accidents	Minimise cost to the public purse	Indicative Costs	Implementability	Recommendation / Comments
<b>1</b>	<b>Road Network and Traffic Management</b>										
1.1	Traffic management at Shillinghill roundabout to ease bus traffic from Shillinghill	○	○	○	✓	×	✓	×	Moderate	●	<b>Retain</b> for further consideration. Does not affect walk distances, but may make bus operation more efficient at peak times
1.2	Westbound bus services operating clockwise from Auld Brig Road, Mill Road to Shillinghill	○	○	○	✓✓	×	○	××	Moderate	●●	<b>Retain</b> for further consideration. Does not affect walk distances, but may make bus operation more efficient as reduces bus journey times for westbound services.
1.3	Eastbound bus services one-way along Drysdale Street and Shillinghill. Westbound bus services one-way along King Street	×	×	×	✓	○	○	××	Moderate	●●	<b>Reject.</b> Will lead to passenger confusion as bus hub for the town will be split to two locations. All bus users (whether accessing town or station) will face longer walk at one part of journey.
1.4	Westbound bus services one-way along Drysdale Street and Shillinghill. Eastbound bus services one-way along King Street	×	×	×	✓	○	○	××	Moderate	●●	<b>Reject.</b> Will lead to passenger confusion as bus hub for the town will be split to two locations. All bus users (whether accessing town or station) will face longer walk at one part of journey.
1.5	All bus services operate via King Street, not via Shillinghill, with stops provided on King Street	××	✓✓	○	✓✓	×	○	×	Moderate	●	<b>Reject.</b> Will lead to significantly increased walk distances for most bus passengers wishing to access the town centre.

Intervention		Minimise walk distances	Minimise penalties of interchange	Awareness of sustainable travel options	Minimise delays to buses	Minimise disadvantages to non-users of public transport	Minimise road accidents	Minimise cost to the public purse	Indicative Costs	Implementability	Recommendation / Comments
1.6	All bus services operate via a new bus station at the King Street car park, not via Shillinghill	✓✓	✓✓	✓✓	✓	x	○	xx	High	●●	<b>Retain</b> for further consideration. Provides a single focus for all bus passengers, reasonably convenient for town and station. Car parking capacity will be lost.
1.7	Drysdale Street/Shillinghill to be converted to bus and taxi only operation	○	○	○	✓✓	xx	○	x	Moderate	●●●	<b>Reject.</b> Not considered to be acceptable to local people and traders.
1.8	Two way bus operation along Drysdale Street and Shillinghill	○	○	○	x	xx	x	xx	Moderate	●●●	<b>Reject.</b> Effective two-way traffic operation and bus stops cannot be accommodated in Shillinghill & Drysdale Street, whilst maintaining essential access for servicing.
1.9	Introduction of bus lanes in one or both directions along King Street	○	○	○	✓	x	○	○	Low	●●	<b>Reject,</b> unless as measure to accompany option 1.1 or 1.4.
<b>2</b>	<b>Bus Network</b>										
2.1	Diversion of all bus services into the station forecourt whilst also operating to Shillinghill	✓✓✓	✓✓	✓✓	xx	○	○	○	Low	●●●	<b>Reject.</b> Station forecourt does not have the capacity to cater for many buses, plus significant additional journey time.
2.2	Diversion of all bus services into the station forecourt instead of operating to Shillinghill	xx	✓✓	x	x	○	○	○	Low	●●●	<b>Reject.</b> Station forecourt does not have the capacity to cater for many buses, plus additional walk distance for passengers accessing town centre.
2.3	Diversion of existing local town services into the station forecourt	✓	✓	✓	○	○	○	x	Moderate	●	<b>Retain</b> for further consideration. Likely to require additional on-going revenue support or partnership with relevant operators.

Intervention		Minimise walk distances	Minimise penalties of interchange	Awareness of sustainable travel options	Minimise delays to buses	Minimise disadvantages to non-users of public transport	Minimise road accidents	Minimise cost to the public purse	Indicative Costs	Implementability	Recommendation / Comments
2.4	New Town Service from Alloa Station	✓	✓	✓	○	○	○	xx	High	●●	<b>Reject.</b> Delays in train may lead to unreliability in bus service. Potential overlap with existing town services so poor value. Likely to need on-going revenue support. Option 2.3 preferred.
2.5	New bus services to Clackmannanshire villages from Alloa Station	✓	✓	✓	○	○	○	xx	High	●●	<b>Reject.</b> Delays in train may lead to unreliability in bus service. Potential overlap with existing town services so poor value. Likely to need on-going revenue support. Option 2.6 preferred.
2.6	Enhanced services to Alloa (including station) from other towns	✓	✓✓	✓✓	○	○	○	xx	High	●●	<b>Retain.</b> Detailed assessment has shown that bus service levels to/from Alloa are entirely in line with what would be expected and that there are few significant gaps in the network. Full integration of bus and rail timetables cannot be achieved at Alloa, given that Alloa is just one point in a complex bus network and that few bus services terminate there. There is the potential by altering times of existing services that better integration can be provided. Especially when bus frequencies are lower in the early morning, late evening and on Sunday. The early morning and late evening services are likely to require additional support from the public purse.

Intervention		Minimise walk distances	Minimise penalties of interchange	Awareness of sustainable travel options	Minimise delays to buses	Minimise disadvantages to non-users of public transport	Minimise road accidents	Minimise cost to the public purse	Indicative Costs	Implementability	Recommendation / Comments
2.7	Demand responsive bus services to station	✓	✓	✓	○	○	○	xx	High	●●	<b>Reject.</b> Potential overlap with existing town services so poor value. Likely to need on-going revenue support. Option 2.3 preferred.
2.8	A developer funded Alloa Station shuttle bus service	✓	✓	✓	○	○	○	○	High	●●●	<b>Reject.</b> No financially-sustainable option can be identified.
<b>3</b>	<b>Infrastructure</b>										
3.1	Footbridge linking King Street Car Park and Alloa Station footway (with pelican crossing removed)	✓	✓✓	○	○	✓	✓	xx	High	●●	<b>Reject</b> as option in own right, but may be essential to enable delivery of King Street bus stops options and could complement bus station option.
3.2	Expanded capacity of bus turning circle at rail station to enable all buses to operate there	✓	○	✓✓	✓✓	xx	○	x	Moderate	●●●	<b>Reject.</b> Insufficient land available to enable this without removal of a significant proportion of car parking spaces, conflicting with park & ride and kiss & ride access.
3.3	Covered, lit walkways between rail station, main bus stops and town centre	✓	✓✓	✓	○	✓	○	x	Moderate	●●	<b>Retain</b> for further consideration. Could help reduce perceived interchange penalties.
3.4	Upgrading of Shillinghill Bus Stance	○	✓✓	✓	x	✓	○	✓✓	Moderate	●●	<b>Retain</b> for further consideration. Will need on-going revenue for maintenance.
3.5	New Bus Stance at Shillinghill	○	✓✓	✓	x	✓	○	✓	High	●	<b>Retain</b> for further consideration. Will need on-going revenue for maintenance.

Intervention		Minimise walk distances	Minimise penalties of interchange	Awareness of sustainable travel options	Minimise delays to buses	Minimise disadvantages to non-users of public transport	Minimise road accidents	Minimise cost to the public purse	Indicative Costs	Implementability	Recommendation / Comments
3.6	New bus stop(s) on King Street close to rail station	✓✓	✓✓	✓	✗	✓	✗	○	Low	●	<b>Retain</b> for further consideration. Stop only relevant on westbound carriageway with present network configuration, and buses would need to stop there twice on each westbound journey, whilst eastbound services would not pass the stop, so potential passenger confusion
<b>4</b>	<b>Public Transport Information</b>										
4.1	Real time information of both rail and bus times at main bus stops and station	○	✓✓	✓✓✓	○	○	○	✗	Moderate	●●	<b>Retain</b> for further consideration. Link to SEStran real time information strategy.
4.2	Scheduled electronic information of both rail and bus times at main bus stops and station	○	✓	✓✓	○	○	○	○	Low	●	<b>Reject</b> unless real time information is unavailable, however printed information is more cost effective (option 4.3).
4.3	Printed information on bus network at rail station. Train times at main bus stops	○	✓	✓✓	○	○	○	○	Low	●	<b>Retain</b> for further consideration. First ScotRail must provide information on bus services and local map as part of franchise agreement.
4.4	Comprehensive leaflet of bus and rail services	○	✓	✓✓	○	○	○	○	Low	●	<b>Retain</b> for further consideration. First ScotRail must provide information on bus services and local map as part of franchise agreement. Effective distribution of the information essential.

Intervention		Minimise walk distances	Minimise penalties of interchange	Awareness of sustainable travel options	Minimise delays to buses	Minimise disadvantages to non-users of public transport	Minimise road accidents	Minimise cost to the public purse	Indicative Costs	Implementability	Recommendation / Comments
4.5	Signing to show routes between station and main bus stops	✓	✓✓	✓	○	○	○	○	Low	●	<b>Retain</b> for further consideration. Considered essential to facilitate multi-modal integration.
<b>5</b>	<b>Ticketing</b>										
5.1	Introduction of Alloa Plusbus	○	✓✓	✓	○	○	○	○	Low	●	<b>Retain</b> for further consideration.
5.2	One-Ticket (valid throughout the SEStran area)	○	✓✓	✓	○	○	○	○	Low	●	<b>Retain</b> for further consideration. Stagecoach, First Edinburgh & First ScotRail are currently members of the scheme.
<b>6</b>	<b>Parking</b>										
6.1	Long stay parking charges	○	○	✓	○	xx	○	✓	Low	●●●	<b>Reject.</b> Could help promote use of public transport to access rail station, but could only be considered as part of wider town centre strategy. It is contrary to Clackmannanshire's Local Transport Strategy.

7.9 From the options described in table 7.1, it can be seen that the following measures are retained for further consideration (intervention numbers as given in the table):

- 1.1: Traffic management at Shillinghill roundabout to ease bus traffic from Shillinghill;
- 1.2: Westbound bus services operating clockwise from Auld Brig Road, Mill Road to Shillinghill;
- 1.6: All bus services operate via new bus stances or a new bus station at the King Street car park, not via Shillinghill;
- 2.3: Diversion of existing local town services into the station forecourt;
- 2.6: Enhanced services to Alloa (including station) from other towns;
- 3.3: Covered, lit walkways between rail station, main bus stops and town centre;
- 3.4: Upgrading of Shillinghill Bus Stance;
- 3.5: New facilities at Shillinghill Bus Stance;
- 3.6: New bus stop(s) on King Street;
- 4.1: Real time information of both rail and bus times at main bus stops and station;
- 4.3: Printed information on bus network at rail station. Train times at main bus stops;
- 4.4: Comprehensive leaflet of bus and rail services;
- 4.5: Improved signing to show walking routes between station and main bus stops;
- 5.1: Introduction of Alloa Plusbus; and
- 5.2: One-Ticket (valid throughout the SEStran area).

## 8 Development of Preferred Options

8.1 Options retained from the initial sift fall into four broad categories:

- New or upgraded facilities at the Shillinghill bus stance, perhaps combined with traffic management changes;
- New bus stances off King Street or a new bus station;
- New/amended bus services; and
- Passenger information/ticketing/quality enhancements.

8.2 These are described in more detail later in this section. Beforehand, however, the comments of key stakeholders on these options are reported.

### Participation and Consultation

8.3 Key stakeholders provided opinions of the retained options.

#### *First Edinburgh*

8.4 First Edinburgh were in support of the 'soft' measures of:

- Better information provision;
- Improvements to passenger waiting facilities; and
- Improvements to pedestrian links including signposting between the main bus stops and railway station.

8.5 In addition First Edinburgh support measures which:

- Maintain access through Shillinghill;
- Ease access from Shillinghill by traffic management measures; and
- With the support of the Council and First ScotRail, would amend the existing town service.

8.6 First Edinburgh's response was, therefore as follows:

*First remain of the view that the best arrangement for both ourselves and a majority of bus passengers would be to have two way bus operation with bus priorities along Shillinghill and Drysdale Street. I note that you specifically rule this out on the grounds of likely local objections and therefore consider that the next best arrangement is to maintain the existing arrangements with some improvements.*

*These should include traffic management measures to allow buses to leave Shillinghill more easily; improvements to the passenger facilities in Shillinghill and better information provision about both bus and rail services all things which your report mentions.*

*We are convinced that the best possible town centre access is of value to far more bus passengers on our main commercial services than stopping closer to the railway station.*

*Continued...*



*We would though support improving pedestrian links including signposting between the main bus stops and railway station and would be pleased to discuss amending the route of Alloa local service 64 to serve the railway station with Clackmannanshire Council, First ScotRail and any other appropriate partners.*

#### **Mackies of Alloa**

- 8.7 Locally-based operator Mackies of Alloa was also supportive of buses continuing to operate through Shillinghill. Although pointing out that the current layout is far from ideal, he was wary of changing the location only to accommodate the single interchange concept to the disadvantage of commercial operation and client convenience.

#### **NHS Forth Valley**

- 8.8 NHS Forth Valley welcomed the options outlined to take forward to full appraisal in enhancing connectivity between bus and rail travel but did not outline overall support for any option above any other.
- 8.9 NHS Forth Valley response was as follows:

*An effective link between Alloa Railway station and the Bus interchange will allow staff, service users and visitors increased flexibility, especially around multi modal journeys, for the journey to and from the New Acute Hospital at Larbert.*

*Enhanced connectivity between bus and rail travel should promote local public transport usage, with a positive effect being an increased demand for new or reinforced services to and from the centre of Alloa. With the New Community Hospital occupying a strategic position on an arterial route to the centre of Alloa, enhanced services from the outlying northern communities would increase their non car based accessibility options.*

*Additionally, it is hoped that an increase in public transport patronage would allow the development of direct services to the Community Hospital from the western and southern areas of Alloa, thereby negating the need to change at Shillinghill. Removing the need to change would be extremely beneficial for patients and visitors especially those with mobility problems or travelling with children.*

#### **Remaining Stakeholders**

- 8.10 Other bus operators (Stagecoach in Fife, Hunters and Wheelchair Accessible Vehicles) representatives from First ScotRail and Network Rail, Alloa Trades Association, Central Scotland Police and from Transport Scotland had all been consulted but made no additional comments.

#### **Summary**

- 8.11 In summary, there is a general consensus that the options taken onto detailed appraisal are acceptable to the key stakeholders. The bus operators particularly favour maximum penetration of their commercial services into the town centre but are not averse to diversion of existing services with the co-operation of appropriate partners.
- 8.12 The only additional outcome from the consultation exercise was consideration of bus stops on King Street to enable improved bus and rail integration.

## Option Development

- 8.13 As noted previously, the most effective transport solutions are usually packages of measures, rather than individual interventions. The five options outlined below are, therefore, packages of measures grouped into two separate categories: options based around the existing bus stance at Shillinghill, and options based around a new facility at King Street car park.
- 8.14 From the option sifting and subsequent stakeholder consultation, five preferred packages of measures emerge as the potentially best value options to contribute to the objectives of the study, worthy of detailed appraisal. The options are as follows:
- Option 1: Upgrade of Shillinghill
    - Option 1a Shillinghill roundabout traffic management;
    - Option 1b Shillinghill to King Street single lane priority; and
    - Option 1c Auld Brig Road, Mill Road to Shillinghill loop.
  - Option 2: King Street Bus Station
    - Option 2a: King Street Car Park Bus Stance Phase 1; and
    - Option 2b: King Street Car Park Bus Station Phase 2.
- 8.15 Any of these options could be accompanied by improved passenger information/ticketing/infrastructure works (summarised as 'journey quality' improvements) and/or changes to bus service provision. Each option is described in more detail below:

### Journey quality improvements

- 8.16 The journey quality package is considered to potentially comprise a range of measures including:
- Sheltered lit walkways between the rail station and main bus stops;
  - Whins Road cantilever shelter (northbound) ;
  - New bus stop(s) on King Street close to the rail station (for Shillinghill upgrade options);
  - Real time information units and high quality printed information provided at bus stops and the rail station showing both rail and bus times at each;
  - Comprehensive leaflet of bus and rail services;
  - Improved signage showing routes between station and main bus stops;
  - Introduction of Alloa Plusbus ticket within Clackmannanshire;
  - Ensuring that One-ticket is valid throughout the area by extending validity to cover rail between Stirling and Alloa; and
  - Improved promotion of One-Ticket (valid throughout the SEStran area) to attract more operators and increase passenger usage.
- 8.17 This package is assumed to accompany each of the options described below.

### **Option 1a: Shillinghill roundabout traffic management**

- 8.18 During the evening peak Shillinghill roundabout is close to capacity which delays bus services exiting Shillinghill on to the roundabout. This option addresses this issue by providing measures to ease movement from Shillinghill onto Shillinghill roundabout and therefore reducing overall journey time.
- 8.19 Common to all of the proposed Shillinghill options, a bus lane has been proposed in the westbound direction from the Shillinghill roundabout to the new roundabout providing access to the BP petrol filling station and the King Street car park. In addition to the bus lane, Option 1a introduces a set of signals on the Shillinghill approach arm to the Shillinghill roundabout.
- 8.20 On Shillinghill, the remaining section of bus priority remains to enable buses exiting the bus stance to gain priority over other traffic.
- 8.21 In addition to the traffic management measures described above, this option considered two alternative infrastructure measures at the Shillinghill bus stance common to options 1a, 1b and 1c. First is the upgrading of the existing stance by enclosing the structure and providing additional facilities such as a waiting room. The second sub-option is the full replacement of the whole structure incorporating more extensive facilities. Both sub-options should also include additional groundworks in terms of installation of Kassel kerbs and resurfacing.

### **Option 1b Shillinghill to King Street single lane priority**

- 8.22 As stated above the King Street bus lane is common to all proposed options. In contrast to the use of a set of signals on the Shillinghill approach arm to the Shillinghill roundabout as used in the previous option, option 1b uses the available space on the Shillinghill approach to the roundabout to create a bus left-turn onto King Street with the inclusion of a raised kerb on the roundabout circulating carriageway to avoid traffic merging on the entry to King Street. This removes the give way rule for buses turning left and will permit a continuous movement for westbound buses. The bus lane will continue into King Street to give the bus a further advantage. Other traffic exiting Shillinghill will have to use the right hand lane, for non-bus traffic this means entering King Street on the outer lane of the westbound carriageway. If other traffic is required to use the inside lane such as to use the King Street car park it will need to move to the inner lane creating a potential conflict. This scenario was modelled and there was no significant effect on non-bus traffic.
- 8.23 Buses which are heading towards the east will continue to turn right at this roundabout and will not benefit from the left-turn filter lane, albeit that they should not be disadvantaged. It is westbound buses that are hindered by the one-way system resulting in them operating twice over King Street and therefore this option will give the greatest benefits to that flow.

### **Option 1c Auld Brig Road, Mill Road to Shillinghill loop**

- 8.24 This option would reopen Mill Road to buses, so enabling westbound buses to access the Shillinghill bus stance without needing to travel along King Street twice, and eastbound buses to use King Street, serving a potential new stop close to the rail station.
- 8.25 Mill Road is currently block paved and this high quality surface could remain. A 'still' is located at the junction of Mill Road and Shillinghill (see Figure 8.1); this would require to be re-sited to allow the formation of the junction. Currently access to Mill Road is from the Auld Brig Road/Tesco's roundabout and East Vennel. Access to Mill Road would be altered to be via a new junction directly off Auld Brig Road for buses and traffic to access Mill Road only. Access would be expansion of the existing pedestrian link. East Vennel can still be accessed from Auld Brig Road/Tesco roundabout but there would be no through route. Instead, a turning head would be

created to the east of East Vennel. The costs of providing this turning head are provided in the capital costs in the economy section of the report.

- 8.26 One of the major concerns of the bus operators was the additional journey time for westbound bus services, being caused by them having to negotiate King Street twice. This option seeks to reduce the additional time penalty (some three minutes) by buses using a shorter loop clockwise from Shillinghill roundabout, Auld Brig Road then turning into a new junction with Mill Road. An additional junction would be provided between Mill Road and Shillinghill at the existing junction with Drysdale Street and Shillinghill. This would be used by westbound buses only and remove the need to use King Street twice and Drysdale Street. Eastbound services could continue to maintain their present route over Drysdale Street and Shillinghill exiting Shillinghill via a slip lane as described in the above option.
- 8.27 The adoption of this shorter loop allows eastbound services to provide stops closer to the rail station on King Street. The sites for the stops are relatively exposed and shelters would be a key requirement.
- 8.28 This option would have an adverse environmental impact on Mill Street, though this may in part be offset by the reduction in bus traffic on Drysdale Street and part of Shillinghill.

**Figure 8.1 Junction Place: Maclays 'Still'**



JMP

#### **Option 2a: King Street Car Park Bus Stance Phase 1**

- 8.29 In the interest of improving integration between bus and rail and reducing journey times, the options 2a and 2b would move the current bus facilities in Shillinghill to a new location within the current King Street car park. (see Figure 8.2)

- 8.30 The facility would be accessed from the four-arm rail station roundabout. Although this was not identified as a congested roundabout, the bus priority provided for services travelling westbound on King Street is added as part of the package of measures.
- 8.31 The traffic modelling exercise identified that the capacity of the roundabout was adequate for provision of existing bus frequencies from the new bus stance in King Street car park and significant journey time savings for westbound buses should result.
- 8.32 A minimum of three stances are required to accommodate bus services in Alloa. The most effective delivery of these services in the limited area is a u-shaped configuration. However, this design does not make effective use of the space available and, although some parking spaces remain within the site, access is difficult and therefore this option would not include them.
- 8.33 Given that the majority of services currently using Shillinghill bus stance are through services, a through configuration would be required. This configuration should also limit the amount of diversion required.
- 8.34 Option 2a seeks to achieve these characteristics as well as the adoption of infrastructure to serve each individual stance. Facilities outlined under these options include high quality enclosed shelters with seating. It is not envisaged that the facility be manned but as the location is close to a manned public convenience there may be opportunities to enable combining of this resource. The area is currently covered by CCTV cameras but it is suggested that these and lighting are improved for the area and the linking thoroughfares to Shillinghill and Drysdale Street.
- 8.35 The new location occupies a central position between the rail station and the current recognised town centre in Drysdale Street, therefore pedestrian linkages to the proposed site are a key issue. In addition to improved signage, this package of measures would include additional covered walkways linking the car park with Shillinghill, Drysdale Street and the station. The link to Drysdale Street would be through a new thoroughfare, highlighted in Appendix D, figure 4.

**Figure 8.2 King Street Car Park**



**Option 2b: King Street Car Park Bus Station Phase 2**

- 8.36 In contrast to option 2a, option 2b would provide a saw-tooth arrangement along with additional stances in order to accommodate the additional manoeuvring time and to allow for future growth. This option combines a differing configuration of bus stance with a significantly higher quality of bus infrastructure in order to achieve a full bus station specification, to a similar standard as that recently opened in Leven. It is anticipated that this facility would be manned.

**Figure 8.3 Leven Bus Station**



*Source: JMP*

- 8.37 No other bus stopping facilities would be provided within the town centre; maintaining the existing 'single town stop' concept for buses in Alloa. This bus station would therefore need to have good pedestrian links to the centre and rail station. The lack of alternative stopping places combined with a high level of facilities mean bus departure charges being considered as a revenue stream for the local authority, which it is assumed will maintain and manage the facility.
- 8.38 The facility would cover the same area as that of option 2a and therefore reducing car parking spaces by the same amount.

**Table 8.1 Preferred packages of measures**

Description		Upgrade of facilities at Shillinghill	New stance with additional facilities at Shillinghill	Traffic Management at Shillinghill roundabout to improve access from Shillinghill	King Street Bus priority	Relocation of all bus services to operate via new stances in King Street	Relocation of all bus services to operate via new bus station in King Street	Auld Brig Road, Mill Road to Shillinghill bus link	Covered, lit walkways between rail station and Shillinghill bus stops.	New stop(s) on King Street	Real time information of both rail and bus times at main bus stops and station	Printed information on bus network at rail station	Printed information on rail network at bus station/stance	Comprehensive leaflet of bus and rail services	Signage to show walking routes between station and bus stopping facilities	Alloa Plusbus	One-Ticket
Option	Table 7.1 reference	3.4	3.5	1.1	1.9	1.6	1.6	1.2	3.3	3.6	4.1	4.3	4.3	4.4	4.5	5.1	5.2
<b>Shillinghill</b>																	
1a	Shillinghill roundabout traffic management - New		●	●	●				●		●	●	●	●	●	●	●
1a	Shillinghill roundabout traffic management - Upgrade	●		●	●				●		●	●	●	●	●	●	●
1b	Shillinghill to King Street single lane priority – New		●	●	●				●		●	●	●	●	●	●	●
1b	Shillinghill to King Street single lane priority – Upgrade	●		●	●				●		●	●	●	●	●	●	●
1c	Auld Brig Road, Mill Road to Shillinghill loop - New		●	●	●			●	●	●	●	●	●	●	●	●	●
1c	Auld Brig Road, Mill Road to Shillinghill loop - Upgrade	●		●	●			●	●	●	●	●	●	●	●	●	●
2a	King Street Car Park Bus Stance Phase 1					●			●		●	●	●	●	●	●	●
2b	King Street Car Park Bus Station Phase 2						●		●		●	●	●	●	●	●	●



## 9 Detailed Appraisal

- 9.1 The method we have chosen to develop selected options follows the processes defined in STAG. Following on from the pre-appraisal work this chapter describes more detailed appraisal work undertaken on the preferred options. The method applied is proportionate to the scale of impacts being considered.
- 9.2 An appraisal summary table is provided for Appendix I for each option.

### Appraisal of Preferred Packages against Transport Planning Objectives

- 9.3 The transport planning objectives were developed in response to the key issues pertinent to the study, the relevant existing objectives for transport in the area and the findings of the consultation process with key stakeholders. Each option has been assessed against the seven objectives identified in Section 6.

**Objective: To minimise walk distances between bus and key town centre destinations, including the station**

- 9.4 Key town centre destinations are identified and listed in Table 9.1. The key locations were categorised by community, council/administration, leisure, education, health, shopping and transport.
- 9.5 The central location of the existing facility at Shillinghill means that walking distances between there and the key town centre locations are generally short.
- 9.6 Existing stopping facilities at Whins Road and new stops proposed near the rail station on King Street minimise walking distances between buses and trains.

#### *Shillinghill Stance*

##### *Option 1a/b*

- 9.7 As the bus stopping facilities will remain in the same location in these options, walking distances will not be worsened between bus and key town centre locations. The walking distance to the station is approximately 300m but existing stopping facilities at Whins Road reduce walking distances between bus and rail station to 200m for northbound bus services.

##### *Option 1c*

- 9.8 As the bus stopping facilities will remain in the same location in this option then walking distances will not be lengthened between bus and key town centre locations. The walking distance to the station would be around 200m but existing stopping facilities at Whins Road reduce walking distances between bus and the rail station to 200m for services northwards. The proposed stops on King Street will also reduce walking distance between bus and rail to around 150m for eastbound services, 200m for westbound.

#### *King Street Car Park*

##### *Option 2a/2b*

- 9.9 Relocating all services to King Street means walking distances to key locations within the town centre are altered somewhat, however short distance between the two locations, Shillinghill and King Street, means the difference is not significant. There is, in aggregate, no worsening of the current situation. The changes are summarised below.

**Table 9.1 Walking Distances from Public Transport locations to Key Town Centre Destinations (metres)**

Map Ref. <sup>5</sup>	Location	Facility	Options 1a, 1b	Option 1c	Options 2a, 2b
1	Spiers Centre	Community	440	440	330
	Greenfield	Council	840	840	750
2	Kilncraigs	Council	680	680	770
	Forth Valley College	Education	2000	2000	2000
3	Alloa Health Centre	Health	960	960	820
4	Boots, High Street	Health	380	380	400
	Community Hospital	Health	1970	1970	1910
5	Drysdale Street Library	Library & Council	270	270	180
6	Asda, King Street	Shopping	310	310	290
7	Tesco, Kilncraigs	Shopping	750	750	840
8	Rail	Transport	300	150-200	220

JMP

**Objective: To minimise time and cost penalties of interchange – including bus / bus and bus / rail.**

#### **Bus/Bus Interchange**

- 9.10 All bus services operating to Alloa currently serve Shillinghill Bus Stance and, therefore, there are minimum time and cost penalties for bus interchange. Improvements to interchange can only be achieved by improved ticketing, information and timetabling of services. Through ticketing is only available on First Edinburgh services by purchase of day, weekly and zonal tickets and through One-ticket on First Edinburgh and Stagecoach in Fife services. Additional ‘soft’ measures, common to all options, of improved published timetable information and real time information will seek to minimise time and cost penalties of interchange.
- 9.11 A well developed competitive bus network already exists providing direct links from the majority of Clackmannanshire villages to Alloa and beyond to Stirling. The survey undertaken as part of this study highlighted only 1.3% users of Shillinghill Stance were changing service, estimated at 6,000 passengers per annum. Of the identified passengers all were changing service to board services to Falkirk. The only direct service to Falkirk is from Stirling via Tullibody and onwards to Clackmannan and Kincardine. Those requiring change started their journeys in other parts of Alloa, Alva and Sauchie.
- 9.12 Analysis of the level of service provision shown in Appendix H highlights that the existing frequency is not a deterrent to interchange but instead it is low demand and the existing extensive network that reduce the need for interchange.
- 9.13 The role of facilities for bus / bus interchange is, therefore, minimal with Shillinghill instead acting as a terminal point for passengers.

<sup>5</sup> See Appendix A Figure 3

### ***Shillinghill Stance***

#### ***Option1a/b/c***

- 9.14 Options under consideration replicate the existing situation in terms of integration of services, but the low level of integration as a result of the extensive network of direct services negates the need for alterations to the existing situation of bus/bus integration in all but a few cases. The preferred packages are unlikely to generate significant benefits to this objective.

### ***King Street Car Park***

#### ***Option2a/b***

- 9.15 As with Shillinghill all services will use the bus stance/bus station in the King Street car park and therefore integration of services remains as per the current position. The preferred packages are unlikely to generate significant benefits to this objective as there is a low level of integration as a result of the extensive network of direct services.

### ***Summary***

- 9.16 Overall these options are anticipated to give no or negligible benefit to the objective.

### ***Bus/Rail Interchange***

- 9.17 Unlike the bus/bus interchange at Shillinghill or King Street bus rail-interchange always requires a change of mode and this has a cost and time effect.
- 9.18 Survey analysis confirmed that 12% of rail users at Alloa currently interchange to/from bus.
- 9.19 The time and cost penalties of interchange between bus and rail can be minimised by multi-modal ticketing, providing fixed bus/rail connections, high frequency bus and or rail services to allow connections and providing bus services close to the rail station.
- 9.20 Multi-modal ticketing and 70% of bus services operating direct from Clackmannanshire's villages serve the Whins Road stop within 200m of the station and will contribute towards this planning objective.

### ***Shillinghill Stance***

#### ***Option1a/b/c***

- 9.21 Options 1a and 1b do little to improve bus/rail integration as, although transfer and waiting will be made more comfortable by improved facilities, a significant walk distance remains. Option 1c provides a greater benefit by providing new stops on King Street, as close as possible to the station entrance.

### ***King Street Car Park***

#### ***Option2a/b***

- 9.22 These options provide some benefit to bus/rail integration over those that retain the Shillinghill stop patterns, as walk distance to the station is reduced by around 80m. Walk distances for all options are shown in Table 9.1.

**Objective: To maximise awareness of sustainable travel options**

- 9.23 Some benefit to this objective is anticipated from each of the options. A wide range of 'soft' (journey quality) measures have been considered in terms of printed timetable information, timetable displays and real time information. The production of a timetable booklet showing all bus and rail services are to be delivered to all households within Clackmannanshire with an aim to maximise awareness of travel options. Additionally, real time information will lead to maximising the awareness of sustainable travel options.

***Shillinghill Stance***

***Options 1a/b/c***

- 9.24 The 'soft' measures are common to all options and would therefore contribute towards this objective. Unlike King Street Car Park there is no direct visual awareness of alternative travel options from Shillinghill. Improved signage would mitigate this situation.

***King Street Car Park***

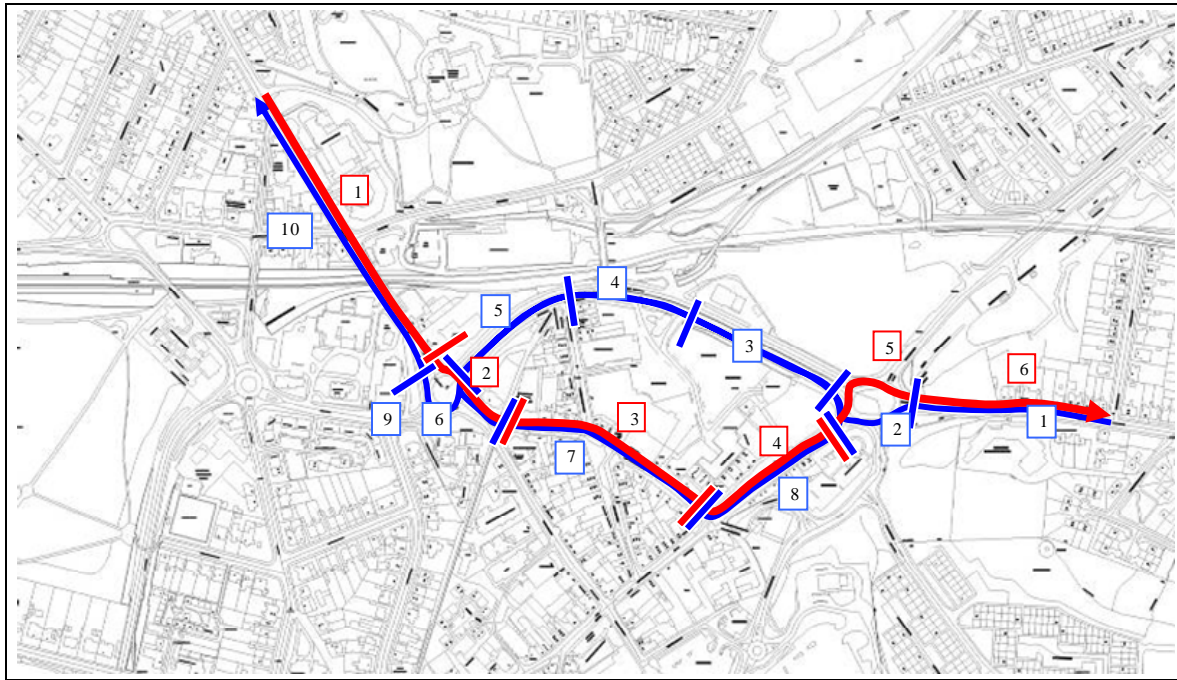
***Option2a/b***

- 9.25 The 'soft' measures are common to all options and would therefore contribute towards this objective. Direct visual awareness of alternative travel options helps to reinforce this as well as by improved signage.

**Objective: To minimise delays to buses in Alloa town centre**

- 9.26 Key amongst the elements of the options for consideration was the aim to improve bus journey times and reliability while not adversely affecting other traffic.
- 9.27 The two key time journey delays affecting buses are:
- exiting Shillinghill onto Shillinghill roundabout; and
  - westbound services requiring to negotiate King Street twice.
- 9.28 All the options considered seek to provide effective and deliverable solutions to overcome these issues.
- 9.29 Substantial modelling analysis took place via a VISSIM model to prove this. The model was developed to show the change in modelled journey time for all proposed bus routes travelling in both eastbound and westbound direction in the AM and PM peak periods and the results were then compared to the existing situation (Figure 9.1). The results of the modelling exercise are described in more detail in Appendix F.

**Figure 9.1 Journey Time Section**



*VISSIM Model*

9.30 The results in summary show that the following journey time savings/losses for buses (for both directions and both AM and PM periods combined) were:

**Table 9.2 Peak Time Bus Journey Time Summary**

Option	Bus Net Journey Time (+ increase, - decrease)
1a Shillinghill roundabout traffic management	+ 21 seconds
1b Shillinghill to King Street single lane priority	+ 47 seconds
1c Auld Brig Road, Mill Road to Shillinghill loop	- 185 seconds
2a King Street Car Park Bus Stance Phase 1	- 175 seconds
2b King Street Car Park Bus Station Phase 2	+ 19 seconds

*JMP VISSIM Results*

**Shillinghill Stance**

**Option 1a**

9.31 Option 1a failed to achieve journey time benefits overall. Whilst a significant (40s) time saving is predicted for eastbound buses in the PM peak, this is more than offset by delays to westbound services. No significant change to journey times in the morning peak is anticipated.

**Option 1b**

9.32 The addition of a slip lane from Shillinghill should provide a benefit to bus traffic as it did not have to give way at Shillinghill roundabout. However, although buses to receive benefit at the point where they leave Shillinghill, increased congestion on the network results in a net increase in journey times for all vehicles, including buses.

### *Option 1c*

- 9.33 The adoption of a slip lane at Shillinghill roundabout and operating via a new section of road (Mill Road) Option 1c provides significant benefits to this objective by potentially reducing journey times by over three minutes at peak times.

### *King Street Car Park*

#### *Option 2a*

- 9.34 As with option 1c this option provides significant time savings and therefore would generate significantly towards the objective. The movement of services to the King Street Bus Station eliminates the need for westbound buses to negotiate King Street twice, this combined with being able to drive in and out of the stance results in an overall time savings of nearly three minutes on average for buses at peak times.

#### *Option 2b*

- 9.35 Unlike the previous option, option 2b potentially delays buses and therefore does not contribute to this objective. The drive-in, reverse-out manoeuvre of the bus station plus anticipated additional dwell time reduces any journey time benefit achieved from relocating to King Street car park.

### *Summary*

- 9.36 Options 1c and 2a both could provide substantial savings in bus journey times in Alloa. All other options are anticipated to increase journey times.

### **Objective: To minimise disadvantages to non-users of public transport**

- 9.37 It was a key requirement that non-users of public transport were not unduly adversely affected by the introduction of any of the options to improve bus/rail integration and access to Alloa town centre by public transport.

#### *Option 1a*

- 9.38 The modelling exercise briefly described above and in Appendix F highlighted in Option 1a that by introducing traffic lights giving priority onto Shillinghill roundabout that this would have a detrimental effect not only on overall bus journey time but also significant effect on non-users as well (the increase in bus journey time is caused by increased congestion for general traffic). This option would therefore provide a disbenefit towards this planning objective.

#### *Options 1b/c*

- 9.39 Options 1b and 1c where a slip lane on Shillinghill roundabout and continual bus lane from the roundabout to the King Street crossing will provide a reduction in capacity on King Street for non bus traffic. The modelling exercise predicted additional delays to traffic in the town centre.
- 9.40 Option 1c has the benefit of removing buses from Drysdale Street and part of Shillinghill, however, to the benefit of those non-public transport users in the town centre; albeit that buses are introduced onto Mill Road.

#### *Option 2a/b*

- 9.41 In terms of options 2a and 2b, which involved moving stopping facilities to the current King Street car park there was no significant operational effect on non-transport users, as a result of this change apart from the loss of up to 100 car parking spaces. As the town centre already has a large supply of free spaces it is believed that the loss of these will not have a significant effect on

non-users of public transport. There will also be a minor impact on non public transport users by reduction in capacity of westbound traffic on King Street carriageway, albeit that there will no longer be buses in Drysdale Street and Shillinghill.

### *Summary*

- 9.42 Therefore, on balance, while the effects are anticipated to be minor these options are judged to be against this objective.

### **Objective: To minimise the number and severity of road accidents**

- 9.43 Although detailed consideration of safety elements would be required at the design stage of any proposals, none of the options are anticipated to significantly increase or worsen accident rates. Options 2a and 2b may provide a slight benefit by removing buses from busy town centre streets, but no particular accident concerns with buses are recorded on these streets at present.

### **Objective: To minimise cost to the public purse of transport infrastructure and services**

- 9.44 The costs and benefits of each of the options are described in detail in the Economy section later in this chapter.

## **Appraisal against STAG Criteria**

### **Environment**

- 9.45 In the pre-appraisal stage of the study we examined the environmental attributes and characteristics of the study area. It was identified that the following would be considered for further appraisal

- Noise and vibration;
- Global air quality – carbon dioxide (CO<sub>2</sub>);
- Local air quality – particulate matter (PM<sub>10</sub>) and nitrogen dioxide (NO<sub>2</sub>);
- Visual amenity; and
- Cultural heritage.

### **Noise and vibration**

- 9.46 Transport is a major source of noise. Noise exposure can have an adverse impact on human health and the perceived quality of life. Nuisance arising from noise exposure varies greatly between individuals, but generally at the community level there is a reasonable correlation between physical measurements of noise and annoyance response. However, people react differently to noise
- 9.47 The interventions under consideration are aimed at improving integration with the rail station and access to the town centre; these have been achieved by altering the road and bus infrastructure rather than changing the frequency of bus services. With no significant increase in capacity the effects of noise and vibration will remain virtually neutral with no benefit or impact.

### **Shillinghill Stance**

#### **Option 1a/b**

- 9.48 Under these options the existing level of bus service operation will be maintained and therefore there will be no significant changes in the effects of noise and vibration. The capital costs, detailed

in Appendix G, list resurfacing of Shillinghill at the bus stance with a high quality surface which will reduce the current noise and vibration of buses.

#### ***Option 1c***

- 9.49 The option where there is likely to be the most impact is Option 1c: Auld Brig Road, Mill Road to Shillinghill loop, where current traffic levels are increased along Mill Road. Mill Road has both commercial and residential properties. To minimise the increase in traffic volume allowance has been made for a high quality road surface. However, the number of properties affected is equivalent to properties along Drysdale Street where traffic levels will be decreased as a result of this option and therefore overall there is little impact in terms of noise and vibration.

#### ***King Street Car Park***

##### ***Option 2a***

- 9.50 With few residential properties around King Street, a drive in drive out facility and new high quality road surface the effects of noise and vibration will be negligible. Overall this option has a minor benefit with regard to noise and vibration impacts on King Street, but should provide a benefit on Drysdale Street and Shillinghill because of the removal of buses from those streets. Overall, therefore, a small benefit is expected.

##### ***Option 2b***

- 9.51 The drive-in / reverse-out facility at the bus station in King Street will increase the effects of noise and vibration but with few residential properties in close proximity and the new high quality road surface the effects will be negligible. However, as with option 2a, the benefits of reduced bus use in the town centre should provide a small overall benefit.

#### **Air quality (Local and Global)**

- 9.52 Data available to date confirmed that that the air quality standards, as specified in legislation are being achieved. Although, it is noted, that if there are significant increases in traffic then these may leave to a minor impact on air quality. In terms of the specific options:

#### ***Shillinghill Stance***

##### ***Option 1a/b/c***

- 9.53 There is unlikely to be any significant change in vehicular traffic volumes, and the number of buses operating is likely to remain the same, therefore there would be no or negligible impact on air quality from this potential cause. Increased traffic congestion, especially for options 1a and 1b may have a detrimental impact on air quality, though not to a level where thresholds are exceeded.

#### ***King Street Car Park***

##### ***Option 2a***

- 9.54 The number of buses (estimated at a maximum of 225 departures per weekday) together with the in and out operation is likely to have a negligible impact on air quality and therefore air quality standards will not be significantly worsened. Although buses will be removed from the town centre streets, no benefit is claimed as no air quality thresholds are currently breached.

##### ***Option 2b***

- 9.55 Where services are driving in and reversing out and where potentially engines are idling as buses have the opportunity to wait longer at the stance then air quality standards may worsen. This option will then be seen to have a negative impact on air quality, although not to a level where air pollution thresholds are breached.



### Visual amenity

- 9.56 Transport options can have a significant impact on the visual environment. This is particularly so where new infrastructure is introduced into an established scene, where the intensity of traffic movements increases or where new lighting is provided in formerly "dark" areas.
- 9.57 All options under consideration will include improvement of lighting. In terms of the walkways these are formerly "dark" areas.

### *Shillinghill Stance*

#### *Option 1a/b/c*

- 9.58 The facilities at Shillinghill will be similar to the current and, therefore, there will be no or negligible visual impact.

### *King Street Car Park*

#### *Option 2a*

- 9.59 The facilities in King Street Car Park with limited facilities will have no or negligible visual impact.

#### *Option 2b*

- 9.60 In option 2b the building will have a significant visual impact, although as the number of residential properties in close proximity is low this is not seen as a negative impact to the scheme, and a high quality bus station may be considered by some people as an improved outlook than the existing car park.

### Cultural heritage

- 9.61 Alloa town centre has a number of listed buildings<sup>6</sup> from its historic and industrial past. A full list was obtained from Clackmannanshire Council Development Plan and none of the buildings were located in and around Shillinghill or King Street. It will therefore not be of major significance in the decision making process on any of the options and have no impact on any of the delivery options.

## Safety

### Accidents

- 9.62 All of the options will seek to maintain Clackmannanshire's downward trend in accidents. It is anticipated, however, that none options will significantly change accident rates.

### Security

- 9.63 Consideration is given to any security impacts included in the developed options while they can affect any public transport user it is particularly vulnerable sections of the community such as children, the elderly or women travelling alone.
- 9.64 A safe environment is an important concern of public transport users, although the survey undertaken as part of this project as well Bus Passenger & Satisfaction Survey put little importance on it. Only 1% of those interviewed ranked a safer environment as the most important factor that would make them travel more. The Bus Satisfaction survey recorded a similar 1.3% of users claimed they were discouraged from travelling because of the lack of a safe environment.

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<sup>6</sup> A "Listed Building" is a building of special architectural or historic interest as defined under the Town and Country Planning (Scotland) Act, 1997

- 9.65 We have previously discussed a number of the safety issues affecting public transport users and therefore all options will include actions to remedy these in terms of improved CCTV coverage and improved lighting.
- 9.66 The provision of covered walkways is also to provide a safer as well as more pleasant environment.
- 9.67 Vandalism of the existing bus infrastructure has been identified (especially at Shillinghill) as an issue and creating a well lit and well maintained environment should lead to a reduction in vandalism.
- 9.68 Examining each of the options in turn we see if adequate consideration has been given to security measures

### *Shillinghill Stance*

#### *Options 1a/b/c – Upgrade*

- 9.69 The package of measures in the upgrade of Shillinghill includes improved lighting, waiting room and enclosed structure. These must be seen to be safe and this can be achieved by being clean but also by having a visible means of escape, therefore waiting rooms should have a separate entrance and exit.
- 9.70 The effects of providing improved waiting facilities can be quantified and these are included in the economic section. We view these effects as having a moderate benefit to security.

#### *Options 1a/b/c – New*

- 9.71 A complete replacement of the existing stance at Shillinghill with a high quality enclosed facility with heated waiting room, improved lighting and CCTV can all add to creating a safer environment. These effects are quantified in the economy section. We view these effects as having a moderate benefit on security.

### *King Street Car Park*

#### *Option 2a*

- 9.72 The package of measures in the new bus stance includes improved lighting, CCTV and enclosed bus shelters. An enclosed bus shelter must be seen to be safe; this can be achieved by clean and well maintained structures but also they must have a visible means of escape, therefore they should have a separate entrance and exit. The adoption of these facilities would have a moderate benefit on security.

#### *Option 2b*

- 9.73 The bus station option would provide the additional security of manned staff. Staff supervision can have a major effect on delivering a safer environment and there are therefore major benefits to improving security in delivering this option. These effects are quantified in the economy section.

## Economy

- 9.74 In our detailed appraisal we have undertaken an assessment of the economic impacts of each of the options.
- 9.75 An overview of the likely Wider Economic Benefits or Economic Activity and Location Impacts indicated that these are likely to be minimal for all the sites and, therefore, a detailed assessment has not been undertaken and no particular benefits from any of the options is claimed.
- 9.76 The BCR was calculated and presented to inform the final decision making process. Passenger predictions had been undertaken for a 4-year period which would allow for the 'novelty' factor of a new facility to be taken into account. This has been used as the basis for appraisal of benefits over a 60-year period. The methodology used and the results presented are examined in more detail in the following section and the model is presented in Appendix J.
- 9.77 All benefits and costs are based on 2008 prices and there is no uplift factor for inflation or potential rises in the RPI. Both benefits and costs are, however, discounted at a 3.5% rate to a 2008 base.
- 9.78 Costs which are directly attributable to the bus operators such as bus maintenance, replacement vehicles etc are not included. No additional costs for extra staff have been included.
- 9.79 All figures are presented as the net present values of costs and benefits over a 60-year life cycle period unless stated.

### Costs

- 9.80 The capital and operating costs for each of the schemes have been derived for each option. A contingency fund of 10% has been added in case there are ongoing capital and operational problems which are not covered within the costings. This figure is assumed to remain static over the 60-year period of the analysis.
- 9.81 A 15% optimism bias has been added to the capital figures in order to account for cost overruns, inflation and the increasing value of services against the base year. This figure could fluctuate over the period of the analysis, however 15% is considered to be the worst case scenario and we would envisage that if the figure were to change the percentage would reduce rather than increase. Any reduction would have the effect of increasing the final BCR.
- 9.82 The summary table below shows the cost estimates including optimism bias and contingency.

**Table 9.3 Capital and Operating Costs (£000)**

	Option 1a	Option 1a	Option 1b	Option 1b	Option 1c	Option 1c	Option 2a	Option 2b
	Upgrade	New	Upgrade	New	Upgrade	New		
Capital Costs	640	920	660	940	970	1,200	1,000	3,300
Operating Costs (60-year NPV)	370	580	370	580	370	580	370	2,000
Total costs	1,000	1,500	1,000	1,500	1,300	1,800	1,400	5,300

JMP

## Passenger Forecasts

- 9.83 The economic benefits of the options are critically dependent on the number of end users. To establish this, the following sections set out passenger predictions.
- 9.84 Passenger predictions for Alloa Rail Station have been calculated for a 4-year period and it has been assumed that the rail passenger numbers will have stabilised by this point. We have therefore used the year 4 passenger figures as a relative constant for years 5 to 60 with only a nominal increase to account for population increase, increased road congestion and the success of government policies to encourage a mode shift to more sustainable modes.
- 9.85 First ScotRail<sup>7</sup> had forecast that the number of rail journeys for the new Alloa station would be 254,000 by Year 4 (2012). However, passenger data collected from the first three four-week periods has indicated 100,221 journeys have been undertaken at Alloa station. Using the same year on year uplift factors and the actual journey number surveyed in the first three periods the predicted number of journeys in 2012 is 434,000 and 486,000 in year 60.

**Table 9.4 Predicted number of users of Alloa Station**

Year	Users	Journeys
Year One	184,432	368,864
Year Two	208,743	417,486
Year Three	212,935	425,870
Year Four	217,211	434,422
Year Sixty	242,926	485,852

JMP

### *Numbers of Passengers Interchanging in Alloa*

- 9.86 A survey was undertaken at both Alloa bus and rail stations during the week of the 25-29 August 2008. Copies of the survey questionnaires as well as full results are included in Appendix E of this report. The rail station survey included a question about the various measures which could be undertaken to encourage passengers travel to the station by bus. They were then asked to chose three of the measures and rank them from 1 to 3 in terms of how effective each of the measures would be to encourage them to interchange.
- 9.87 The results were then weighted based on the Office of National Statistics weighting methodology for large data sets, i.e. each of the responses was given a value which reflected the effect they would have on encouraging people to use the bus to travel to the station. A weighting factor was calculated using gravity model principles to provide a final weighting which would encourage bus use to travel to the station. Two responses were excluded from this calculation; they were 'nothing would encourage the user to interchange' and 'other' both of which are dealt with anecdotally elsewhere in this report.
- 9.88 The survey responses were used to calculate the potential number of users who would interchange dependant on the measures which were introduced. Excluded from the calculations at this stage were those passengers who currently interchange and those users who would never interchange.
- 9.89 Of the measures which were included within the options frequency and reliability were considered to be the measures which would most encourage people to interchange. The following measures were included in terms of encouraging passengers to interchange:-

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<sup>7</sup> SDG Report

- Reduced Journey Times;
- Reliability;
- Safer Environment;
- Comfort and Cleanliness; and
- Information.

9.90 Using the weighted survey results and the predicted level of users for each of the options the potential number of bus/rail interchange users was calculated based only on the measures that were included within the different schemes. This resulted in potential new interchangers by Year 60 as presented in the table below.

**Table 9.5 Predicted Bus/Rail Interchangers in Year 60**

Option 1a	Option 1a	Option 1b	Option 1b	Option 1c	Option 1c	Option 2a	Option 2b
Upgrade	New	Upgrade	New	Upgrade	New		
5,800	5,800	11,000	11,000	17,000	17,000	17,000	17,000

*JMP*

### Benefits

9.91 There would be benefits from all the options both to the Bus / Rail Interchangers but also to the passengers who use the bus station for bus journeys only.

### *Operator Benefits*

9.92 In terms of the potential bus operator benefits the biggest effect lies in fare box revenues, though further impacts arise from operating cost changes. For rail operators, the benefits calculated lie solely with fare box revenues. Utilising the predicted potential interchange users by mode, the current single journey fares split by destination and the percentage of potential new users' final destination or origin point (assimilated from survey data), we have calculated the potential discounted fare box revenue gained by Year 60 and the vehicle operating distances used to calculate operating cost savings.

9.93 The greatest potential direct monetary benefit in terms of fares is gained from both Option 1c (Upgrade and New) and Option 2a and 2b at £7,400,000 (60-year net present value). This result is a direct influence of these options attracting the most potential bus/rail interchange users and therefore the greatest increase in fare box revenue through the increase in the number of journeys.

9.94 Table 9.8 below shows the combined Operator (both rail and bus) benefits in Year 60 both in terms of direct monetary benefits (fares) and indirect benefits (operators' cost savings).

**Table 9.6 60 Year Discounted Operator Benefits (£000s)**

	Option 1a	Option 1a	Option 1b	Option 1b	Option 1c	Option 1c	Option 2a	Option 2b
	Upgrade	New	Upgrade	New	Upgrade	New		
Farebox revenue	2,500	2,500	4,700	4,700	7,400	7,400	7,400	7,400
Operating cost savings	0	0	0	0	300	300	1,000	1,000
<b>Total</b>	<b>2,500</b>	<b>2,500</b>	<b>4,700</b>	<b>4,700</b>	<b>7,700</b>	<b>7,700</b>	<b>8,400</b>	<b>8,400</b>

*JMP*

- 9.95 Whilst the most direct monetary benefit lies in fare box revenue, the 2004 TRL Report 'Demand for Public Transport: A Practical Guide' on Passenger Demand Forecasting indicates that there are a number of other indirect benefits from the provision of new facilities at public transport interchanges. These benefits are not only valid for Bus / Rail interchangers but also for passengers using the facilities for bus journeys only.
- 9.96 According to the Association for Train Operating Companies Report (ATOC) (2002) there are a number of factors which indirectly benefit the Bus / Rail Interchanger, which are also relevant for bus passengers only. These are as follows:-
- Intercom;
  - Real Time Information;
  - Supervisor Staff;
  - CCTV;
  - Heating;
  - Departure Information;
  - Seating;
  - Improved Lighting; and
  - Printed Timetabling.
- 9.97 Each of these factors was given a value for the business, commuter and leisure user as indicated in the ATOC study. As both the rail and bus station at Alloa attract all these user types an average of the three values was used. The values used are indicated in the table below.

**Table 9.7 Values of Interchange Station Facilities**

Facility	Benefit (pence) per passenger
Intercom	15
Real Time Information	33
Supervisor Staff	18
CCTV	12
Heating	7
Departure Information	15
Seating	22
Improved Lighting	4
Printed Timetabling	8

ATOC

- 9.98 Using these values, Option 2b accrued the greatest indirect benefits of £620,000. This is not surprising given the increased facilities that would be provided with a new ‘state of the art’ station being provided within this option. Of the other schemes each of the “new” (rather than “upgraded”) schemes within Option 1a, 1b and 1c provided the greatest benefit; again this is not surprising given the increased facilities associated with the new build rather than the upgrade options. All these figures are based on the total number of bus boarders at Alloa which based on survey data is estimated to be 463,000 per annum.

#### *Journey Time Effects*

- 9.99 All the schemes either changed the route or provided infrastructure changes along the proposed route which affected the journey time of buses and their passengers in vehicle time (IVT). According to the TRL report the IVT should be set at £0.06 per minute when all users (commuters, business, leisure) are utilising the facility.
- 9.100 A VISSIM model of the route was run for the base case to provide a journey time in the Do Nothing Case Scenario. Each of the schemes and the various infrastructure options, as previously described in this chapter and Appendix F, were run for the Do Something Case. All schemes were run by direction (East – West and West – East) for the AM and PM peaks. This provided journey time figures which could then be compared by direction and time period against the Do Nothing model.
- 9.101 The journey time effects were then calculated using the IVT and the number of passengers. The results of the journey time calculations for the 60-year period are shown in the table below.

**Table 9.8 Value of Journey Time Effects (£000s)**

Option 1a	Option 1a	Option 1b	Option 1b	Option 1c	Option 1c	Option 2a	Option 2b
Upgrade	New	Upgrade	New	Upgrade	New		
-220	-220	-930	-930	5,700	5,700	5,400	-580

JMP

### *Existing Transport Costs*

- 9.102 In addition to the accrued indirect and direct operator benefits there will be a cost associated with the existing travel movements by the passengers.
- 9.103 Using the survey data it was calculated that 12% of the journeys were commute based and 88% were for other journey purposes. Business use was calculated to be less than 3% of the total passengers and was therefore not included as a separate category and was included within the commute group to reflect their higher value of time.
- 9.104 The Value of Time was set at £5.04 per hour for commute and £4.46 per hour for other trip purposes in line with the figures included within STAG.
- 9.105 Utilising the predicted number of new passengers using the bus as their means to interchange with the rail station and the value of time indicated above would result in existing travel costs for each of the options as indicated in Appendix J.

### **Summary**

- 9.106 The table below summarises the overall benefits of each option (an aggregation of each of the benefits described above) and the Net Present Value for each i.e. the discounted 60 year benefits minus the discounted 60 year costs.
- 9.107 Additionally, the BCR is presented for each of the schemes based on their overall capital and operational costs against the overall monetised benefits.

**Table 9.9 Summary of Economy Indicators (60-year present value)**

	Option 1a	Option 1a	Option 1b	Option 1b	Option 1c	Option 1c	Option 2a	Option 2b
	Upgrade	New	Upgrade	New	Upgrade	New		
Value of Benefits (£000)	2,700	2,800	4,300	4,400	13,800	13,900	14,200	8,500
Net Present Value (£000)	530	150	2,100	1,700	11,300	10,900	11,600	2,000
BCR	1.3:1	1.1:1	1.9:1	1.6:1	5.5:1	4.6:1	5.6:1	1.3:1

*JMP*

- 9.108 The table shows clearly that, a comparison of the financial costs with those benefits that have been monetised that two options (1c and 2a) perform well, with high BCRs. No other option offers a BCR to a level that would usually be considered worthy of investment unless substantial unquantified benefits arise.



## Integration

### Transport integration

- 9.109 An integrated transport system aids accessibility by connecting people to opportunities and goods to markets with the minimum inconvenience. Interchange, however, is a fact for many journeys made by bus, train or a combination of both. Interchange also carries a cost. Furthermore, facilities such as interchange at a rail head by their very nature imply an interchange between the mode used to access the site and the mode of public transport used to complete the journey. It is important that this is achieved seamlessly.
- 9.110 The range of measures to achieve the seamless journey includes multi-modal tickets as well as a variety of infrastructure measures, the design of the interchange facility and information provision.
- 9.111 All the packages of measures for each option under detailed consideration will seek to meet the objective of the seamless journey and in doing so will not conflict with current government policy.
- 9.112 The package of measures being considered for each option includes improvements to information and ticketing. These measures being considered are the same across all options:

### Information

- Comprehensive leaflet of bus and rail services;
- Improved signage showing routes between rail station and bus stops.

### Ticketing

- Introduction of Alloa Plusbus ticket within Clackmannanshire;
  - Ensuring that One-ticket is valid throughout the area by extending validity to cover rail between Stirling and Alloa;
  - Improved promotion of One-Ticket (valid throughout the SEStran area) to attract more operators and increase passenger usage.
- 9.113 Based on current usage of *Plusbus* in corresponding areas it is unlikely that its introduction will make a significant impact on integration of bus and rail services.
- 9.114 One-ticket is a multi-modal ticket that is valid throughout the SEStran area and the Stirling Council area. First ScotRail are currently a participating operator in the One-Ticket scheme, but the rail and bus combined ticket is not yet valid on the Alloa-Stirling section of Alloa – Glasgow service and existing users travelling to Edinburgh would require to change modes at Stirling. Although 11%<sup>8</sup> of Alloa rail users travel to Edinburgh, only 12% of those travel daily, enabling them to take advantage of the discounts offered by one-ticket. This is, therefore, unlikely to affect a large number of passengers but will make those passengers' journeys easier. First Edinburgh, Stagecoach in Fife and WAVE (by operation of Council supported services) are the three bus operators of the five operating within Clackmannanshire that are currently members of the scheme. Therefore by engaging with the remaining two operators a comprehensive multi-modal ticket can be offered to achieve a seamless journey.
- 9.115 It has already been noted that all bus services operating to Alloa use the current bus stance in Shillinghill. With services operating one-way on adjacent stops there is no requirement for pedestrians to cross the road to interchange between services. All infrastructure has level access

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<sup>8</sup> Based on surveys undertaken for this study.

and therefore meet current DDA legislation. Any changes to infrastructure will, therefore, be required to maintain this level of integration.

- 9.116 Furthermore, 70% of services using Shillinghill also serve Whins Road, approximately 200m from the station. Therefore, it is only the remaining 30% (Clackmannan services) that would particularly benefit from additional stops serving the station. It is proposed to provide additional stops on King Street (either side) to serve the rail station in respect of these services under option 1c.
- 9.117 The packages of measures described in Options 1a, 1b and 1c do not include any change to the co-ordination of bus services, all services continuing to use the existing facility at Shillinghill; key variances between the options are as a result of traffic management measures. It can therefore be said with confidence that as long as the current level of service is maintained that services can be well co-ordinated at the Shillinghill bus facility.
- 9.118 Options 2a and 2b replicate the operation of services at Shillinghill by providing bus services in King Street Car Park, therefore integration is maintained as all services are on one site and all infrastructure is provided at level access, meeting current DDA legislation.
- 9.119 Co-ordination of rail and bus services is subject to the timeous arrival and departure of both modes. In terms of the rail services where only an hourly service currently operates from Alloa station then delays can mean a considerable wait for the next service. With the low rail frequency to Alloa station to overcome potential delays any integrated service must operate direct from the station to avoid potential reliability issues from holding one service for the arrival of another. The initial appraisal rejected this option in favour of maintaining the existing high frequency of bus services with no holding of any bus service for the arrival of the train. The existing frequency is adequate to serve the population using the station. It is therefore not envisaged that any changes are required to the network.
- 9.120 Measures aimed at making the journey “seamless” are limited to the measures outlined above.

#### **Land-use transport integration**

- 9.121 All of the options being appraised at this level show a high level of integration with land use policies. This integration occurs at all levels from national policies through to SEStran regional transport strategy, Stirling and Clackmannanshire Structure Plan, and Clackmannanshire’s Local Transport Strategy.
- 9.122 The National Transport Strategy sets high level objectives for transport in Scotland’s transport future. The options set out will assist in the requirement to increase the accessibility of the transport network, protect the environment as well as improve public health through building and potential investment in public transport and other types of efficient and sustainable transport.
- 9.123 The National Transport Strategy aims to ensure that the infrastructure and incentives are in place so that bus operators improve services and both hold on to current passengers and grow the market to achieve a modal shift from cars. All the bus options being considered provide high quality interchange infrastructure which forecast to increase public transport ridership which could in turn potentially benefit existing passengers through future enhancements in service frequency.

#### **Policy integration**

- 9.124 The proposals will provide benefits to national, regional and local objectives to promote sustainable transport promote social inclusion while improving the environment and reduce carbon emissions. No part of the proposals conflict with any established policy previously outlined in the chapter 3 of this report.

## Accessibility and Social Inclusion

### Community accessibility

- 9.125 We have already reported in Chapter 2 and 8 of this report the extensive network of services that operate from the majority of Clackmannanshire's villages to Alloa and onwards to Stirling. The network and frequency of services is presented in Appendix H showing daytime frequencies of services that have been compared against populations of the villages to provide an access ratio. This highlights the villages of Muckhart and Dollar to have poor links to Alloa and require improvement. In addition, highlighted in tables 9.10-9.12 we highlight the potential bus/rail co-ordination. These tables confirm an adequate level of integration along the main corridors from Tillicoultry and Clackmannan. For services to/from Tillicoultry they will also serve Devon Village, Coalsnaughton, Fishcross and Sauchie. It is noted that particularly on Sunday minor amendments to bus timetables can have a substantially effect on improving integration. These services are currently operated commercially and therefore any such changes would be a commercial decision of the operators.
- 9.126 In addition, to the Sunday service a gap has also been identified between for the first departure from Alloa. On Saturday no buses link with the second journey. Demand for these services will be low and would be the responsibility of the local authority to meet any demand.
- 9.127 None of the preferred package of measures would provide an improvement in services between Muckhart and Alloa.
- 9.128 The detailed options do not include any significant changes to the network, although improvement of the transport infrastructure and traffic management in Alloa may attract bus operators to alter or introduce services to the network such as where the potential for reduce journey times have been identified in options 1b, 1c and 2a.
- 9.129 Reduced journey times and improved reliability promote confidence in bus use and these benefits have all been identified as achievable from adoption of options 1b, 1c and 2a.
- 9.130 All of the options are to be developed under DDA legislation to be fully accessible to all.

### Comparative accessibility

- 9.131 The largest benefits will accrue to those people that do not have access to a car, or choose not to use it for their journey. As such, older and younger people and those on the lowest incomes will gain most from any benefits incurred.
- 9.132 The current network of bus services provides good access to jobs, shops and services. The measures to improve integration between bus and rail, however, will lead to a significant benefit for access to employment, shops and services beyond Clackmannanshire while also allowing improved access to for those travelling in to Clackmannanshire to work, shop or for leisure.
- 9.133 Significant benefit for access to employment and other opportunities for residents of the study area can be achieved and should assist in improving the range of opportunities available locally. Particular benefits arise for residents of the most parts of the study area, with improved access available by public transport for those that do not have access to a car.

**Table 9.10 Bus/Rail Co-ordination – Monday-Friday**

Departures from Alloa Rail Station		Bus arrivals from Clackmannan	Bus arrivals from Tillilcoultry		Departures from Alloa Rail Station	
		Service No.	Mins past each hour	Service No.	Mins past each hour	Dep.
AM Peak						0610
		74	0635	62	0657	0711
		15	0713	62	0738	0754
		MA1	0753	65	0748	0754
		15	0816	62	0758	0835
		60	0828	62	0818	0835
				62	0820	0835
		60	0900	70	0851	0935
Off Peak		MA1	xx03			
		15	xx16	62	xx08	
		60	xx20	MA2	xx32	xx35/xx40
		MA1	xx26	62	xx28	xx35/xx40
		60	xx40	62	xx48	
	60	xx00	65	xx59		
Plus Service 68 - 0927, 1039,1147,1259,1407,1519,1627						
Arrivals at Alloa Rail Station	Train arrival at Alloa Rail Station	Bus departures to Clackmannan		Bus departures to Tillilcoultry		
	Arr.	Service No.	Mins past each hour	Service No.	Mins past each hour	
Off Peak		MA1	xx09	63	xx07	
		60	xx16			
		xx13	15	xx29	63	xx27
			60	xx36	65	xx40*
			MA1	xx46	63	xx47
			60	xx56	MA2	xx55
Plus Service 68 - 1001,1113,1221,1333,1441,1553, 1701						
PM Peak		1717	60	1721	63	1712
		1717	15	1733	63	1732
		1717	60	1736		
					63	1747
			MA1	1746		
Evening			60	1801	63	1807
		1814	15	1834	63	1832
					65	1910
		1915	15	1934	63	1929
		2013	15	2034	63	2029
					65	2110
		2113	15	2134	63	2129
	2213	15	2234	63	2229	
* Service 65 operates every other hour						

**Table 9.11 Bus/Rail Co-ordination: Saturday**

Departures from Alloo Rail Station	Bus arrivals from Clackmannan		Bus arrivals from Tillicoultry		Departures from Alloo Rail Station
	Service No.	Mins past each hour	Service No.	Mins past each hour	Dep.
AM Peak					0610
			62	0657	0711
	15	0713	62	0738	0754
	MA1	0753	65	0748	0754
	15	0816	62	0758	0835
	60	0828	62	0818	0835
			62	0820	0835
	60	0900	70	0851	0935
	MA1	xx03			
Off Peak	15	xx16	62	xx08	
	60	xx20	MA2	xx32	xx35/xx40
	MA1	xx26	62	xx28	xx35/xx40
	60	xx40	62	xx48	
	60	xx00	65	xx59	
Plus Service 68 - 0927, 1039,1147,1259,1407,1519,1627					
Arrivals at Alloo Rail Station	Train arrival at Alloo Rail Station	Bus departures to Clackmannan		Bus departures to Tillicoultry	
	Arr.	Service No.	Mins past each hour	Service No.	Mins past each hour
Off Peak		MA1	xx09	63	xx07
		60	xx16		
	xx13	15	xx29	63	xx27
		60	xx36	65	xx40*
		MA1	xx46	63	xx47
		60	xx56	MA2	xx55
Plus Service 68 - 1001,1113,1221,1333,1441,1553, 1701					
PM Peak	1717	60	1721	63	1712
	1717	15	1733	63	1732
	1717	60	1736		
				63	1747
		MA1	1746		
		MA1	1756		
Evening		60	1801	63	1807
	1814	15	1834	63	1832
	1915	15	1934	63	1929
	2013	15	2034	63	2029
	2113	15	2134	63	2129
2213	15	2234	63	2229	
* Service 65 operates every other hour					

**Table 9.12 Bus/Rail Integration - Sunday**

Departures from Alloa Rail Station		Bus arrivals from Clackmannan		Bus arrivals from Tillicoultry		Departures from Alloa Rail Station
		Service No.	Mins past each hour	Service No.	Mins past each hour	Dep.
						0913
				62	0943	
				65	1001	1013
	15	1043		62	1043	1113
				62	1143	
				65	1201	1213
	15	1243		62	1243	1313
				62	1343	
				65	1401	1413
	15	1443		62	1443	1513
				62	1543	
				65	1601	1613
	15	1643		62	1643	1713
				62	1743	1815
				65	1816	
	15	1843		62	1843	1907
				62	1943	2006
	15	2043		62	2043	2105
				62	2143	2206
				62	2243	
				62	2343	
Arrivals at Alloa Rail Station	Train arrival at Alloa Rail Station	Bus departures to Clackmannan		Bus departures to Tillicoultry		
	Arr.	Service No.	Mins past each hour	Service No.	Mins past each hour	
				65	1040	
	1107	15	1104	63	1104	
				63	1204	
	1207			65	1240	
		15	1304	63	1304	
	1307			63	1404	
	1407			65	1440	
		15	1504	63	1504	
	1507			63	1604	
	1607			65	1640	
		15	1704	63	1704	
	1707			63	1804	
	1811	15	1905	63	1904	
	1907			63	2004	
	2007	15	2104	63	2104	
	2107			63	2204	
	2207					
	2307					

## 10 Liabilities to Clackmannanshire Council

- 10.1 It is essential that the likely net cost of an option from the public sector's point of view is identified within the appraisal. This enables a comparison with the total benefits and an assessment of overall value for money. This section refers to all costs incurred by the public sector as a whole, net of any revenues. The total net cost consists of investment costs, operating and maintenance costs, grant/subsidy payments and taxation impacts.
- 10.2 In many cases the private sector operators' revenues are unlikely to cover the investment and operating costs of an option considered. As a result, some form of grant or subsidy may be required, and any such payments represent a liability on the Council.
- 10.3 This section therefore outlines the financial impact of the schemes on Council funds. This is assumed to need to cover all investment costs in bus roadside infrastructure and facilities and on-going maintenance of infrastructure and facilities as well as day to day operation.

### *Grants and subsidy payments*

- 10.4 No proposals for grants or subsidy payments are included at this time, although the real time passenger information scheme included in this project is progressing to the tender stage after an initial feasibility study recommended progression of the SEStran region-wide scheme. Funding has yet to be formalised but an application has been put to the EU for funding in combination with local authority funding.

### *Revenues*

- 10.5 The existing schemes do not generate any direct revenue for the local authority and there are no direct revenues generated from the options that could accrue to the local authority, apart from that described in Option 2b. If the Council were to manage the operation then they could charge 'Departure charges' to bus operators based on every bus leaving the station to cover the additional facilities of supervisor staff and higher quality facilities. It is estimated that this would raise £70,000 per year but would be used to pay supervisor staff.

### *Indirect Taxes*

- 10.6 The slight reduction in vehicle trips would result in a decrease in indirect taxes to Central Government.

### *Summary*

- 10.7 The table below presents the estimated capital cost and annual revenue costs that are likely to be incurred by the Council (i.e. excluding bus operators' costs or farebox revenue). Investment costs reflect the size of the facility and these are also reflected in the operating and maintenance costs. No available grants or subsidies have been identified, at present, and while each option will have an effect on reducing indirect tax this is seen as insignificant and has not been recorded.

**Table 10.1 Costs to Clackmannanshire Council (£000)**

Element	Option 1a – Upgrade	Option 1a – New	Option 1b - Upgrade	Option 1b – New	Option 1c - Upgrade	Option 1c – New	Option 2a	Option 2b
Investment Costs	640	920	660	940	970	1,200	1,000	3,300
Annual Operating & Maintenance Costs	24	39	24	39	24	39	24	133



# 11 Risk and Uncertainty

- 11.1 All risks and uncertainties associated with the options identified need to be fully taken into account.
- 11.2 Evidence from past transport projects illustrates that there is a tendency to be optimistic when estimating costs and benefits to redress this tendency adjustments for 15% optimism bias have been made when appraising the options. When more reliable costs are calculated the risks can be more explicitly assessed and quantified and adjustments can be made to reduce the level of optimism bias.
- 11.3 In general, however, even with a well developed project there will remain some risks which cannot be foreseen. In such cases it will not be possible to include these risks in the expected value, so instead a contingency figure should be added in order to take account of possible unanticipated risks. For all options the contingency figure will be 10%.
- 11.4 Following the identification and analysis of risks an assessment of options' exposure to uncertainty is required. Guidance supplied in the Green book<sup>9</sup> has been considered to mitigate risks and uncertainties. The following may be adopted:
- **Consulting early** – In developing the recommended options key stakeholders have been consulted;
  - **Carrying out pilot studies** - Acquire more information on risk affecting projects with many unknowns;
  - **Building in flexibility from the start:** Designs have been made adaptable to future increase in capacity and as a result are less adversely affected by designing for the outcome;
  - **Developing less risky options** – Although all the options considered are using tried and tested technology there always remains a risk in using leading edge technology;
  - **Reinstating or developing different options:** Alternative options may be considered if current options are found to be more risky than initially perceived; and
  - **Abandoning options:** Although options seem to meet all objectives may seem to be so risky that it is worth abandoning due to adverse risk
- 11.5 By responding to and reducing the risks and uncertainty in these ways described below, the risk-adjusted costs of an option are lowered. The implications of decisions taken to respond to risks are factored into the estimates of base costs.

## *Technical risks*

- 11.6 All parts of the proposals comprise fully-tested and commonly-used features. The technology used in terms of real time information and bus priority signals has been fully tested and is commonly used; it therefore represents no technical risks.

## *Operational risks*

- 11.7 Road infrastructure components of the packages will require on-going maintenance, but not at a level that is significantly different from that of existing infrastructure. High quality low-maintenance materials have been quoted in the capital costs to maintain the current level of maintenance.

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<sup>9</sup> HM Treasury Green Book (2003)

- 11.8 Traffic control systems require on-going assessment for their effectiveness and rapid repair in the event of damage. With the traffic control system for Shillinghill roundabout outlined in option 1a being the first traffic control system in Clackmannanshire then a further assessment will be required to determine the extra workload this will provide on the Council and determine the need for an effective repair procedure. Commonly-available technology with maximum reliability and ease of repair will be used to limit potential problems.
- 11.9 The existing level of bus services may be affected by external factors such as the uncertainty regarding fuel and direct bus operating costs; this may lead to an increase in the supply of commercially registered services if there is a significant modal shift or alternatively a reduction in services if operators are unable to sustain commercially viable services.
- 11.10 An allowance for spare capacity has been made in the design of bus infrastructure for all schemes, therefore there should be no additional infrastructure required to meet additional growth in the bus market in the short to medium term.
- 11.11 The bus station (option 2b) is the only option where there is the potential for revenue, through departure charges and rental from retail units. These will only act as an effective revenue stream for the bus station owners if alternative stopping places are restricted throughout the town. Charges must also be set at a realistic level in terms of the level of operation, facilities offered and other charges faced by the operator on the route (e.g. charges at Stirling Bus Station).

#### *Financial risks*

- 11.12 Use of high quality materials for road infrastructure, common available technology for traffic control systems and real time information are not anticipated to be significantly different from costs already in existence and therefore if capital funding for the schemes implementation can be identified, no financial risks are identified.
- 11.13 The major risk will be linked to the highest level of capital cost associated with each option. These are reflected in the AST tables (See Appendix I).

#### *Public acceptability*

- 11.14 Those options under consideration in Shillinghill do not vary widely from the existing situation and, therefore, risks associated with public acceptability of these schemes seem low. However, public acceptability risks do arise with proposals for new/extended schemes where the proposal affects the ability to park outside a property (residential or commercial). Option 1c Mill Road cut through will involve the overall reduction in car park places both for commercial and residential use and is likely to be perceived as reducing the quality of the environment in this location.
- 11.15 In addition, options 2a and 2b being considered will create potential risks in respect of public acceptability as there will be up to 100 lost car parking spaces by the introduction of a bus facility at this location.
- 11.16 Therefore, particular public and political acceptability concerns are anticipated for:
- Loss of residential parking in Mill Road (Option 1c);
  - Introduction of bus traffic on Mill Road (Option 1c); and
  - Loss of car parking in King Street Car Park (Option 2a & 2b).

## 12 Summary

- 12.1 The Stirling to Alloa corridor has been the subject of significant capital investment with the re-opening of the Stirling – Alloa – Kincardine rail line. This has seen the resumption of direct rail passenger service from Alloa to Stirling and Glasgow.
- 12.2 This study assessed the potential for linking local bus services with rail at the new Alloa station. Further assessment was made on the impact this may have on the bus network and existing passengers as well as what level of patronage is likely to interchange between bus and rail at Alloa.
- 12.3 The study was informed by data received from First ScotRail and bus operators as well as by an extensive consultation exercise with key stakeholders. The consultation stage highlighted the need to reduce journey times and improve bus reliability, therefore improving access to the town centre but the review concluded that the existing network of bus services is appropriate to meet the needs of Alloa and surrounding communities.
- 12.4 Following on from analysis of relevant problems and issues, a wide variety of options were identified which were distilled by representatives from Clackmannanshire Council, SEStran and the consultant team into five that were worthy of detailed consideration.
- 12.5 The initial consultation stage ruled out direct links between rail and bus at Alloa rail station but concluded that effective integration could be achieved by providing improved bus facilities at the present Shillinghill bus stance or at a new bus station on the existing King Street car park. This, combined with a series of measures to improve passenger information and journey quality, was seen as the most effective way forward.
- 12.6 The options that were tested in our final appraisal were:
- Option 1: Upgraded or new passenger waiting facility on Shillinghill with:
    - Option 1a Shillinghill roundabout traffic management;
    - Option 1b Shillinghill to King Street single lane priority; and
    - Option 1c Auld Brig Road, Mill Road to Shillinghill loop.
  - Option 2: King Street Bus Station:
    - Option 2a: King Street Car Park Bus Stance Phase 1; and
    - Option 2b: King Street Car Park Bus Station Phase 2.
- 12.7 Any of the options would be accompanied by a package of journey quality measures were developed, including real time information, multi-modal ticketing, a comprehensive leaflet of bus and rail services as well as improved lighting, CCTV coverage and covered walkways linking the proposed transport hubs at King Street and Shillinghill with the rail station.
- 12.8 In our detailed appraisal we undertook an assessment of the impacts of the options against transport planning objectives and the STAG criteria. This showed that two of the options (1c and 2a) provided significantly better contribution to the objectives and much better value than the others.
- 12.9 Option 2a is the construction of a new bus stance on the King Street car park. This would bring bus stops closer to the rail station and speed westbound bus operations, albeit require the removal

of around 100 of the town centre's approximately 1,400 car parking spaces (although this could bring environmental enhancements).

- 12.10 Option 1c is the upgrading of the current Shillinghill Bus Stance to improve the passenger waiting environment, accompanied by traffic management measures in order to reduce delays to buses at the Shillinghill roundabout, new bus stops near to the rail station on King Street and the reopening of Mill Road to buses, which would provide substantial journey time savings for westbound services. This is shown on the attached plan, titled Option 1c. Works could be implemented in a phased manner, with the Mill Road reopening following the other enhancements.
- 12.11 Either would provide significant benefit to locally-derived transport planning objectives and to national criteria for improved transport. The contribution of each option to the transport planning objectives defined for the study is indicated in the table below.

**Table 12.1 Summary of Contributions to Planning Objectives**

	King Street car park bus stance	Shillinghill upgrade
Minimise walk distances between bus and town centre destinations	○	○
To minimise time and cost penalties of interchange	✓✓	✓✓
To maximise awareness of sustainable travel options	✓✓	✓
To minimise delays to buses in Alloa town centre	✓✓✓	✓✓✓(✓ if Mill Road not reopened)
To minimise disadvantages to non-users of public transport	✓	✓
To minimise the number and severity of road accidents	○	○
To minimise cost to the public purse of transport infrastructure and services	✓	✓(○ if Mill Road not reopened)

- 12.12 The King Street car park option is anticipated to have capital costs of £1.01M and a benefit:cost ratio (BCR) of 5.6:1. The Shillinghill option would have capital costs of £0.97M (or £0.67M if Mill Road were not reopened) and a BCR of 5.5:1 (which would fall to 1.9:1 if Mill Road were not reopened and the bus journey time savings not realised). The aggregated 60-year net present value of each of the options (benefits less costs) is estimated to be £11.6M for the King Street option, £11.3M for the Shillinghill option (this falling to £2.0M if Mill Road were not reopened).
- 12.13 We therefore recommend that consideration is given to both these options in detail and a further structured local decision-making process is undertaken in order to determine which should be pursued. An action plan for medium-term implementation of the preferred option should then be developed.
- 12.14 In order to provide short-term benefits, however, we recommend that works are undertaken as soon as possible to provide bus priority measures at Shillinghill roundabout, provide a new stop for westbound buses on King Street and provide high quality information to passengers on interchange opportunities. A suggested implementation programme is presented in the next section.

## 13 Implementation Programme

13.1 A realistic implementation programme is shown below that highlights the key dependence of each intervention.

13.2 Short-term actions are recommended to be:

- Bus priority at Shillinghill roundabout;
- Westbound bus stop near station on King Street;
- Upgrade to northbound bus stop on Whins Road;
- Covered, lit walkways between the rail station, King Street car park and the Shillinghill bus stance;
- Real time information of both rail and bus times at Shillinghill, King Street and Whins Road bus stops and rail station;
- Printed information on bus network at rail station. Train times at Shillinghill, King Street and Whins Road bus stops;
- Comprehensive leaflet of bus and rail services, delivered to households in Clackmannanshire;
- Signing to show walking routes between rail station and Shillinghill, King Street and Whins Road bus stops;
- Introduction of Alloa Plusbus;
- One-Ticket (valid throughout the SEStran area).

13.3 Medium term actions should then comprise one of two packages of measures, either the Shillinghill improvement (option 1c):

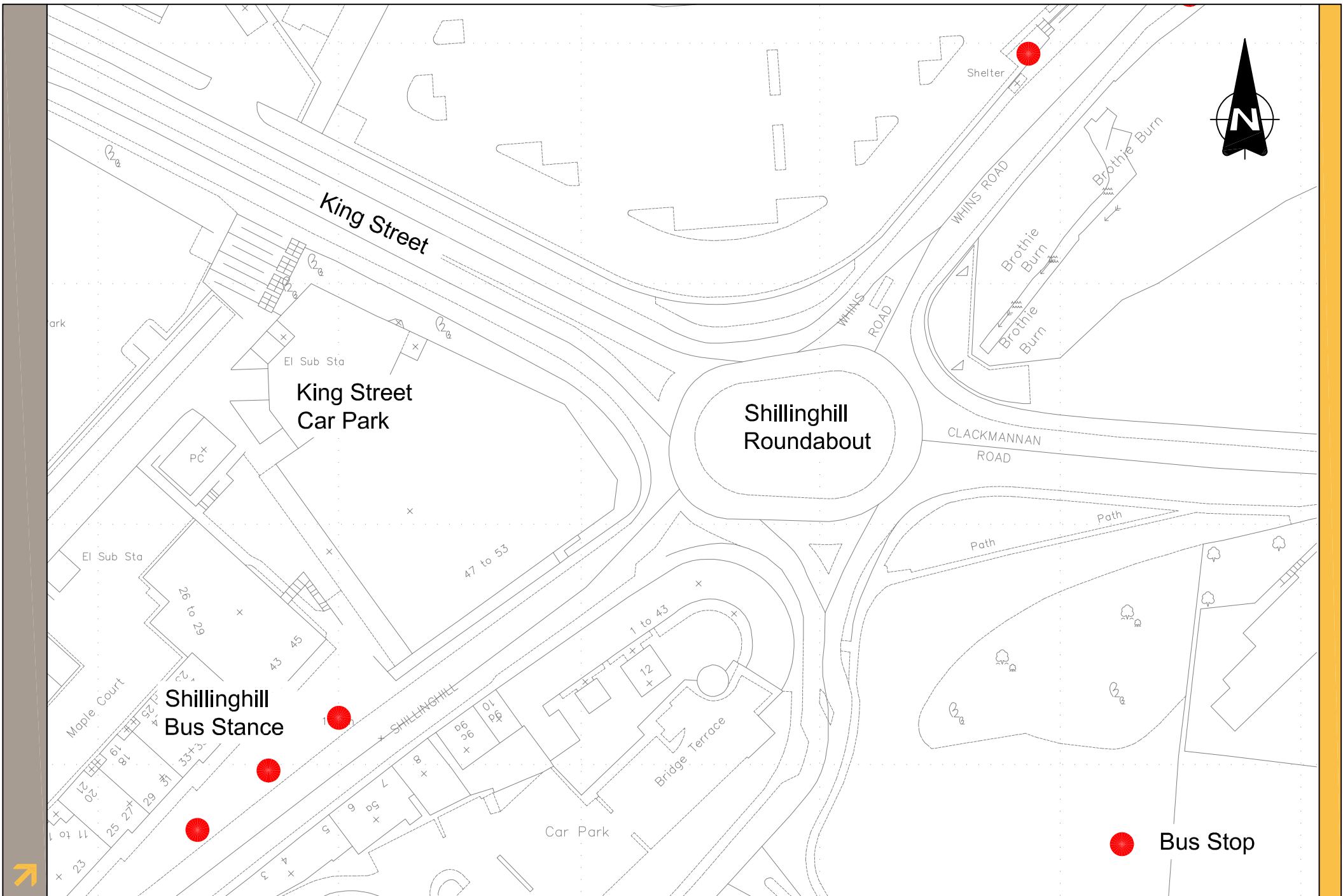
- Upgrade of Shillinghill bus stance facilities;
- Eastbound bus stop near station on King Street;
- Opening of Mill Road to buses (northbound)

13.4 or the King Street car park bus stance option (option 2a):

- Construction of bus stance and associated facilities on the King Street car park.

## Appendix A

## Maps

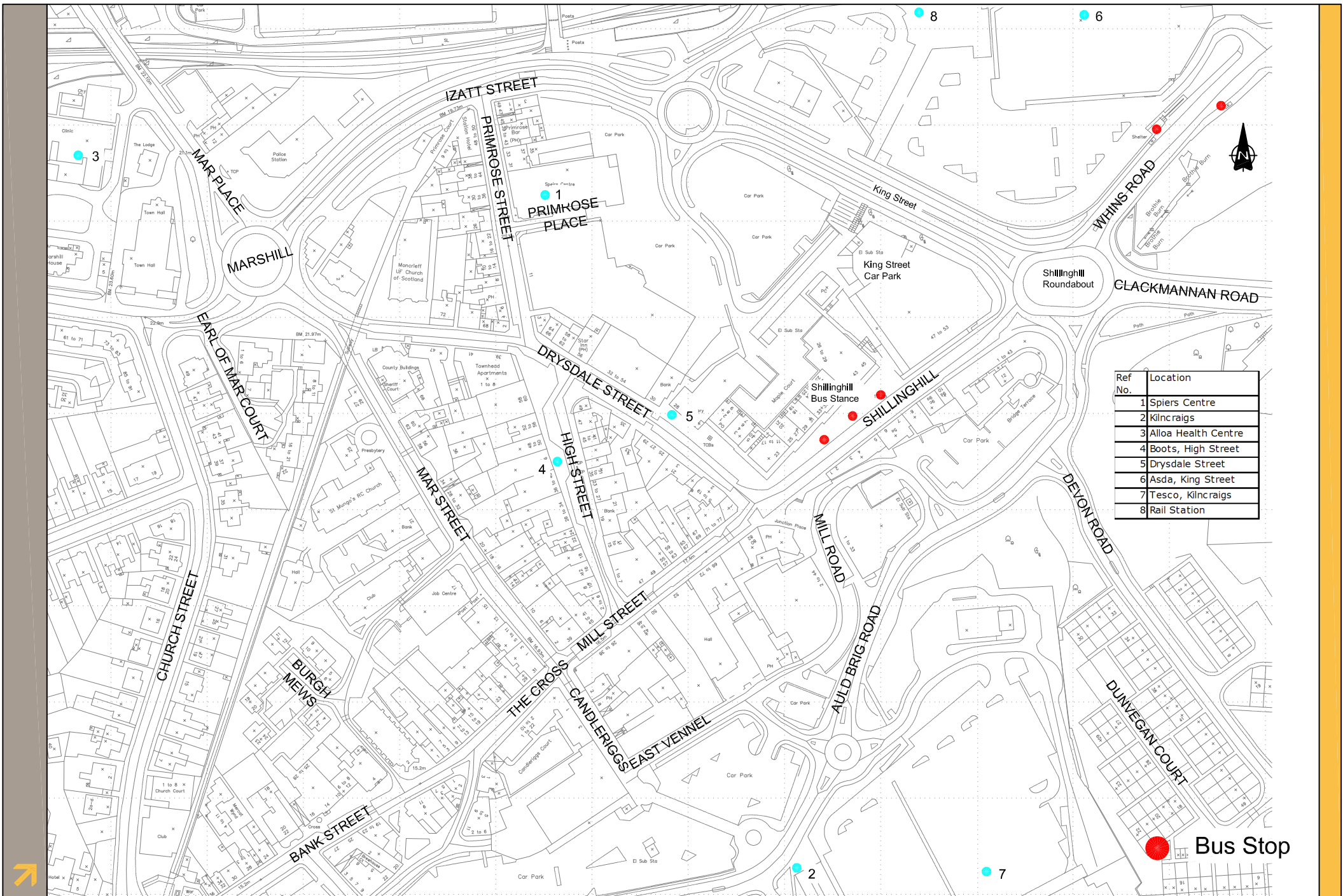




➔ Town Centre Car Park Locations - 1:2000 @ A4

Figure 2





## Appendix B

### Social & Environmental Context Tables

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Job No	Report No	Issue no	Report Name
B085026	1	2	SEStran Clackmannanshire Bus Study

## APPENDIX B

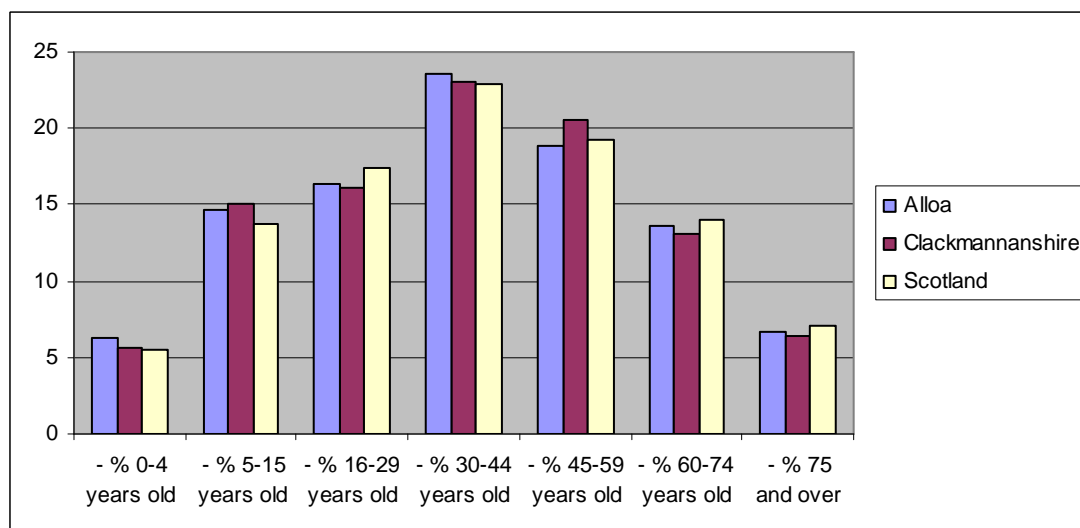
### SOCIAL & ENVIRONMENTAL CONTEXT

#### Population

**Table B.1 Population Recorded in 2001 Census by Age**

Age	Alloa	Clackmannan shire	Scotland
Total resident population	18,989	48,077	5,062,011
0-4 years old (%)	6.25	5.67	5.47
5-15 years old (%)	14.60	15.11	13.73
16-29 years old (%)	16.39	16.12	17.46
30-44 years old (%)	23.61	22.98	22.97
45-59 years old (%)	18.88	20.58	19.29
60-74 years old (%)	13.60	13.15	13.98
75 and over (%)	6.67	6.41	7.09

Source: Working age population from General Register Office for Scotland 2001 Census (SIMD 2004) and SAPE 2004 (SIMD 2006)



## Car Availability

**Table B.2 Car ownership; local, regional, national**

Car Ownership	Alloa	Clackmannan shire	Scotland
Total number of households (with residents)	8,560	20,558	2,192,246
-No car or van (%)	34.66	29.47	34.23
1 car or van (%)	45.62	45.35	43.35
2 cars or vans (%)	16.57	20.76	18.62
3 or more cars or vans (%)	3.15	4.42	3.81

[www.scrol.gov.uk/scrol/analyser](http://www.scrol.gov.uk/scrol/analyser)

## Health

**Table B.3 Comparative Health profile – economic activity**

Percentage of economically inactive people who are permanently sick or disabled	Clackmannan shire	Scotland
(%)	24.05	21.25

[www.scrol.gov.uk/scrol/analyser](http://www.scrol.gov.uk/scrol/analyser)

**Table B.4 Limiting Long Term Illness**

Limiting Long Term Illness	Alloa	Clackmannanshire	Scotland
Total resident population	18,989	48,077	5,062,011
-Has a limiting long term illness (%)	23.40	21.60	20.31
Does not have a limiting long term illness (%)	76.60	78.40	79.69

[www.scrol.gov.uk/scrol/analyser](http://www.scrol.gov.uk/scrol/analyser)

## Economy/Employment

**Table B.5 Travel to work, by settlement and mode**

	TOTAL 'NIGHT TIME' POPULATION	Not currently working or studying	Total Night Time Population working or studying	Works or studies mainly at or from home	Underground, tube, metro or light rail	Train	Bus, minibus or coach	Taxi or minicab	Driving a car or van	Passenger in a car or van	Motorcycle, scooter or moped	Bicycle	On foot/Other
Clackmannanshire	45778	17013	28765	4.5%	0.0%	0.8%	11.6%	0.8%	44.5%	12.7%	0.4%	1.0%	23.6%
Alloa	25993	10111	15882	4.3%	0.0%	0.7%	11.1%	0.9%	42.3%	13.9%	0.4%	1.1%	25.2%
Alva	5181	1770	3411	4.4%	0.1%	1.1%	7.8%	0.6%	47.5%	11.5%	0.6%	1.5%	25.0%
Clackmannan	3450	1286	2164	3.6%	0.0%	0.6%	16.9%	1.2%	45.8%	14.0%	0.5%	0.8%	16.5%
Dollar	2877	902	1975	6.8%	0.1%	0.7%	6.5%	0.4%	45.6%	8.9%	0.4%	0.2%	30.5%
Menstrie	2007	721	1286	5.2%	0.0%	1.7%	15.7%	0.5%	49.6%	10.9%	0.2%	0.8%	15.3%
Tillicoultry	6270	2223	4047	4.2%	0.0%	1.0%	15.3%	0.5%	47.7%	10.8%	0.4%	0.6%	19.5%

Footnotes: 1 No fixed place: counted as if working or studying in the area and are classified according to the means of transport used.

2 'Working or studying' includes all people of any age who work or study mainly at or from home, at no fixed place or travel to a place of work or study.

[www.scrol.gov.uk/scrol/analyser](http://www.scrol.gov.uk/scrol/analyser)

**Table B.6 Travel to work, by settlement and distance travelled**

	People Currently Working or Studying	Less than 2km	2km - less than 5km	5km - less than 10km	10 km - less than 20km	20km - less than 40km	40km and over
Clackmannanshire	27345	36.3%	18.3%	17.0%	12.3%	5.6%	3.9%
Alloa	15060	42.8%	17.6%	17.0%	8.2%	4.9%	3.3%
Alva	3262	33.7%	17.8%	20.8%	10.8%	5.5%	4.7%
Clackmannan	2087	22.0%	28.8%	13.8%	18.8%	7.2%	2.9%
Dollar	1840	39.4%	2.7%	14.6%	20.0%	11.1%	5.9%
Menstrie	1219	18.2%	24.3%	32.0%	8.0%	4.9%	6.2%
Tillicoultry	3877	24.9%	21.7%	12.5%	23.7%	5.2%	4.6%
Scotland	3066537	35.9%	18.7%	15.2%	12.5%	7.3%	3.3%

[www.scrol.gov.uk/scrol/analyser](http://www.scrol.gov.uk/scrol/analyser)

## Safety

**Table B.7 Safety**

Police force/ Council	1994-98 average			2006 (provisional)			2002-2006 average (provisional)		
	Killed	Killed & Serious	All Severities	Killed	Killed & Serious	All Severities	Killed	Killed & Serious	All Severities
Clackmannanshire	2	42	137	4	26	121	3	31	128
Scotland	378	4,838	22,316	314	2,908	17,077	309	3,149	18,296

## Appendix C

### Consultees

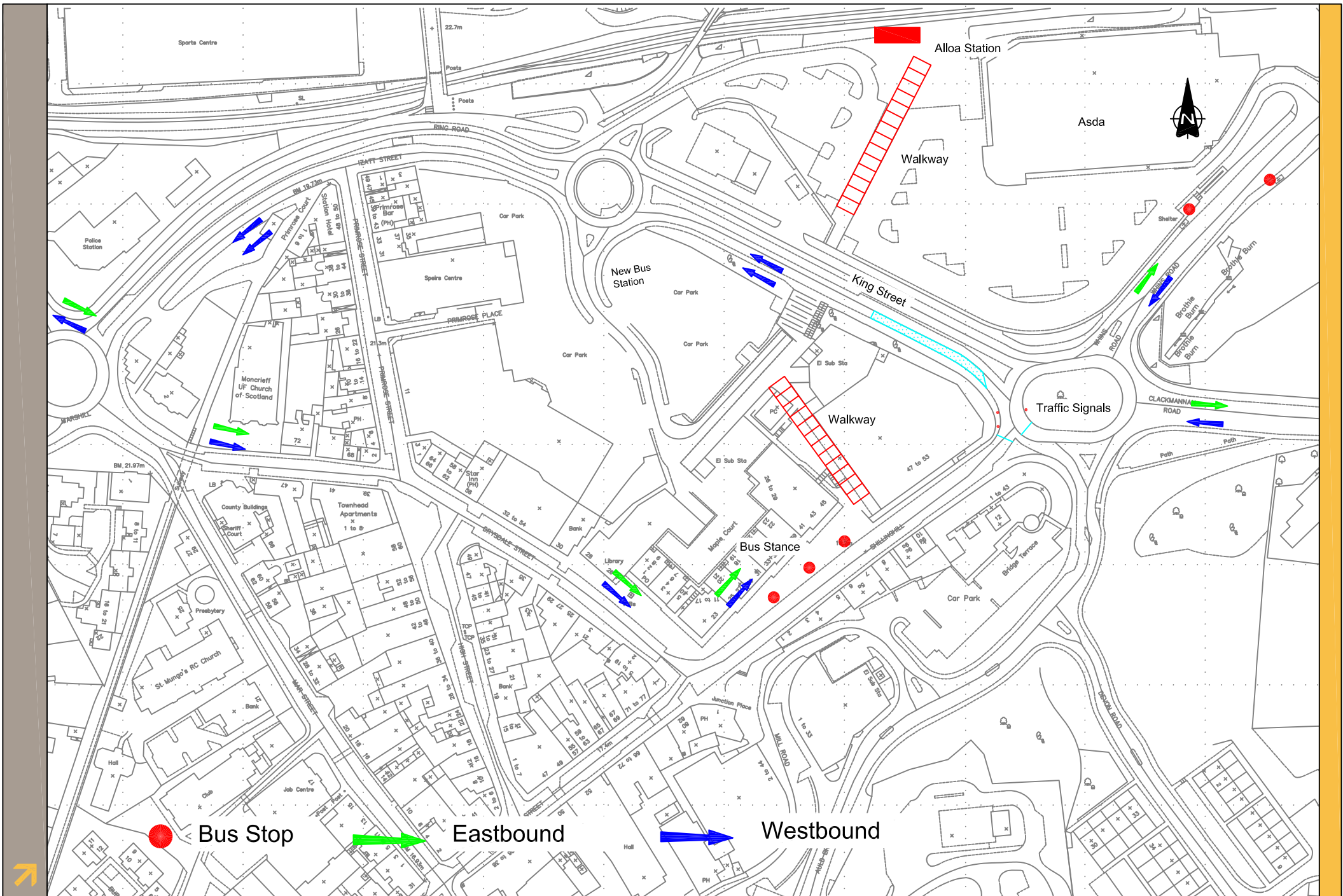
## Consultees

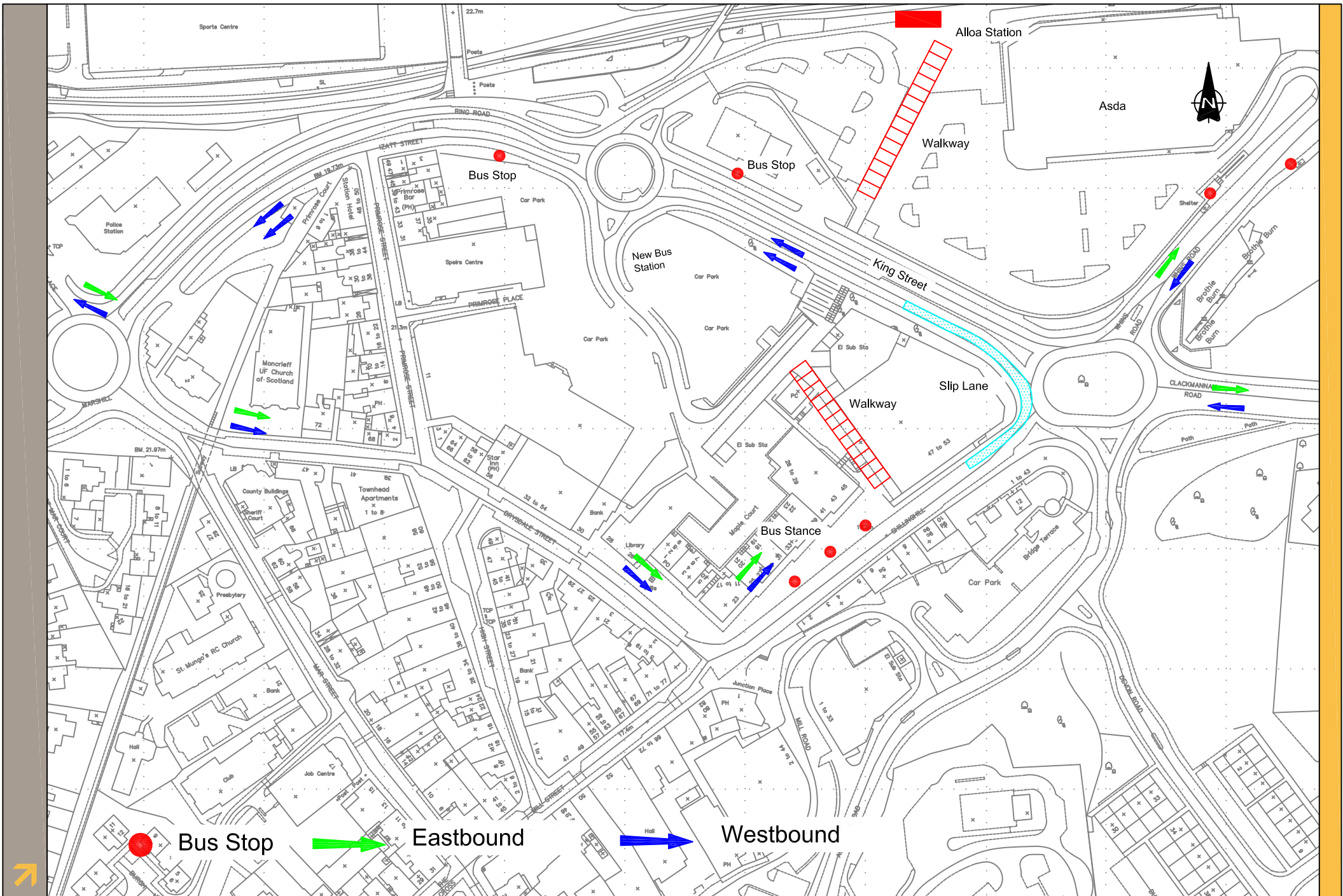
<b>Main Contacts</b>	
<b>Bus Operators</b>	
Brian Peat/Jim Freeland	First Edinburgh
Steve Walker	Stagecoach in Fife
Duncan Hearsurn	Wheelchair Accessible Vehicle Enterprises (WAVE)
Lennox Mackie	Mackies of Alloa
John Hunter	Hunter's Executive Coaches
<b>Health</b>	
Mark Craske	NHS Forth Valley
<b>Representatives of the Alloa Town Centre</b>	
Mike Mulraney	Alloa Trades Association
<b>Representative of the Rail Industry</b>	
Dawn Macklin	Transport Scotland
Ellie Murphy	ScotRail
Nigel Wunsch	Network Rail
<b>Central Scotland Police</b>	
Jim Allan	Central Scotland Police
<b>SEStran</b>	
Trond Haugen/Alastair Short	SEStran
<b>Clackmannanshire Council</b>	
Alan Murray/Dorothy Walker	Clackmannanshire Council

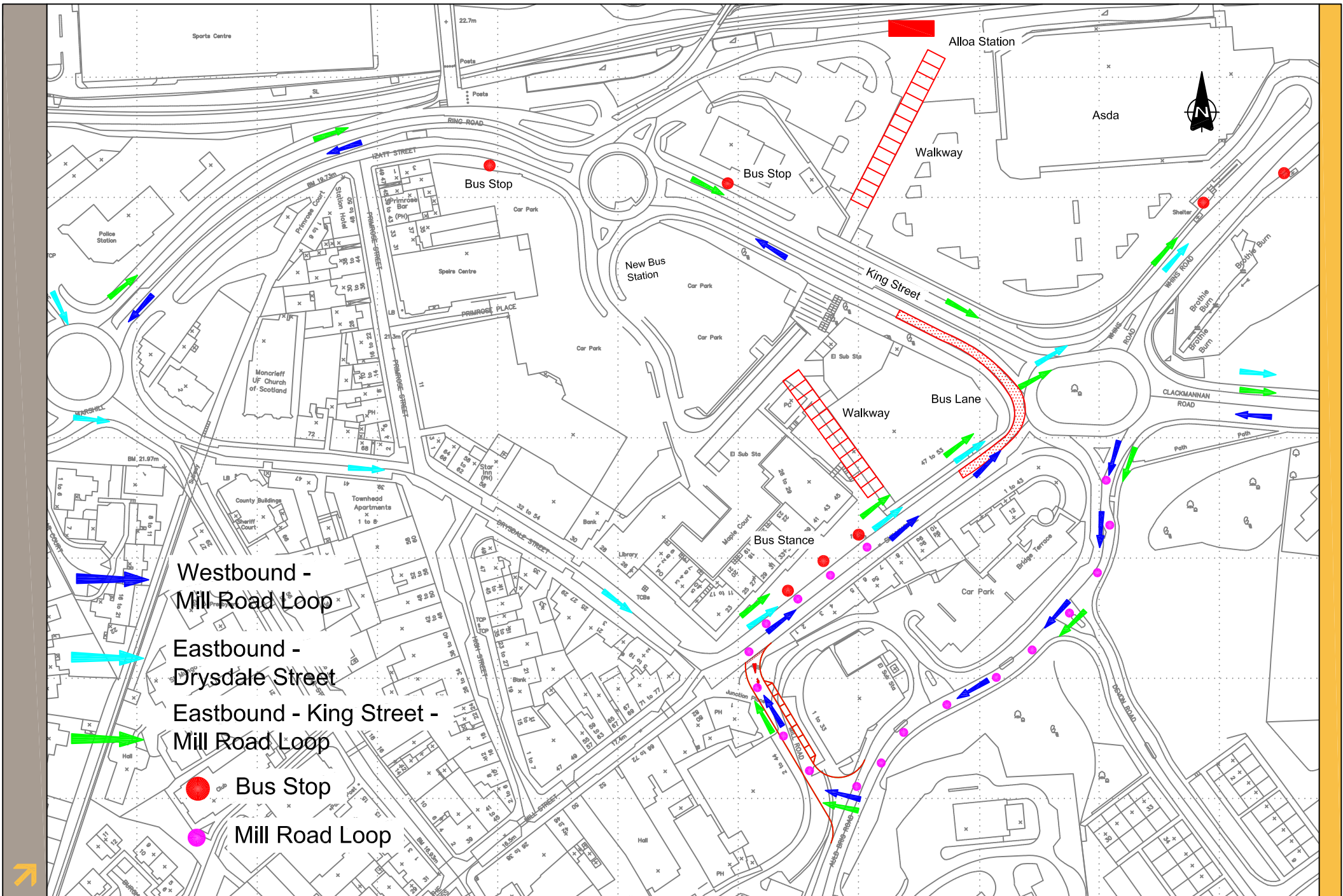
## Appendix D

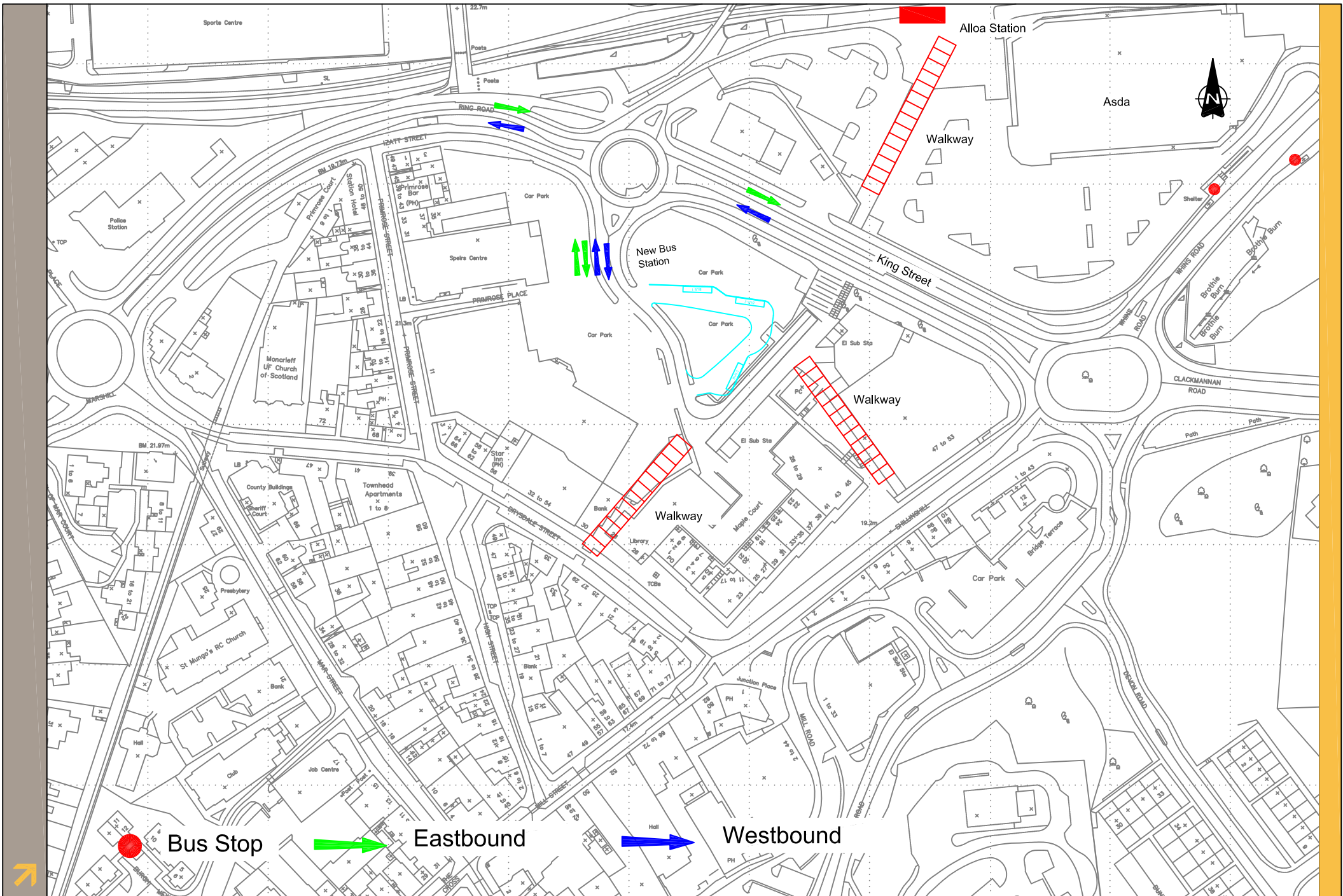
## Option Plans

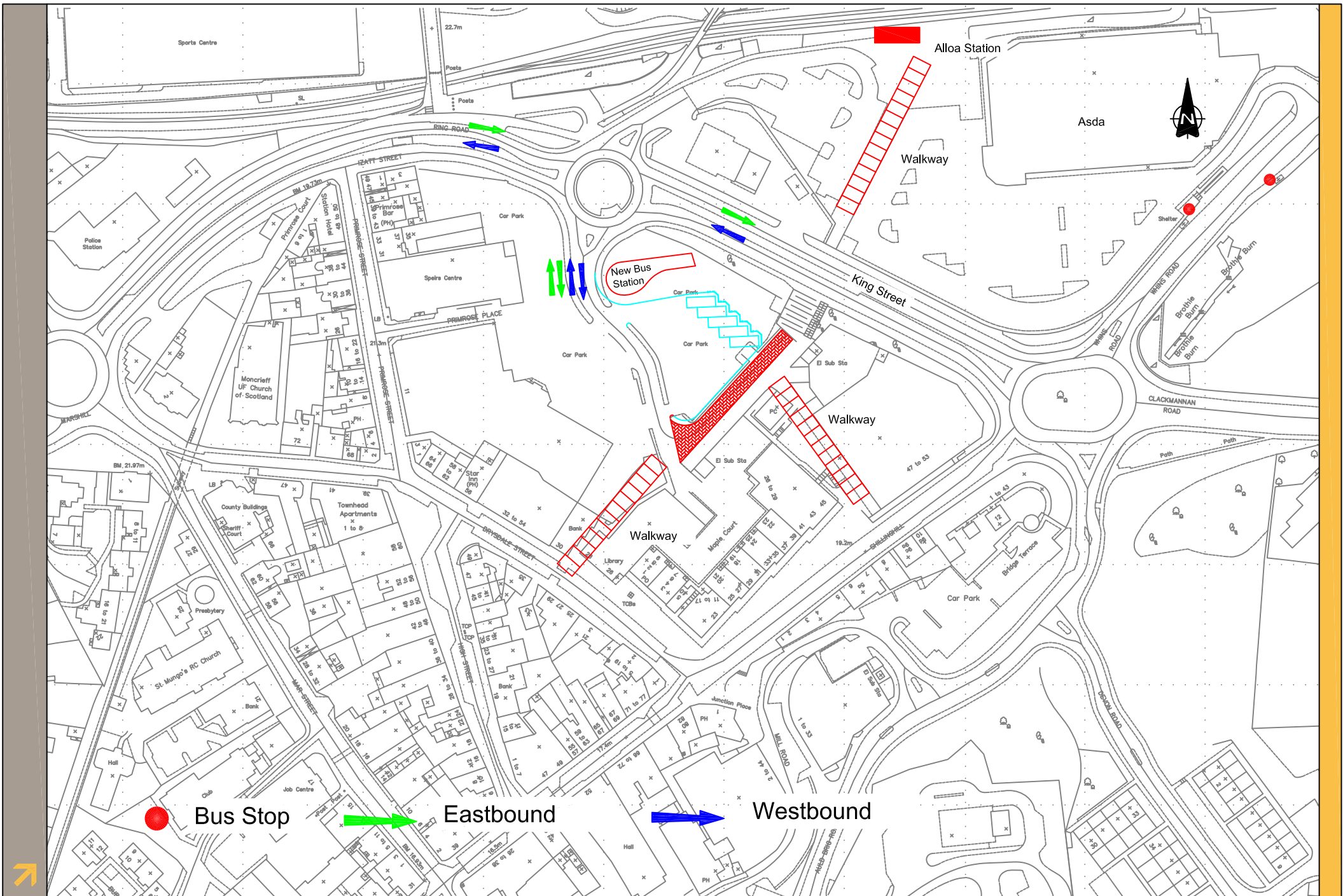












# Appendix E

## Surveys

## Contents

1	SURVEY RESULTS .....	1
	Introduction .....	1

## Figures

Figure 2.1	SEStran Clackmannanshire Bus Study - Alloa Rail Station Access Survey.....	2
Figure 2.2	SEStran Clackmannanshire Bus Study - Alloa Shillinghill Survey.....	4
Figure 2.3	Bus & Rail Questions - Gender.....	6
Figure 2.4	Bus & Rail Question - Age .....	7
Figure 2.5	Bus Question5 & Rail Question 6:Journey Purpose .....	8
Figure 2.6	Bus Question 6 & Rail Question 7 - Frequency .....	9
Figure 2.7	Rail Question 1 - Origin.....	10
Figure 2.8	Rail Question 2 - Destination Total .....	11
Figure 2.9	Rail Questions 1, 2 & 8 - Origin & Destination (New and generated users).....	12
Figure 2.10	Rail Question 3 - Modal split of access to Alloa & Stirling Rail Station.....	14
Figure 2.11	Rail Question 4 - Rail (Important Change).....	15
Figure 2.12	Rail Question 5 - Would you travel to the station by bus? .....	16
Figure 2.13	Rail Question 9 - Previous mode of travel before railway.....	17
Figure 2.14	Bus Question 3 - Bus Passengers Destination.....	18
Figure 2.15	Bus Question 4 - Most important improvements that would make you travel more by bus? .....	19
Figure 2.16	Bus Question 7 - Ticket Type.....	20

# 1 Survey Results

## Introduction

- 1.1 In the absence of reliable data from bus operators combined with the opportunity to obtain accurate data following the opening of the railway instead of relying on forecasted figures it was decided during the project to undertake a rail and bus survey. The surveys took place following the introduction of rail services for both rail and bus passengers.
- 1.2 The main purpose of the rail surveys, that were intended at rail boarders was to
  - origin,
  - destination,
  - journey purpose,
  - mode
  - what would make them travel by bus instead of the present mode
  - what would improve interchange
  - how many had moved from bus to train.
- 1.3 The bus surveys were again aimed at boarders only and seek to achieve details on
  - origin,
  - destination,
  - journey purpose,
  - mode
  - what would make them travel by bus
- 1.4 To ensure surveys did not take place in the school holidays they were delayed until 25 August 2008. Generally rail surveys took place between 0815 and 1400, bus surveys from 1300 to 1730. Following an initial pilot survey, rail surveys took place on board Glasgow train prior to departure from Alloa. Bus surveys took place at the existing stance at Alloa, Shillinghill.
- 1.5 In total 271 rail and 225 bus surveys were completed between 25 and 29 August 2008.
- 1.6 Additional to the above surveys where information was sought by questionnaires the survey also included a head count of passengers boarding, alighting and an estimate of the load on each bus. The latter specifically important in determining the number of bus passengers that were affected by the additional running times of westbound services that had to negotiate King Street twice as a result of Alloa's one way system.
- 1.7 As the data was collated after the initial sift of options these surveys were used predominantly to develop quantitative analysis of proposals outlined in the detailed appraisal of the report.
- 1.8 The responses to each questions are reported in tabular and graphical form below, the commentary is reported in chapter 4 of the main report.



**Figure 1.1 SEStran Clackmannanshire Bus Study - Alloa Rail Station Access Survey**

Time:				No. /
Day/Date (DD/MM/YY):				
Sex:	Male	<input type="checkbox"/>	Female	<input type="checkbox"/>
Age:	Between 5 and 15	<input type="checkbox"/>	Between 5 and 15	<input type="checkbox"/>
	16-24 years old	<input type="checkbox"/>	16-24 years old	<input type="checkbox"/>
	24-59 years old	<input type="checkbox"/>	24-59 years old	<input type="checkbox"/>
	60 and above	<input type="checkbox"/>	60 and above	<input type="checkbox"/>

1. Where did you begin your journey today?

Postcode Street Name (e.g. FK10 1EX)	
Village (e.g. Sauchie)	
Town (e.g. Alloa)	

2. Where are you travelling to on this journey?

Stirling	<input type="checkbox"/>	
Glasgow	<input type="checkbox"/>	
Edinburgh	<input type="checkbox"/>	
Other (please State)	<input type="checkbox"/>	

3. How did you get to the station today?

Car Driver	<input type="checkbox"/>	Go to question 4	
Car Passenger	<input type="checkbox"/>	Go to question 4	
Bicycle	<input type="checkbox"/>	Go to question 6	
Motorcycle	<input type="checkbox"/>	Go to question 4	
Walk	<input type="checkbox"/>	Go to question 6	
Bus	<input type="checkbox"/>	Go to question 4	
Taxi	<input type="checkbox"/>	Go to question 4	
Other (please state)	<input type="checkbox"/>	Go to question 4	

4. What is the most important single change that should be made to make interchange between bus and rail in Alloa easier?

Bus stop closer to rail station	<input type="checkbox"/>	
More convenient timing of bus services (to connect better with train times)	<input type="checkbox"/>	
Availability of suitable bus service	<input type="checkbox"/>	
Improved information about bus and rail services	<input type="checkbox"/>	
Through ticketing	<input type="checkbox"/>	
Don't know	<input type="checkbox"/>	
Nothing	<input type="checkbox"/>	
Other (please state)	<input type="checkbox"/>	

5. If the change highlighted in the previous question was made would you be likely to travel by bus to the rail station?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

6. What is the main purpose of your trip?

Shopping	<input type="checkbox"/>	
Social/Leisure	<input type="checkbox"/>	
Health	<input type="checkbox"/>	
Going to/from normal place of work	<input type="checkbox"/>	
Travelling on business	<input type="checkbox"/>	
Other (please state)	<input type="checkbox"/>	

7. How often do you use the rail service?

Daily or every weekday	<input type="checkbox"/>
2-4 times a week	<input type="checkbox"/>
Weekly	<input type="checkbox"/>
Fortnightly	<input type="checkbox"/>
Monthly	<input type="checkbox"/>
First time	<input type="checkbox"/>

8. Did you make similar journeys as described in this questionnaire (but not necessarily by rail) before the railway reopened?

Yes (if yes go to next question)	<input type="checkbox"/>
No (and end questionnaire)	<input type="checkbox"/>

9. If you answered yes to the previous question what was the main mode of travel you used to make the journey as described in questions 1 and 2?

Car Driver	<input type="checkbox"/>	
Car Passenger	<input type="checkbox"/>	
Bicycle	<input type="checkbox"/>	
Motorcycle	<input type="checkbox"/>	
Bus	<input type="checkbox"/>	
Taxi	<input type="checkbox"/>	
Rail (from Stirling or other rail station)	<input type="checkbox"/>	
Other (please state)	<input type="checkbox"/>	

Thank you and end.

**Figure 1.2 SEStran Clackmannanshire Bus Study - Alloa Shillinghill Survey**

Time of Survey:				No:	/
Service No/Destination Operator/:		/ /			
(Not mandatory)					
Day/Date (DD/MM/YY):					
Sex:	Male	<input type="checkbox"/>	Female	<input type="checkbox"/>	
Age:	Between 5 and 15	<input type="checkbox"/>	Between 5 and 15	<input type="checkbox"/>	
	16-24 years old	<input type="checkbox"/>	16-24 years old	<input type="checkbox"/>	
	24-59 years old	<input type="checkbox"/>	24-59 years old	<input type="checkbox"/>	
	60 and above	<input type="checkbox"/>	60 and above	<input type="checkbox"/>	

1. Where in Alloa did you start this bus journey today?

Postcode or Street Name (e.g. FK10 2ET)	
	Go to Question 3
Didn't start journey in Alloa	Go to Question 2

2. If you did not start this journey in Alloa where did you start it?

Postcode or Street Name (e.g. FK8 3EG)	
Village (e.g. Clackmannan)	
Town/City (e.g. Falkirk)	

3. Where are you travelling to today?

Postcode or Street Name (e.g. FK8 3EG)	
Village (e.g. Tullibody)	
Town/City (e.g. Stirling)	

4. What are the three most important improvements (in order) that would make you travel more?

SHOW CARD	Order	1st	2nd	3rd
I wouldn't travel anymore what ever changes were made		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More direct services		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheaper fares		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce journey times		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Introduce more frequent services		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide more reliable services		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safer environment (on and off bus)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comfortable & Cleaner vehicles		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved information		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please state)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. What is/was the main purpose of your trip?

Shopping	<input type="checkbox"/>	
Social/Leisure	<input type="checkbox"/>	
Health	<input type="checkbox"/>	
Going to/from normal place of work	<input type="checkbox"/>	
Travelling on business	<input type="checkbox"/>	
Other (please state)	<input type="checkbox"/>	

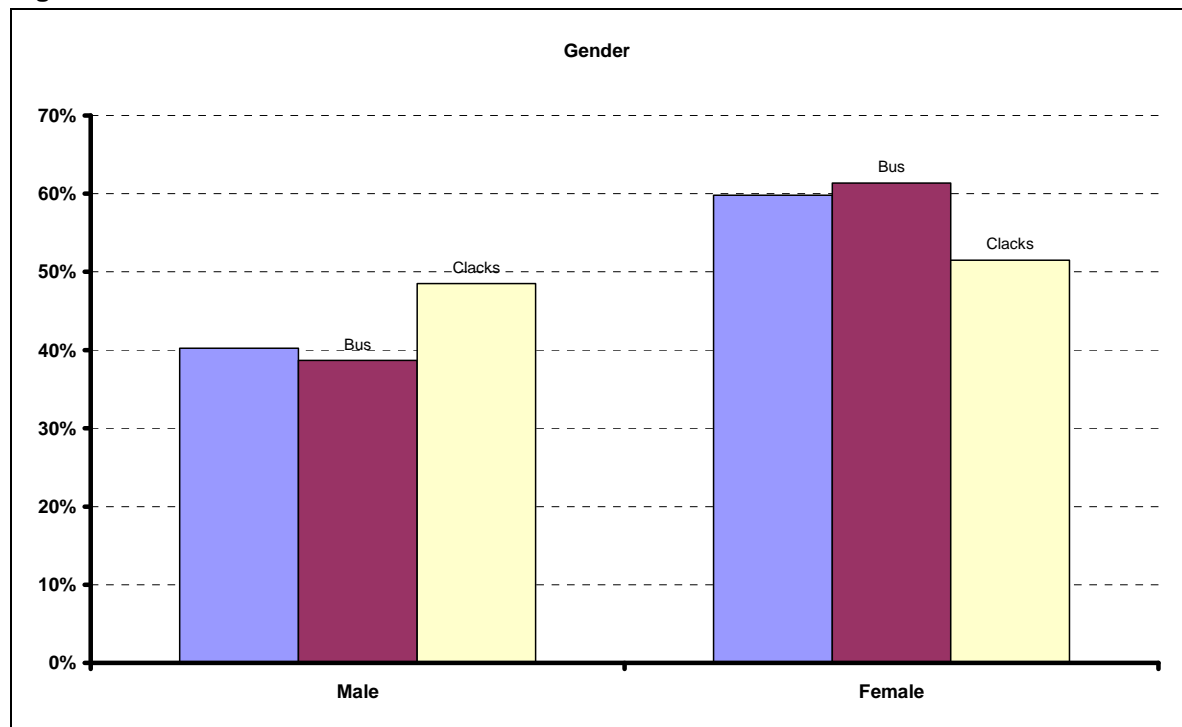
6. How often do you use the services on this route?

Daily or every weekday	<input type="checkbox"/>
2-4 times a week or more	<input type="checkbox"/>
Weekly	<input type="checkbox"/>
Fortnightly	<input type="checkbox"/>
Monthly	<input type="checkbox"/>
First time	<input type="checkbox"/>

7. What type of ticket will you be using to travel today?

Child (Single or return)	<input type="checkbox"/>
Adult (Single or return)	<input type="checkbox"/>
National Concessionary Pass	<input type="checkbox"/>
Day Ticket, Weekly, Monthly or Season Ticket	<input type="checkbox"/>
One-Ticket	<input type="checkbox"/>

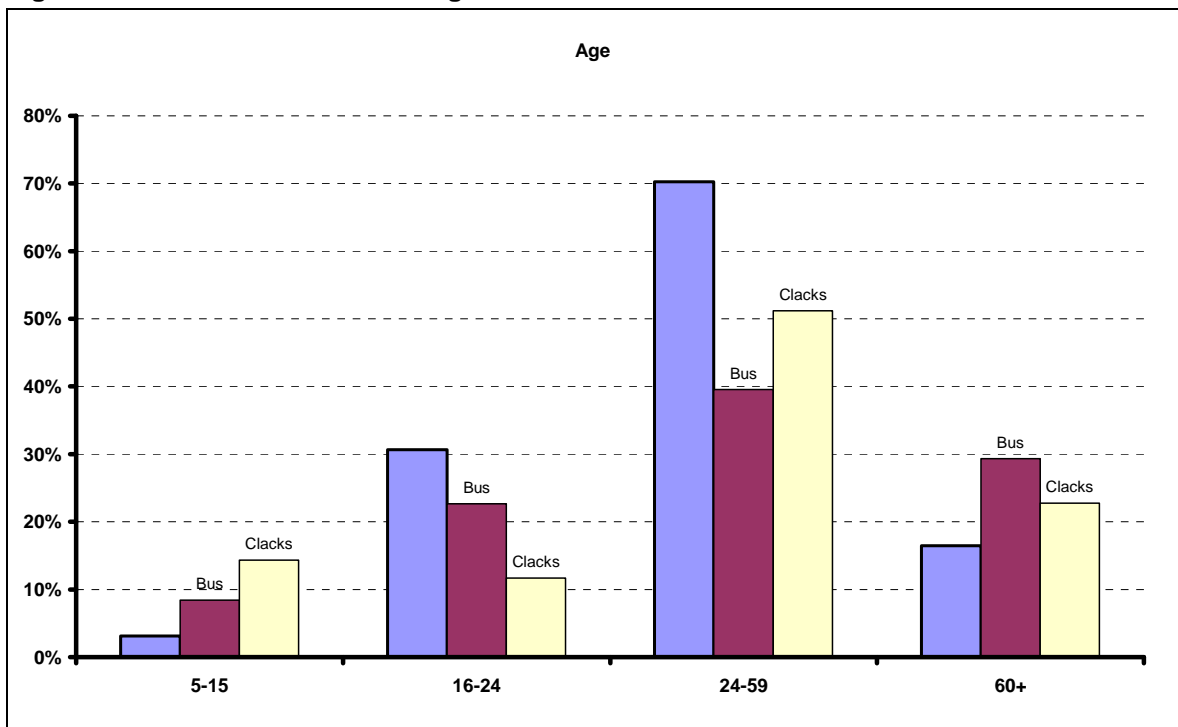
**Figure 1.3 Bus & Rail Questions - Gender**



JMP

Gender						
	Rail No	Rail %	Bus No	Bus %	Clacks No	Clacks %
Male	109	40%	87	39%	22868	49%
Female	162	60%	138	61%	24253	51%
	271		225		47121	

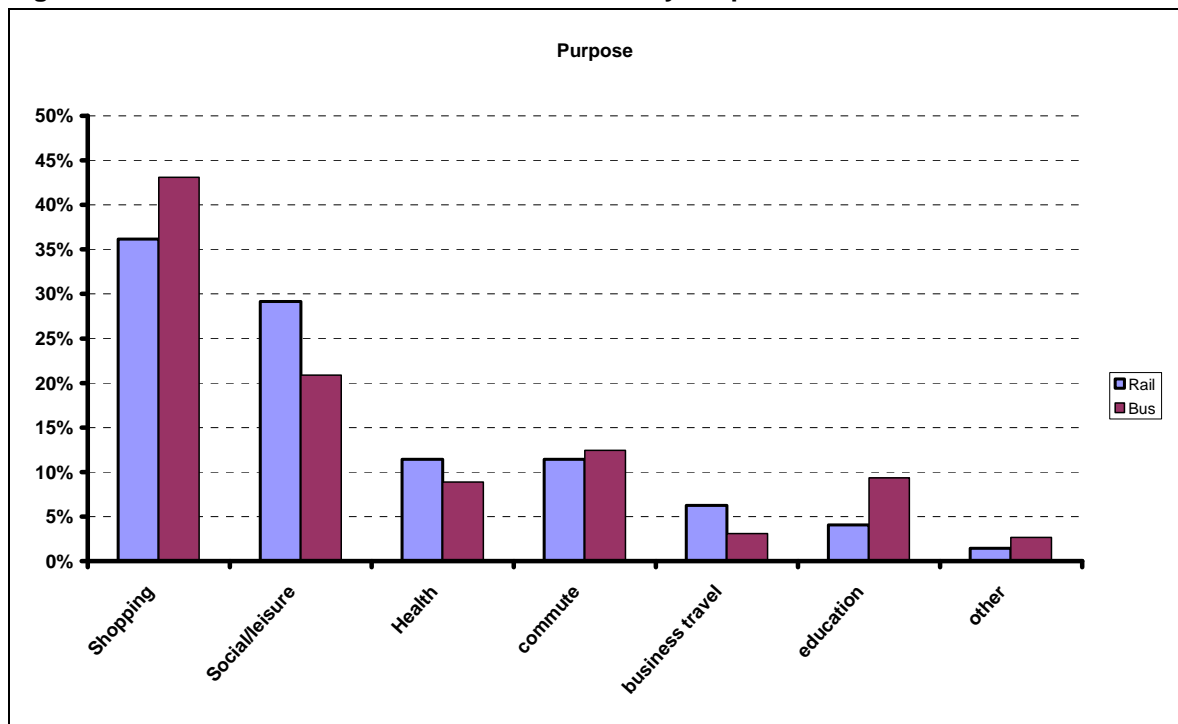
**Figure 1.4 Bus & Rail Question - Age**



JMP

Age						
	Rail No	Rail %	Bus No	Bus %	Clacks No	Clacks %
5-15	7	3%	19	8%	6761	14%
16-24	69	31%	51	23%	5502	12%
24-59	158	70%	89	40%	24132	51%
60+	37	16%	66	29%	10726	23%
	271		225		47121	

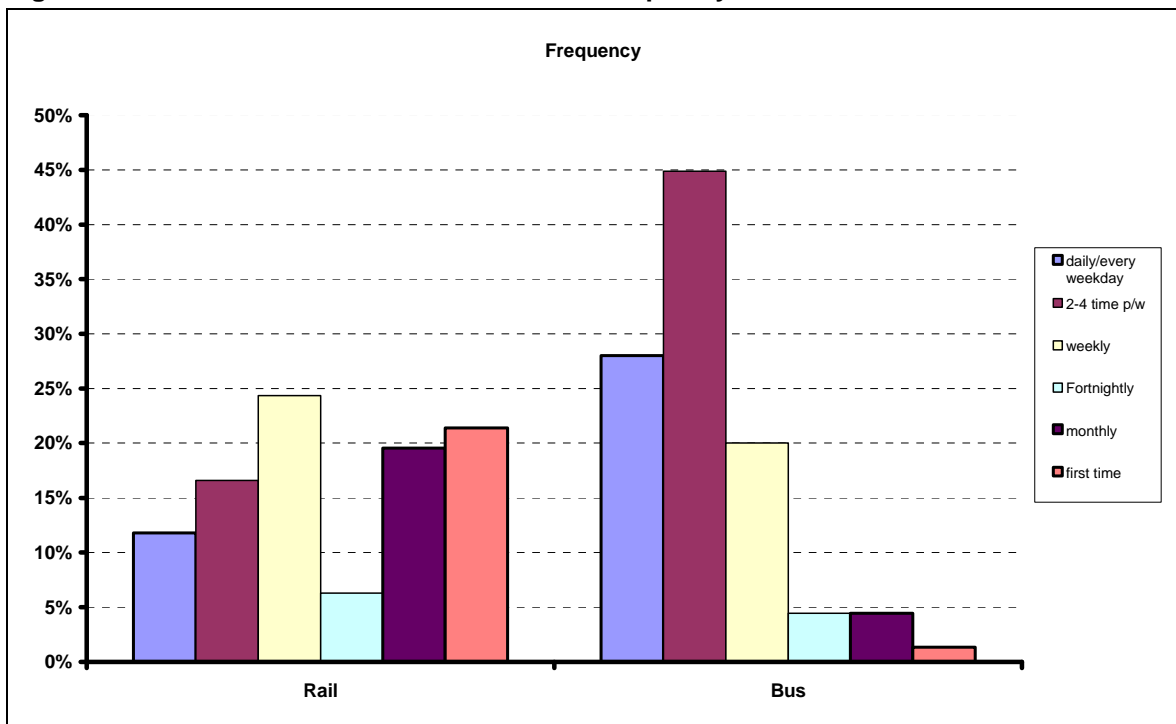
Figure 1.5 Bus Question5 & Rail Question 6:Journey Purpose



JMP

Purpose				
	Rail No	Rail %	Bus No	Bus %
Shopping	98	36%	97	43%
Social/leisure	79	29%	47	21%
Health	31	11%	20	9%
commute	31	11%	28	12%
business travel	17	6%	7	3%
education	11	4%	21	9%
other	4	1%	6	3%
	271		225	

**Figure 1.6 Bus Question 6 & Rail Question 7 - Frequency**

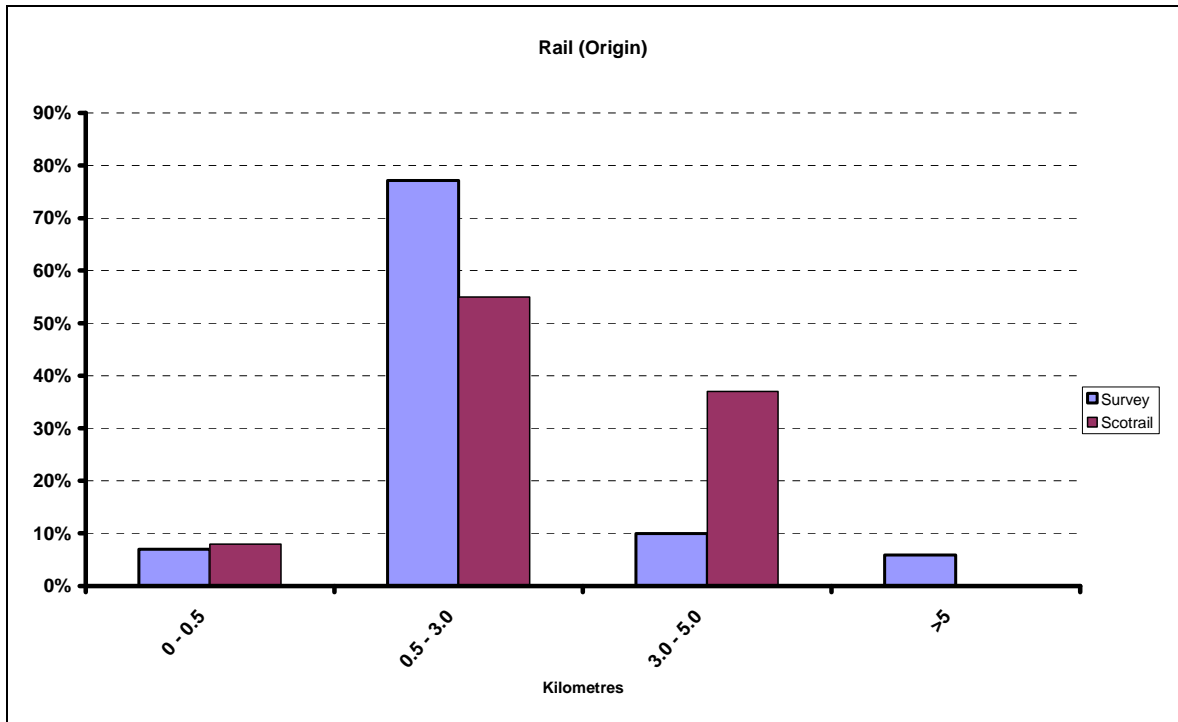


JMP

Frequency				
	Rail No	Rail %	Bus No	Bus %
daily/every weekday	32	12%	63	28%
2-4 time p/w	45	17%	101	45%
weekly	66	24%	45	20%
Fortnightly	17	6%	10	4%
monthly	53	20%	10	4%
first time	58	21%	3	1%
	271		225	



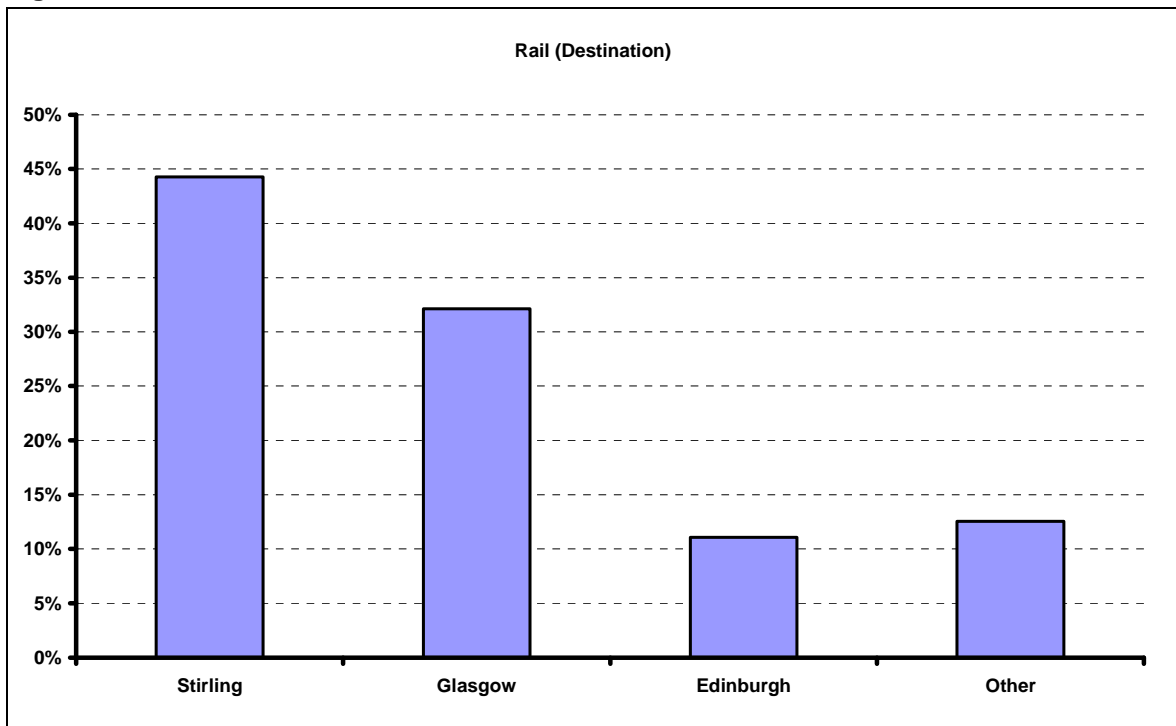
**Figure 1.7 Rail Question 1 - Origin**



JMP/Scotrail

Rail Origin			
Zone	Km	Survey	Scotrail
Z1	0 - 0.5	7%	8%
Z2	0.5 - 3.0	77%	55%
Z3	3.0 - 5.0	10%	37%
Z4	>5	6%	

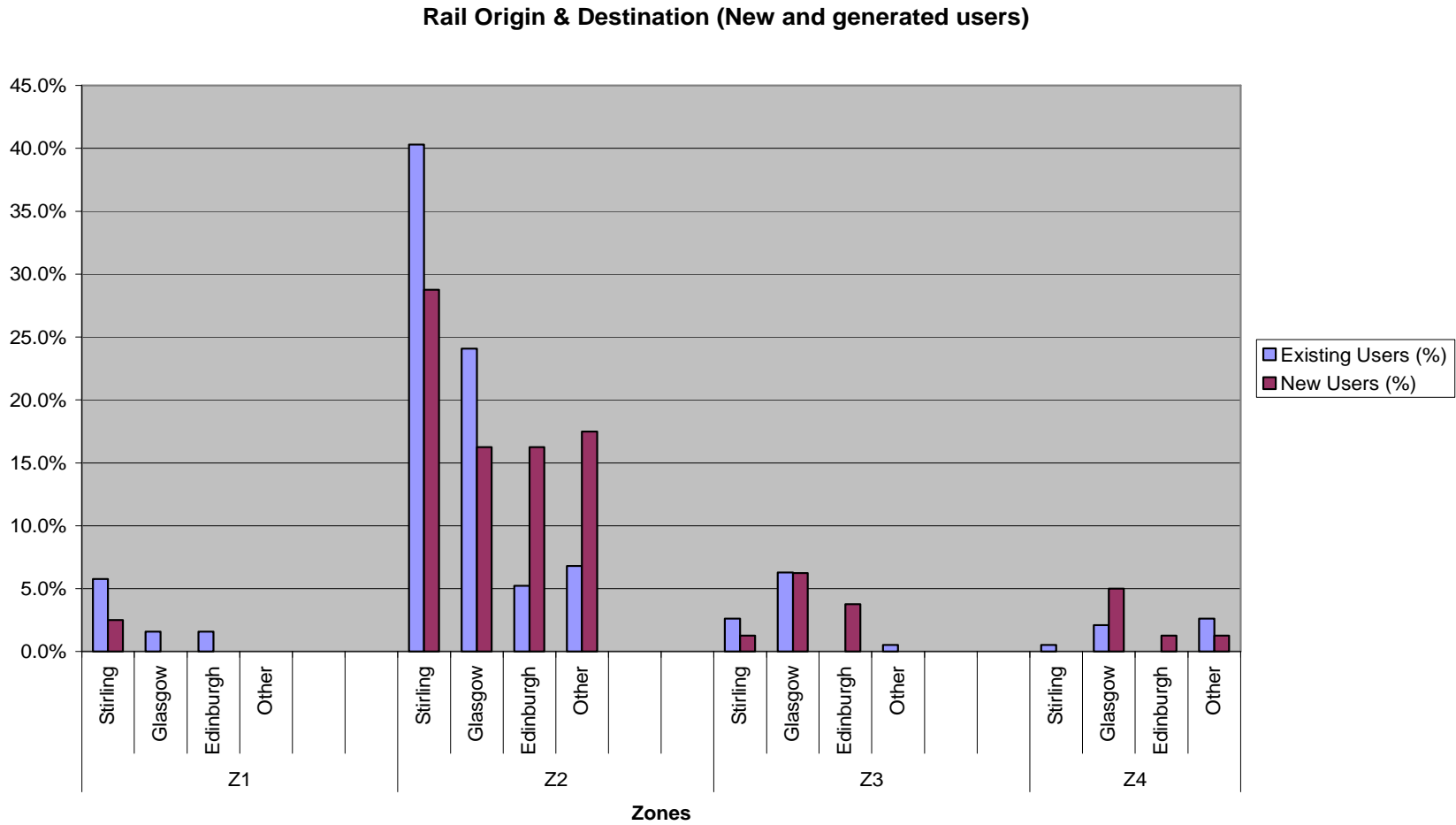
**Figure 1.8 Rail Question 2 - Destination Total**



JMP

Rail destination		
	Rail No	Rail %
Stirling	120	44%
Glasgow	87	32%
Edinburgh	30	11%
Other	34	13%
	271	

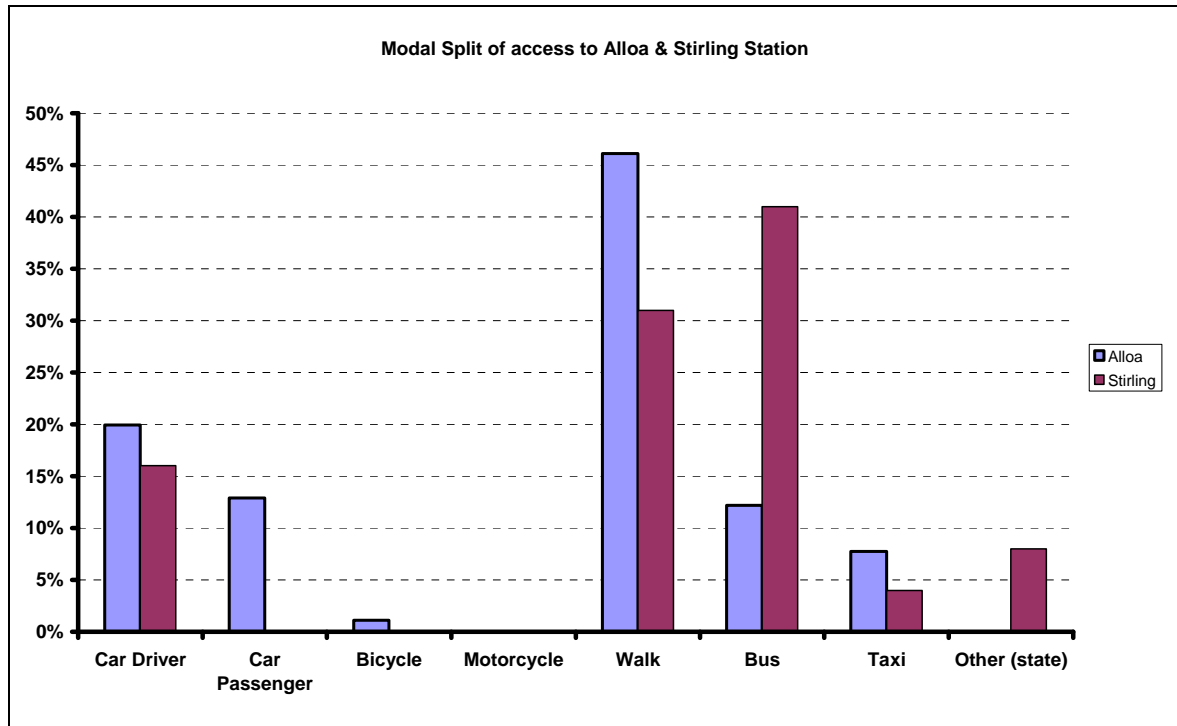
Figure 1.9 Rail Questions 1, 2 & 8 - Origin & Destination (New and generated users)



Rail Origin & Destination (New and generated users)					
Origin	Destination	Rail (previously travelled)	% of all Previously Travelled	Rail (New journeys)	% of all new journeys
Z1	Stirling	11	5.8%	2	2.5%
	Glasgow	3	1.6%	0	0.0%
	Edinburgh	3	1.6%	0	0.0%
	Other	0	0.0%	0	0.0%
			17		2
Z2	Stirling	77	40.3%	23	28.8%
	Glasgow	46	24.1%	13	16.3%
	Edinburgh	10	5.2%	13	16.3%
	Other	13	6.8%	14	17.5%
			146		63
Z3	Stirling	5	2.6%	1	1.3%
	Glasgow	12	6.3%	5	6.3%
	Edinburgh	0	0.0%	3	3.8%
	Other	1	0.5%	0	0.0%
			18		9
Z4	Stirling	1	0.5%	0	0.0%
	Glasgow	4	2.1%	4	5.0%
	Edinburgh	0	0.0%	1	1.3%
	Other	5	2.6%	1	1.3%
			10		6
	Total	191		80	

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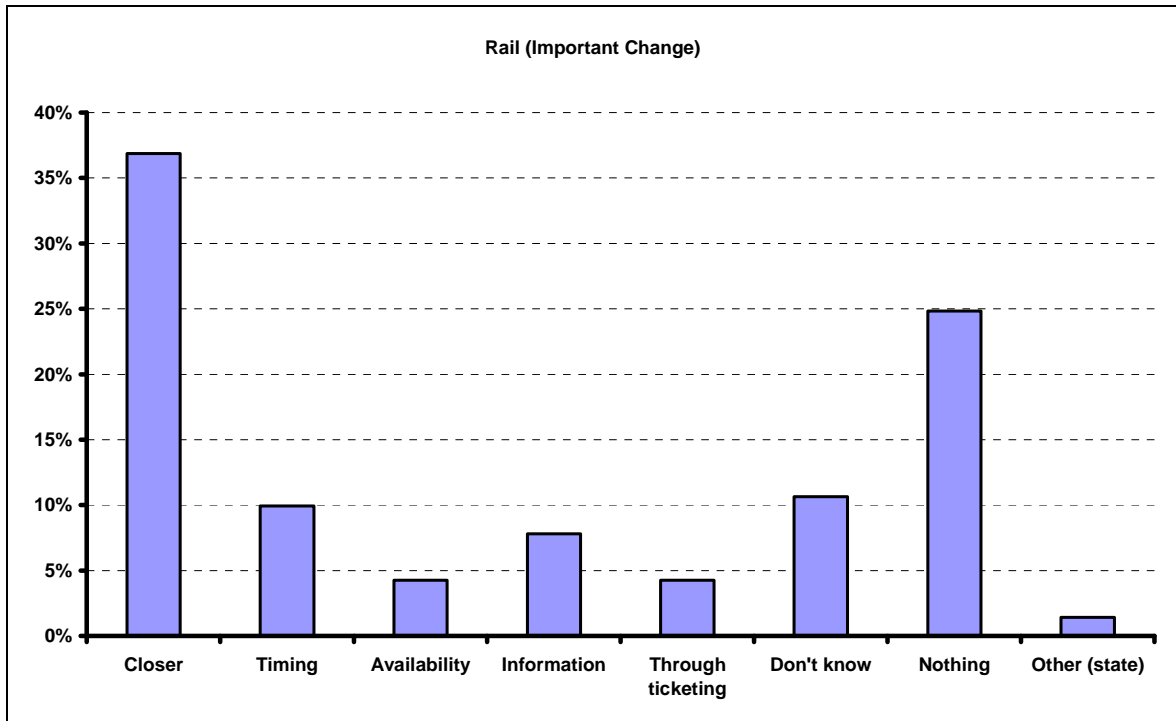
**Figure 1.10 Rail Question 3 - Modal split of access to Alloa & Stirling Rail Station**



JMP/ScotRail

Mode to rail station			
	Rail No	Rail %	Stg %
Car Driver	54	20%	16%
Car Passenger	35	13%	
Bicycle	3	1%	0%
Motorcycle	0	0%	0%
Walk	125	46%	31%
Bus	33	12%	41%
Taxi	21	8%	4%
Other (state)	0	0%	8%
	271		

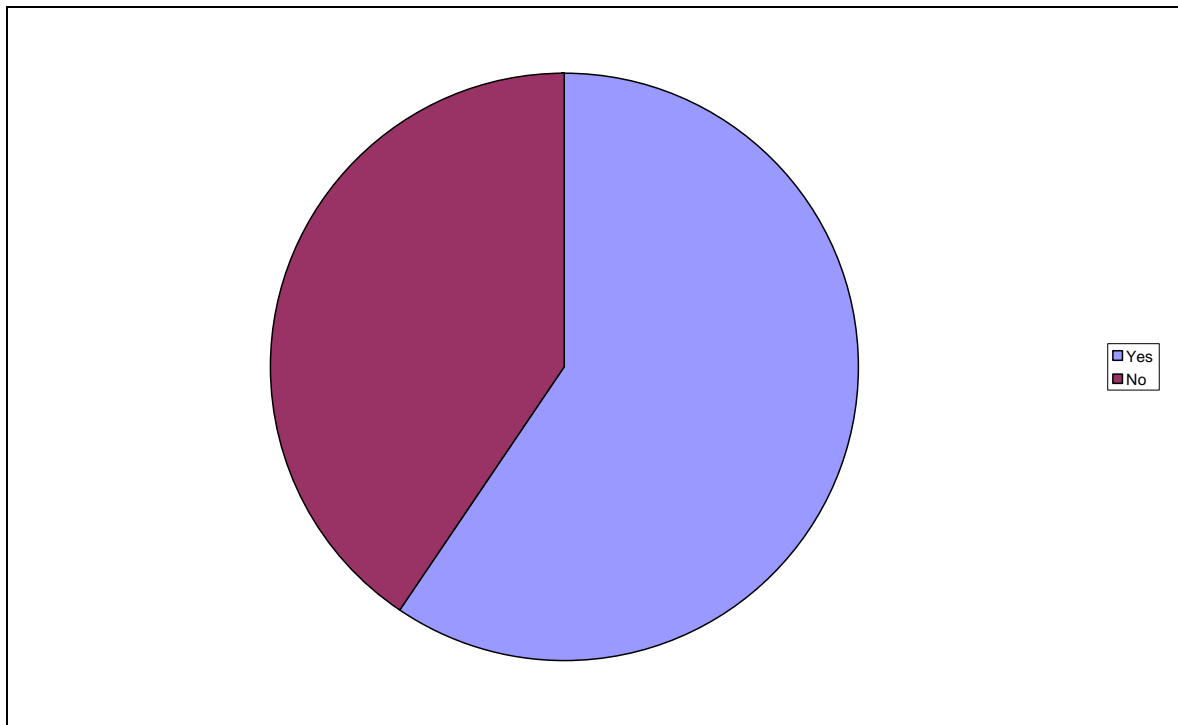
**Figure 1.11 Rail Question 4 - Rail (Important Change)**



JMP

Rail most important change (exclude Walk & Cycle)		
	Rail No.	Rail %
Closer	52	37%
Timing	14	10%
Availability	6	4%
Information	11	8%
Through ticketing	6	4%
Don't know	15	11%
Nothing	35	25%
Other (state)	2	1%
	141	

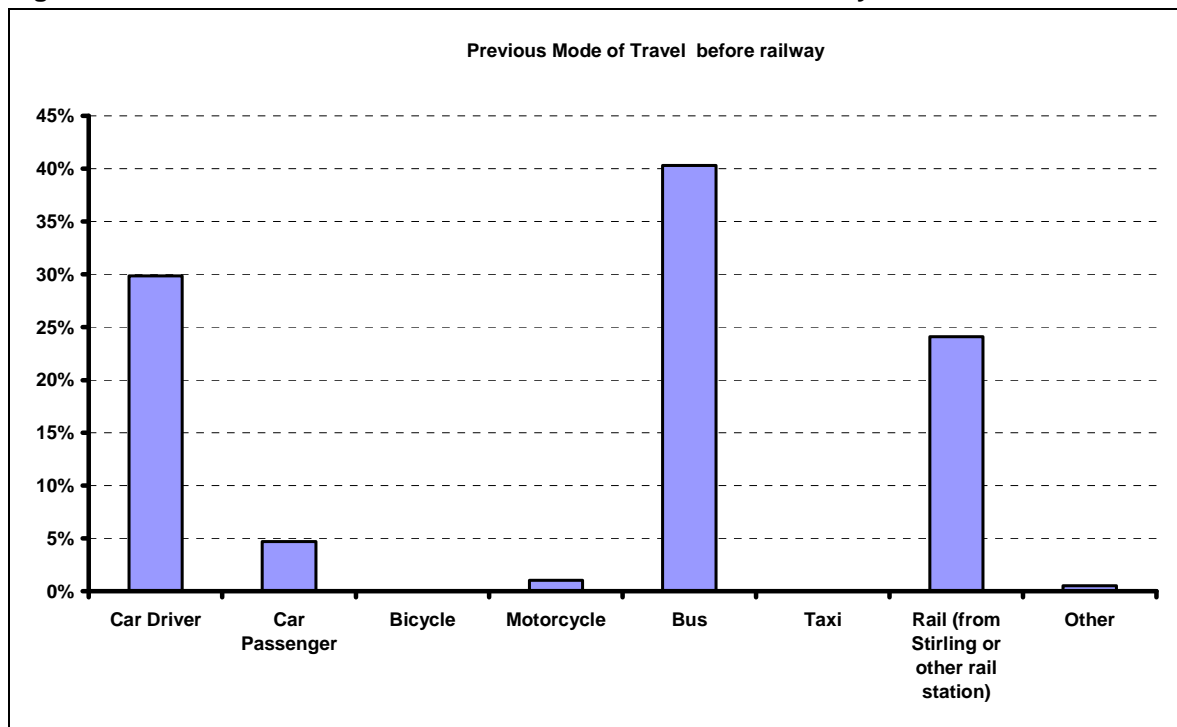
**Figure 1.12 Rail Question 5 - Would you travel to the station by bus?**



JMP

Travel by Bus if change made		
	Rail No.	Rail %
Yes	84	60%
No	57	40%
	141	
N/a (Walk & Cycle)	130	n/a

**Figure 1.13 Rail Question 9 - Previous mode of travel before railway**

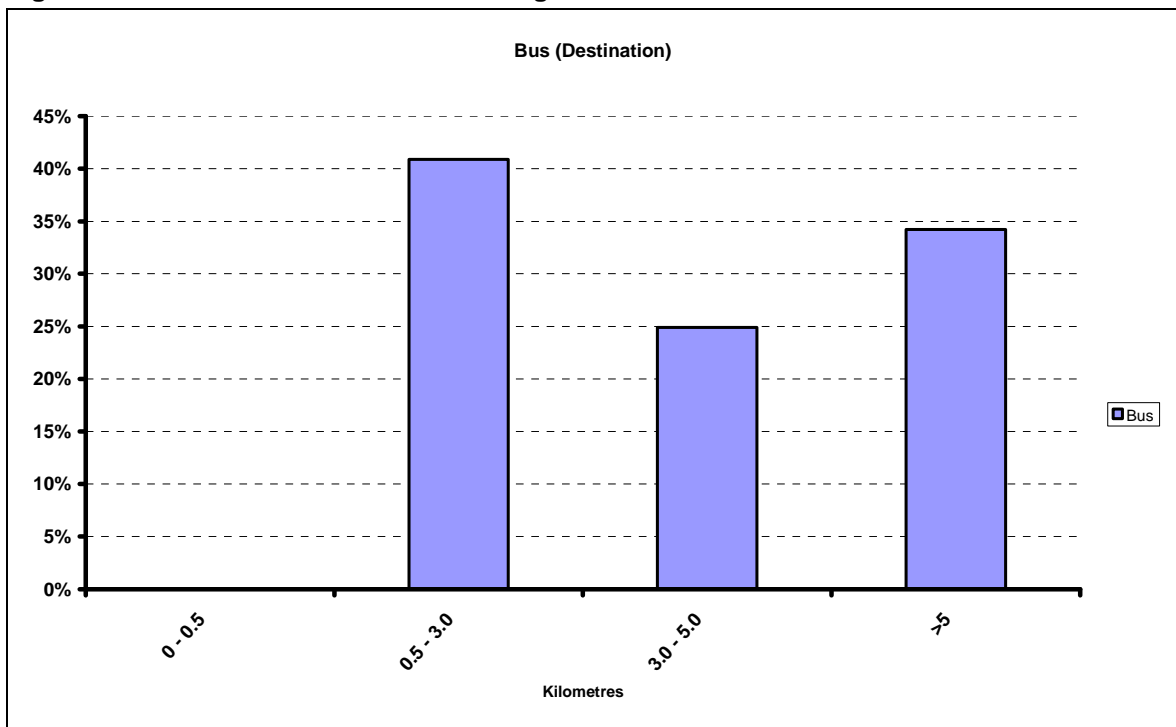


JMP

	Rail No.	Rail %
Car Driver	57	30%
Car Passenger	9	5%
Bicycle	0	0%
Motorcycle	2	1%
Bus	77	40%
Taxi	0	0%
Rail (from Stirling or other rail station)	46	24%
Other	1	1%
	191	



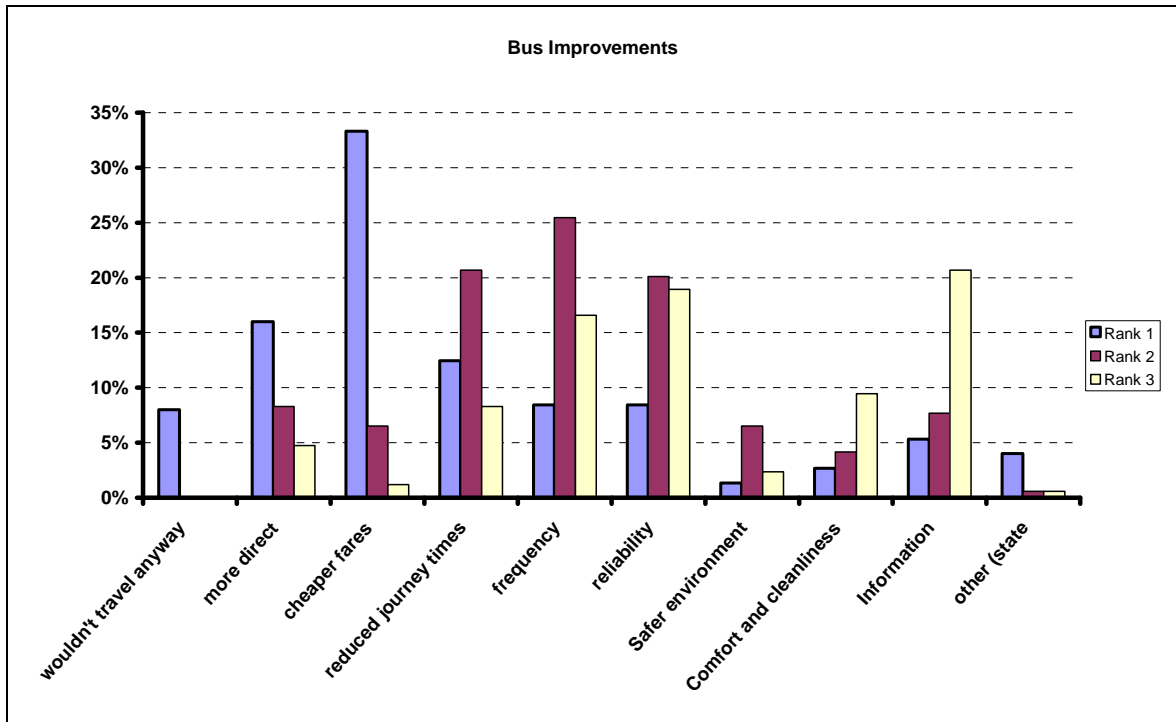
**Figure 1.14 Bus Question 3 - Bus Passengers Destination**



JMP

Bus Destination			
Origin			
Zone	Km	Bus No.	Bus %
Z1	0 - 0.5	0	0%
Z2	0.5 - 3.0	92	41%
Z3	3.0 - 5.0	56	25%
Z4	>5	77	34%
		225	

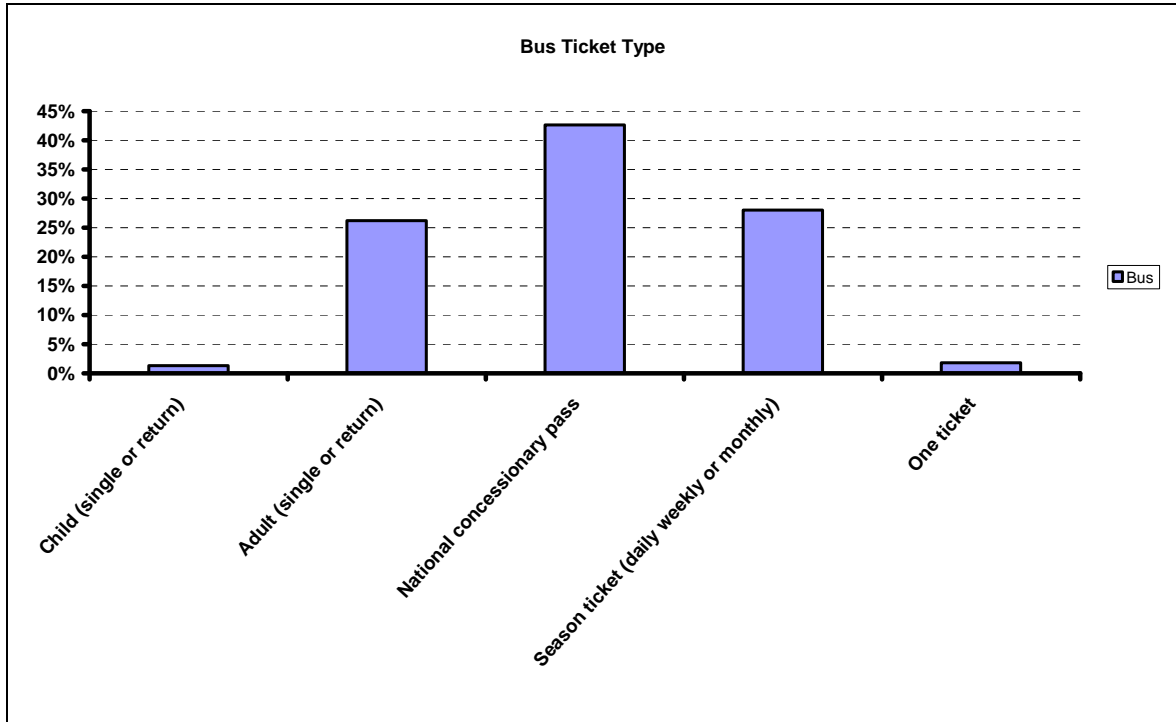
**Figure 1.15 Bus Question 4 - Most important improvements that would make you travel more by bus?**



JMP

Bus Improvement						
	Rank 1	%	Rank 2	%	Rank 3	%
wouldn't travel anyway	18	8%	0	0%	0	0%
more direct	36	16%	14	8%	8	5%
cheaper fares	75	33%	11	7%	2	1%
reduced journey times	28	12%	35	21%	14	8%
frequency	19	8%	43	25%	28	17%
reliability	19	8%	34	20%	32	19%
Safer environment	3	1%	11	7%	4	2%
Comfort and cleanliness	6	3%	7	4%	16	9%
Information	12	5%	13	8%	35	21%
other (state)	9	4%	1	1%	1	1%
	225		169		140	

**Figure 1.16 Bus Question 7 - Ticket Type**



JMP

Ticket Type (Bus)		
	Bus No	Bus %
Child (single or return)	3	1%
Adult (single or return)	59	26%
National concessionary pass	96	43%
Season ticket (daily weekly or monthly)	63	28%
One ticket	4	2%
	225	

# Appendix F

## Modelling Report

## Contents

1	SURVEY RESULTS .....	1
	Introduction .....	1
2	PROPOSED OPTIONS .....	4
	Description of Options .....	4
3	CONCLUSIONS .....	14
	Option Comparison.....	14

## Tables and Figures

Table 1.1	Individual Modelled Sections.....	2
Table 1.2	Journey Times (East-West).....	2
Table 1.3	Journey Times (West - East).....	3
Table 2.1	Option 1a - Journey Times (East – West).....	6
Table 2.2	Option 1a - Journey Times (West - East).....	7
Table 2.3	Option 1b - Journey Times (East – West).....	8
Table 2.4	Option 1b - Journey Times (West – East).....	9
Table 2.5	Option 1c - Journey Times (East-West).....	9
Table 2.6	Option 1c - Journey Times (West – East).....	10
Table 2.7	Option 2a - Journey Times (East – West).....	11
Table 2.8	Option 2a - Journey Times (West – East).....	11
Table 2.9	Option 2b - Journey Times (East – West).....	12
Table 2.10	Option 2b - Journey Times (West - East).....	13
Table 3.1	Journey Time Summary .....	14
Figure 1.1	Journey Time Sections .....	3

# 1 Survey Results

## Introduction

- 1.1 An important element of the success of the new rail service will be the integration between bus and rail in Alloa. The initial stakeholder report highlighted the importance of reducing bus journey times, specifically for westbound services that have to negotiate King Street twice adding to overall journey time.
- 1.2 As part of the detailed appraisal a number of options were identified. This report details the findings of the modelling exercise that was undertaken to investigate the potential of improving the efficiency of local bus services and the impact this will have on journey times through Alloa as well as the effect on other traffic for the various options.
- 1.3 The journey times were used in the economy section to develop the final benefit: cost ratio.
- 1.4 Given that the majority of bus routes which travel through Alloa extend to the Tullibody Road and the Clackmannan Road, the VISSIM model was specifically set up to examine journey times between these points.
- 1.5 Traffic congestion in the PM peak period is significantly greater than in the AM peak period in Alloa town centre. This is something which has been observed in the VISSIM model as queuing and delay is generally higher at major junctions.

## Existing Situation

### *Existing Model*

- 1.6 JMP's model is based on Jacobs' VISSIM model.

### *Modelled Sections*

- 1.7 Modelled sections are shown in Figure 1.1 and are marked red and blue for the west – east and east – west routes respectively. Details of where each individual section begins and ends are listed below.
- 1.8 Figure 1.1 describes each of the sections shown in Table 1.1 on an OS map with the eastbound direction shown in red and the westbound direction shown in blue.
- 1.9 So as not to repeat any sections due to the loop which westbound buses have to negotiate, Section 9 (blue) above has been extended from the Shillinghill approach to the exit of the Mar Place roundabout onto the Tullibody Road. This is shown in Table 1.1 and has been included for accuracy over a longer distance.
- 1.10 Table 1.2 below shows the results from the base westbound journey time model which are commonly shown in seconds for increased accuracy. This data will be compared with results from the proposed options later in this report.

**Table 1.1 Individual Modelled Sections**

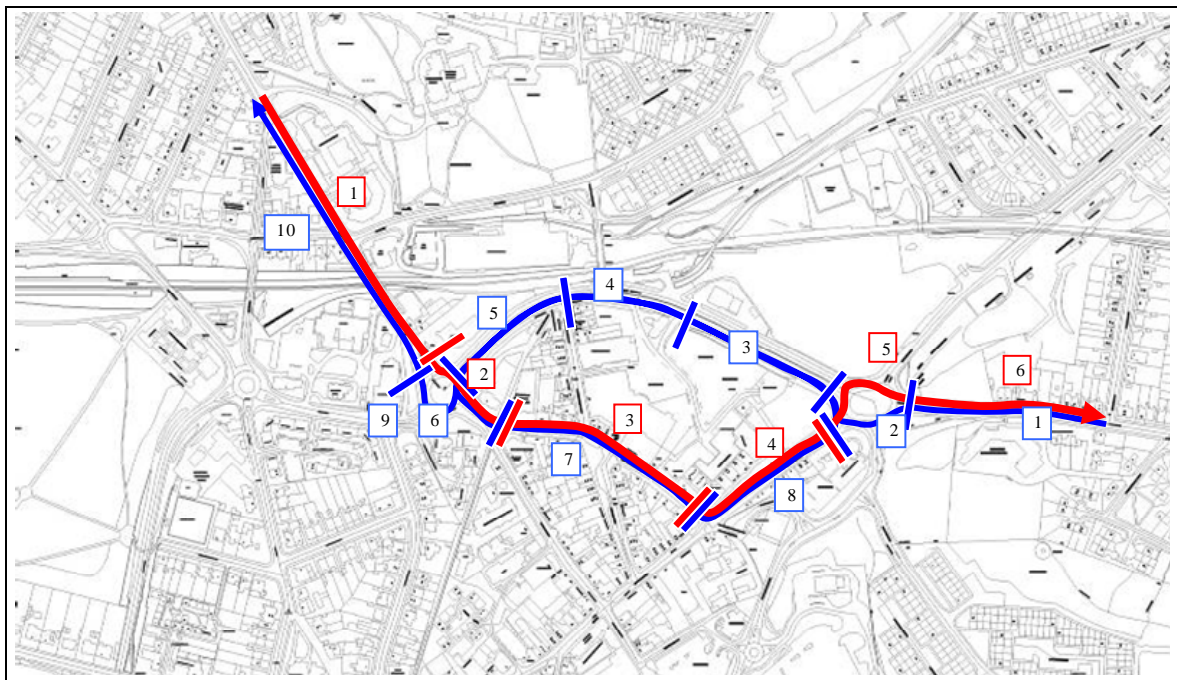
Section	Description	Section	Description
1	Clackmannan Road Exit Arm <TO> Park Place / Clackmannan Road junction	1	Ludgate / Mar Place Junction <TO> Mar Place
2	Clackmannan Road Approach <TO> Shillinghill Roundabout Exit	2	Mar Place <TO> Drysdale St / Mar St junction
3	King Street <TO> BP Petrol Station/Station Roundabout	3	Drysdale St / Mar St junction <TO> Drysdale St / Shillinghill junction
4	BP Petrol Station Roundabout/Station <TO> Primrose Court	4	Drysdale St / Shillinghill junction <TO> Shillinghill Roundabout
5	Primrose Court / Izatt Street <TO> Marshill roundabout	5	Shillinghill Roundabout <TO> Clackmannan Road Exit Arm
6	Marshill roundabout <TO> Drysdale St / Mar St junction	6	Clackmannan Road Exit Arm <TO> Park Place / Clackmannan Road junction
7	Drysdale St / Mar St junction <TO> Drysdale St / Shillinghill junction		
8	Drysdale St / Shillinghill junction <TO> Shillinghill Roundabout		
9	Shillinghill Roundabout <TO> Marshill Roundabout exit		
10	Marshill Roundabout Ext<TO> Ludgate / Mar Place junction		

JMP VISSIM

**Table 1.2 Journey Times (East-West)**

Existing Model		
Route Section	AM Run Time (Secs)	PM Run Time (Secs)
1	61.7	48.5
2	7.0	8.4
3	17.3	18.3
4	13.4	14.0
5	13.0	14.5
6	4.7	6.7
7	18.9	25.0
8	27.0	52.1
9	59.0	72.0
10	39.9	55.1
Total	261.8	314.5

**Figure 1.1 Journey Time Sections**



JMP VISSIM

- 1.11 Table 1.3 below shows the results from the base eastbound journey time model which are commonly shown in seconds for increased accuracy. This data will be compared with results from the proposed options later in this report.

**Table 1.3 Journey Times (West - East)**

Existing Model		
Route Section	AM Run Time (Secs)	PM Run Time (Secs)
1	56.7	106.9
2	8.0	9.2
3	18.9	25.0
4	27.0	52.1
5	10.2	14.1
6	30.2	29.9
Total	150.9	237.2

JMP VISSIM

- 1.12 Results in the table above show journey times for buses only, travelling between identified sections in the VISSIM model as detailed in table 1.1. Journey times above have been compared with on-site observations and typical vehicle speeds over each journey time section and the results are generally in line with what is expected.



## 2 Proposed Options

### Description of Options

2.1 The following list summarises the options which have been considered for this modelling exercise and report:

1. Option 1a – Shillinghill Roundabout traffic management
2. Option 1b – Shillinghill to King Street single lane priority
3. Option 1c – Auld Brig Road, Mill Road to Shillinghill loop
4. Option 2a – King Street Car Park Bus Stances Phase 1
5. Option 2b – King Street Car Park Bus Station Phase 2

#### *Option 1a – Shillinghill Roundabout traffic management*

2.2 Common to all of the proposed options, a bus lane has been proposed in the westbound direction from the Shillinghill roundabout to the new roundabout providing access to the BP Petrol filling station and the King Street car park. This section of road is best described as journey time section no. 3 (marked in blue) in Figure 1.1 above.

2.3 In addition to the bus lane, Option 1a introduced a set of signals on the Shillinghill approach arm to the Shillinghill roundabout. This was modelled to measure the affect on congestion and delay on this arm in a bid to reduce queuing which could often extend back onto High Street and Drysdale Street.

#### *Option 1b – Shillinghill to King Street single lane priority*

2.4 The King Street bus lane is common to all proposed options and has been modelled to show how this measure can improve bus services in Alloa town centre.

2.5 This option uses the available space on the Shillinghill approach to create a bus left-turn onto King Street with the inclusion of a raised kerb on the roundabout circulating carriageway to avoid traffic merging on the entry to King Street. This removes the give way rule for buses turning left and will permit a continuous movement for westbound buses only. Buses which are heading towards the east will continue to turn right at this roundabout and will not benefit from the left-turn filter lane. Buses heading north will also not benefit from this lane, however the existing bus only right filter lane on Whins Road will remain.

#### *Option 1c - Auld Brig Road, Mill Road to Shillinghill loop*

2.6 The King Street bus lane is common to all proposed options and has been modelled to show how this measure can improve bus services in Alloa town Centre.

2.7 This option seeks to remove the route which loops around the King Street twice, by allowing buses to travel along Auld Brig Road and turn into a new link along Mill Road to Shillinghill at the existing junction with Drysdale Street and Shillinghill. This would be used by westbound buses and remove the need to travel down Drysdale Street and twice around King Street.

### ***Option 2a – King Street Car Park Bus Stances Phase 1***

- 2.8 This option proposes complete removal of bus services from the Shillinghill stance by introducing new bus stop facilities at the existing King Street car park with three proposed bus stops arranged in parallel. This layout is shown in Appendix D, Figure 4 which shows that the bus stops can all be accessed from the four-arm roundabout at the BP petrol station. This option will serve as the main stop in Alloa.

### ***Option 2b – King Street Car Park Bus Station Phase 2***

- 2.9 As with the option above this one proposes complete removal of bus services from the Shillinghill stance by introducing a bus station with high quality bus facilities at the existing King Street car park. This layout is shown in Appendix D, Figure 5 which shows that buses will access the stances by a saw-tooth arrangement, which will mean buses will have to drive in and reverse out. The station will be accessed from the four-arm roundabout at the BP petrol station.

## **VISSIM Modelling**

### ***Modelling Methodology***

- 2.10 Alloa town centre has been replicated using VISSIM v5 by JMP based on a model supplied by Clackmannanshire Council (CC) which was initially built and developed by Jacobs. As previously stated, the AM and PM models have not been validated by either Jacobs or JMP.
- 2.11 The VISSIM models for the AM and PM peak periods are dynamically assigned throughout the network based on origin-destination trip matrices which have been created by Jacobs and supplied to JMP. This type of dynamic modelling allows the network vehicles to react to congestion and delay through an iterative process of model runs. Essentially this allows vehicles to re-route by assigning a 'cost' to the previous route and choose quicker routes in subsequent runs.
- 2.12 In order to get the best representation of how traffic will behave in the future year proposed options as stated above, VISSIM model runs were averaged over three random seed values. A seed value enables the model to randomise the rate of vehicles which enter the network without altering their total number. An average for this has been used to calculate the journey times given in all of the tables in this report.
- 2.13 It is the purpose of this report is to compare the journey time results between each of the proposed options and the base model which represents the existing situation. The results of this comparison will show which options are most effective and how each section of each route performs.

### ***East to West***

- 2.14 Journey time markers have been placed at various sections along a route from Clackmannan Road to Tullibody Road. In the east to west route, there are ten individual routes which are shown in Figure 1.1.
- 2.15 It should be noted that as for westbound services four of the options which have been proposed in this report do not include some of the ten individual sections and therefore cannot be compared with the existing base journey times. The total journey time, therefore, over the entire route is the critical measurement.

### ***West to East***

- 2.16 Journey time markers have been placed at various sections along a route from Tullibody Road to Clackmannan Road. In the west to east route, there are six individual routes which are shown in Figure 1.1.

2.17 It should be noted that four of the options which have been proposed in this report do not include some of the six individual sections and therefore cannot be compared with the existing base journey times. In this case, the total journey time over the entire route is the critical measurement.

### Modelled Results

#### Option 1a

- **East to West**

2.18 Table 2.1 below shows the results for bus journey times travelling in the westbound direction in the AM and PM peak periods.

**Table 2.1 Option 1a - Journey Times (East – West)**

Option 1a Model				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	47.1	-14.6	110.3	61.8
2	13.2	6.2	19.1	10.7
3	18.1	0.8	18.9	0.6
4	13.3	-0.1	16.3	2.3
5	14.1	1.1	19.5	5.0
6	4.7	0	5.4	-1.3
7	19.4	0.5	22.4	-2.6
8	38.4	11.4	41.9	-10.2
9	59.5	0.5	73.8	1.8
10	40.1	0.2	42.6	-12.5
Total	268.9	6	370.2	56

JMP VISSIM

2.19 The results from this table show clearly that the PM model suffers significantly from the proposed changes with an increase in journey time of nearly one minute over the whole route. The sections most affected in the PM scenario are at the beginning of the modelled route, between the Clackmannan Road and the beginning of the King Street.

2.20 The modelled scenario shows that the introduction of traffic signals on the circulating carriageway of the Shillinghill roundabout would cause considerable delay to through traffic attempting to access the King Street.

2.21 It should be noted that there is an improvement in journey time in section eight (Shillinghill approach) of the PM model run due to the proposed signalisation with a reduction of 20% (approx. 10-seconds).

2.22 This benefit however, is outweighed by the significant increase in journey time over the entire route in the westbound direction.

- **West to East**

2.23 Table 2.2 below shows the results for bus journey times travelling in the eastbound direction in the AM and PM peak periods.

**Table 2.2 Option 1a - Journey Times (West - East)**

<b>Option 1a Model</b>				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	56.7	0	60.2	-46.7
2	7.5	-0.5	9.7	0.5
3	19.4	0.5	22.4	-2.6
4	38.4	11.4	41.9	-10.2
5	9.1	-1.1	18.8	4.7
6	18.7	-11.5	44.7	14.8
Total	149.8	-1	197.7	-40

*JMP VISSIM*

2.24 Travelling in the eastbound direction, towards the Clackmannan Road, it can be seen that the impact of the proposed traffic signals is not significant in the AM period. It can also be seen that there is a reduction in average journey time in the PM period for vehicles travelling eastbound of around 40 seconds; the majority of this time saving in the PM period occurs at the start of the route on Tullibody Road.

- **Directional Comparison**

2.25 It can be seen that the implementation of signals at the Shillinghill roundabout and a bus lane on King Street has a positive effect in the PM period for buses travelling east through Alloa. Buses travelling west through Alloa are subject to delay caused by the signals on the circulating carriageway of the Shillinghill roundabout and the subsequent queuing and receive a significant overall disbenefit in the PM.

*Option 1b*

- **East to West**

2.26 Table 2.3 below shows the results for bus journey times travelling in the westbound direction in the AM and PM peak periods.

**Table 2.3 Option 1b - Journey Times (East – West)**

Option 1b Model				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	46.5	-15.2	41.9	-6.6
2	8.1	1.1	9	0.6
3	16.9	-0.4	19.7	1.4
4	12.1	-1.3	14.4	0.4
5	11.9	-1.1	18.6	4.1
6	5.1	0.4	6.1	-0.6
7	19.4	0.5	65.3	40.3
8	27.3	0.3	86.8	34.7
9	53.4	-5.6	63.7	-8.3
10	40.2	0.3	43.7	-11.4
Total	240.9	-21	369.2	55

*JMP VISSIM*

- 2.27 The results from this table show clearly that the AM model improves significantly from the proposed changes with a decrease in journey time of around 20s over the whole route. The sections most affected in the AM scenario are at the beginning of the modelled route, between the Clackmannan Road and the Shillinghill roundabout.
- 2.28 The modelled scenario shows that the introduction of a left-turn filter lane on the Shillinghill approach of the Shillinghill roundabout would reduce delay to through traffic attempting to access the King Street.
- 2.29 It should also be noted that there is a significant increase in journey time in sections seven and eight (Shillinghill approach) of the PM model run due to the proposed left-turn filter lane with an increase of 40-seconds and 35-seconds respectively.
- **West to East**
- 2.30 Table 2.4 below shows the results for bus journey times travelling in the eastbound direction in the AM and PM peak periods.

**Table 2.4 Option 1b - Journey Times (West – East)**

Option 1b Model				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	56.7	0	106.9	0
2	8	0	8.6	-0.6
3	19.4	0.5	25	0
4	27.3	0.3	86.8	34.7
5	10.2	0	11.8	-2.3
6	18.3	-11.9	22.2	-7.7
Total	139.9	-11	261.3	24

JMP VISSIM

2.31 Travelling in the eastbound direction, option 1b provides a small journey time reduction for buses in the morning peak, but a larger disbenefit (of nearly half a minute) in the PM peak.

- **Directional Comparison**

2.32 When both directions are compared over both peaks, there is a net increase in journey time of nearly one minute.

### Option 1c

- **East to West**

2.33 Table 2.5 below shows the results for bus journey times travelling in the westbound direction in the AM and PM peak period.

**Table 2.5 Option 1c - Journey Times (East-West)**

Option 1c Model				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	64.5	2.8	48.5	0
2	54.4	47.4	66.3	57.9
3	16.9	-0.4	17.7	-0.6
4	12.8	-0.6	13	-1
5	11.6	-1.4	12.2	-2.3
6	0	-4.7	0	-6.7
7	0	-18.9	0	-25
8	0	-27	0	-52.1
9	0	-59	0	-72
10	39.9	0	55.1	0
Total	200.1	-62	212.8	-102

2.34 The results from this table show that there is a significant overall decrease in journey times for both the AM and PM peak periods.

- **West to East**

2.35 Table 2.6 below shows the results for bus journey times travelling in the eastbound direction in the AM and PM peak periods.

**Table 2.6 Option 1c - Journey Times (West – East)**

<b>Option 1c Model</b>				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	56.7	0	106.9	0
2	7.7	-0.3	9	-0.2
3	17.7	-1.2	20.1	-4.9
4	28.8	1.8	31.5	-20.6
5	10.8	0.6	14.8	0.7
6	30.8	0.6	32.4	2.5
Total	152.5	2	214.7	-23

2.36 Travelling in the eastbound direction, towards the Shillinghill roundabout, it can be seen that this particular option provides a negligible increase in journey time in the morning peak, but a journey time reduction of over 20s in the PM peak.

- **Directional Comparison**

2.37 Overall, this option provides a significant benefit to westbound buses and a lesser one to eastbound buses.

**Option 2a**

- **East to West**

2.38 Table 2.7 below shows the results for bus journey times travelling in the westbound direction in the AM and PM peak periods.

2.39 As previously stated, four of the route sections below will not be comparable with the base data as Drysdale Street, Mill Street and Shillinghill have been removed from the bus route. These streets are represented by route sections six, seven, eight and nine.

**Table 2.7 Option 2a - Journey Times (East – West)**

Option 2a Model				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	64.5	2.8	48.5	0
2	7.3	0.3	8.4	0
3	17.6	0.3	18.3	0
4	47.9	34.5	53.5	39.5
5	13.7	0.7	18.1	3.6
6	0	-4.7	0	-6.7
7	0	-18.9	0	-25
8	0	-27	0	-52.1
9	0	-59	0	-72
10	40.6	0.7	55.1	0
Total	191.6	-70	201.9	-113

JMP VISSIM

2.40 The results from this table clearly show that there is a considerable time saving in both peak periods when the changes in Option 2a are implemented. The removal of the route via Shillinghill would reduce the overall journey times by 70-seconds and over 110-seconds in the AM and PM periods respectively.

- **West to East**

2.41 Table 2.8 below shows the results for bus journey times travelling in the eastbound direction in the AM and PM peak periods.

2.42 As previously stated, four of the route sections below will not be comparable with the base data as Drysdale Street, Mill Street and Shillinghill have been removed from the bus route. These streets are represented by route sections two, three, four and five.

**Table 2.8 Option 2a - Journey Times (West – East)**

Option 2a Model				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	57.8	1.1	106.9	0
2	79.2	71.2	89.9	80.7
3	0	-18.9	0	-25
4	0	-27	0	-52.1
5	0	-10.2	0	-14.1
6	27.3	-2.9	35.6	5.7
Total	164.3	13	232.4	-5

JMP VISSIM



2.43 Travelling in the eastbound direction, towards the Clackmannan Road, it can be seen that the impact of the proposed relocated bus stances at the King Street car park is minor for eastbound bus journeys.

- **Directional Comparison**

2.44 It can be seen that the implementation of a new major bus stop location at the King Street car park and King Street bus lane at the Shillinghill roundabout has a significant benefit to westbound buses, but little effect for those eastbound.

*Option 2b*

- **East to West**

2.45 Table 2.8 below shows the results for bus journey times travelling in the westbound direction in the AM and PM peak periods.

2.46 As previously stated, four of the route sections below will not be comparable with the base data as Drysdale Street, Mill Street and Shillinghill have been removed from the bus route. These streets are represented by route sections six, seven, eight and nine.

**Table 2.9 Option 2b - Journey Times (East – West)**

<i>Option 2b Model</i>				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	63.9	2.2	57.9	9.4
2	7.1	0.1	6.9	-1.5
3	19.8	2.5	17.6	-0.7
4	99.3	85.9	116.2	102.2
5	11.7	-1.3	11.4	-3.1
6	0	-4.7	0	-6.7
7	0	-18.9	0	-25
8	0	-27	0	-52.1
9	0	-59	0	-72
10	40	0.1	40	-15.1
Total	241.8	-20	250	-65

*JMP VISSIM*

2.47 The results from this table show clearly that the AM and PM models improve from the proposed changes with a decrease in journey time of 20s and over one minute respectively.

2.48 Benefits are reduced in comparison with option 2a because of the anticipated longer dwell time at the enhanced bus station, and the need for buses to reverse.

- **West to East**

2.49 Table 2.9 below shows the results for bus journey times travelling in the eastbound direction in the AM and PM peak periods.

2.50 As previously stated, four of the route sections below will not be comparable with the base data as Drysdale Street, Mill Street and Shillinghill have been removed from the bus route. These streets are represented by route sections two, three, four and five.

**Table 2.10 Option 2b - Journey Times (West - East)**

<i>Option 2b Model</i>				
Route Section	AM Run Time (Secs)	Change (Secs)	PM Run Time (Secs)	Change (Secs)
1	57	0.3	106.9	0
2	130.8	122.8	145.5	136.3
3	0	-18.9	0	-25
4	0	-27	0	-52.1
5	0	-10.2	0	-14.1
6	26.1	-4.1	25.7	-4.2
Total	213.9	63	278.1	41

*JMP VISSIM*

- 2.51 Travelling in the eastbound direction, towards the Clackmannan Road, it can be seen that the impact of the proposed bus station is most significant during the AM period.
- **Directional Comparison**
- 2.52 Where there is an overall reduction in journey times in the westbound direction in both peaks, it is balanced by a similar loss in performance in the other direction. When both directions are compared over both peaks, there is a net increase in journey time of approximately 20 seconds.

### 3 Conclusions

#### Option Comparison

- 3.1 The purpose of this modelling exercise and report was to explain the change in modelled journey time for all proposed bus routes travelling in both the eastbound and westbound direction in the AM and PM peak periods when compared to the existing situation.
- 3.2 There were five separate options considered in the VISSIM model and the journey time results have been presented in the tables above together with the percentage change when compared to the existing situation. Those options were:
1. Option 1a – King Street Bus Lane with Signalisation of Shillinghill
  2. Option 1b – King Street Bus Lane with Shillinghill Left Filter Lane (Buses only)
  3. Option 1c – King Street Bus Lane and a 'breakthrough' link from Greenside Street to Shillinghill
  4. Option 2a – King Street Bus Lane with New Bus Stances at King Street Car Park
  5. Option 2b – King Road Bus Lane with Saw-tooth Bus Stances at King Street Car Park
- 3.3 Individual journey time sections were selected along both the eastbound and westbound routes and compared in the VISSIM model against the existing situation. Each model run was carried out for three different random 'seed' values so as to get a more accurate reflection of on-site conditions and to rule out any abnormalities in the model.
- 3.4 The results in summary show that the following journey time savings/losses were:

**Table 3.1 Journey Time Summary**

Option	Net Journey Time in comparison with existing situation, AM and PM peaks combined
1a	+ 21 seconds
1b	+ 47 seconds
1c	- 185 seconds
2a	- 175 seconds
2b	+ 19 seconds

*JMP VISSIM Results*

## Appendix G

### Capital Costs

## Table and Figures

Table G.1 Option 1a: Capital Costs .....	1
Table G.2 Option 1a: Annual Operating Costs.....	1
Table G.3 Option 1b: Capital Costs .....	2
Table G.4 Option 1b: Annual Operating Costs.....	2
Table G.5 Option 1c: Capital Costs.....	3
Table G.6 Option 1c: Annual Operating Costs .....	3
Table G.7 Option 2a: Capital Costs .....	4
Table G.8 Option 2a: Annual Operating Costs.....	4
Table G.9 Option 2b: Capital Costs .....	5
Table G.10 Option 2b: Annual Operating Costs.....	5

**Table G.1 Option 1a: Capital Costs (2008 prices)**

Element	Description	Cost (£000)	Cost (£000)
		Upgrade	New
Shillinghill Roundabout	Shillinghill bus priority set of signals on the Shillinghill approach arm to the Shillinghill roundabout	40	40
Shillinghill Roundabout	King Street westbound bus lane	40	40
Shillinghill Bus Stance	Upgrade of existing facilities	80	0
Shillinghill Bus Stance	New Bus Stance with new facilities	0	300
Shillinghill	Kassel kerb and associated works	50	50
Sheltered walkway	Rail Station to King Street	150	150
Sheltered walkway	Shillinghill to King Street car park	75	75
Bus Shelters	2 shelters at current stops Whins Road	8	8
Signage	Signs identifying pedestrian links to and from bus stance and station and access to the town	10	10
Real Time	2 additional display units <sup>1</sup> showing all services located at rail station and bus stance	16	16
Real Time	1 additional display time at Shillinghill showing rail times	10	10
Information Booklet	Booklet containing rail and bus services	30	30
One-Ticket	Promotion of existing multi-modal ticket	3	3
Plusbus	Introduction and promotion of multi-modal ticket	2	2
<b>Sub Total</b>		<b>514</b>	<b>734</b>
Contingency	10%	51.4	73.4
Optimum bias	15%	77.1	110.1
<b>Total Estimated Capital Costs</b>		<b>642.5</b>	<b>917.5</b>

**Table G.2 Option 1a: Annual Operating Costs (2008 prices)**

Element	Description	Cost (£000)	Cost (£000)
		Upgrade	New
Shillinghill Roundabout	Maintenance of signals on the Shillinghill approach arm to the Shillinghill roundabout	5	5
Shillinghill Bus Stance	Cleaning and Maintenance	7.2	10
Walkways	Cleaning and Maintenance	3.5	3.5
Real Time	Display units over and above SEStran commitment <sup>2</sup>	2.5	2.5
<b>Total Estimated Annual Operating Costs</b>		<b>18.2</b>	<b>21</b>

<sup>1</sup> Capital Costs for display units at each stance have been excluded from this study as they are considered to be part of separate funding initiative for supply of SEStran region wide real time system. Additional capital costs refer to units showing all services and display units being provided at rail station showing bus times. No additional costs have been included for on-board bus equipment linked to real time provision.

<sup>2</sup> Exclusive of Licence

**Table G.3 Option 1b: Capital Costs (2008 prices)**

Element	Description	Cost (£000)	Cost (£000)
		Upgrade	New
Shillinghill Roundabout	Shillinghill/King Street slip lane	55	55
Shillinghill Roundabout	King Street westbound bus lane	40	40
Shillinghill Bus Stance	Upgrade of existing facilities	80	0
Shillinghill Bus Stance	New Bus Stance with new facilities	0	300
Shillinghill	Kassel kerb and associated works	50	50
Sheltered walkway	Rail Station to King Street	150	150
Sheltered walkway	Shillinghill to King Street car park	75	75
Bus Shelters	2 shelters at current stops Whins Road	8	8
Signage	Signs identifying pedestrian links to and from bus stance and station and access to the town	10	10
Real Time	2 additional display units <sup>3</sup> showing all services located at rail station and bus stance	16	16
Real Time	1 additional display time at Shillinghill showing rail times	10	10
Information Booklet	Booklet containing rail and bus services	30	30
One-Ticket	Promotion of existing multi-modal ticket	3	3
Plusbus	Introduction and promotion of multi-modal ticket	2	2
<b>Sub Total</b>		<b>529</b>	<b>749</b>
Contingency	10%	52.9	74.9
Optimum bias	15%	79.35	112.35
<b>Total Estimated Capital Costs</b>		<b>661.25</b>	<b>936.25</b>

**Table G.4 Option 1b: Annual Operating Costs (2008 prices)**

Element	Description	Cost (£000)	Cost (£000)
		Upgrade	New
Shillinghill Bus Stance	Cleaning and Maintenance	3.6	7.2
Walkways	Cleaning and Maintenance	3.5	3.5
Real Time	Display units over and above SEStran commitment <sup>4</sup>	2.5	2.5
<b>Total Estimated Annual Operating Costs</b>		<b>9.6</b>	<b>13.2</b>

<sup>3</sup> Capital Costs for display units at each stance have been excluded from this study as they are considered to be part of separate funding initiative for supply of SEStran region wide real time system. Additional capital costs refer to units showing all services and display units being provided at rail station showing bus times. No additional costs have been included for on-board bus equipment linked to real time provision.

<sup>4</sup> Exclusive of Licence

**Table G.5 Option 1c: Capital Costs (2008 prices)**

Element	Description	Cost (£000)	Cost (£000)
		Upgrade	New
Shillinghill Roundabout	Shillinghill/King Street slip lane	55	55
Shillinghill Roundabout	King Street westbound bus lane	40	40
Shillinghill Bus Stance	Upgrade of existing facilities	80	0
Shillinghill Bus Stance	New Bus Stance with new facilities	0	300
Shillinghill	Kassel kerb and associated works	50	50
Mill Road link	Construction of Mill Road/Auld Brig and Mill Road/Shillinghill junctions, resiting of 'still' at Junction Place and East Vennel turning head.	245	245
Sheltered walkway	Rail Station to King Street	150	150
Sheltered walkway	Shillinghill to King Street car park	75	75
Bus Shelters	2 shelters at current stops Whins Road and King Street shelter	12	12
Signage	Signs identifying pedestrian links to and from bus stance and station and access to the town	10	10
Real Time	2 additional display units <sup>5</sup> showing all services located at rail station and bus stance	16	16
Real Time	1 additional display time at Shillinghill rail times	10	10
Information Booklet	Booklet containing rail and bus services	30	30
One-Ticket	Promotion of existing multi-modal ticket	3	3
Plusbus	Introduction and promotion of multi-modal ticket	2	2
<b>Sub Total</b>		<b>778</b>	<b>998</b>
Contingency	10%	77.8	99.8
Optimum bias	15%	116.1	149.7
<b>Total Estimated Capital Costs</b>		<b>972.5</b>	<b>1247.5</b>

**Table G.6 Option 1c: Annual Operating Costs (2008 prices)**

Element	Description	Cost (£000)	Cost (£000)
		Upgrade	New
Shillinghill Bus Stance	Cleaning and Maintenance	3.6	7.2
Walkways	Cleaning and Maintenance	3.5	3.5
Real Time	Display units over and above SEStran commitment <sup>6</sup>	2.5	2.5
<b>Total Estimated Annual Operating Costs</b>		<b>9.6</b>	<b>13.2</b>

<sup>5</sup> Capital Costs for display units at each stance have been excluded from this study as they are considered to be part of separate funding initiative for supply of SEStran region wide real time system. Additional capital costs refer to units showing all services and display units being provided at rail station showing bus times. No additional costs have been included for on-board bus equipment linked to real time provision.

<sup>6</sup> Exclusive of Licence



**Table G.7 Option 2a: Capital Costs (2008 prices)**

Element	Description	Cost (£000)
		<b>New</b>
Shillinghill Roundabout	King Street westbound bus lane	40
King Street Bus Stance	High quality shelters at each stances	45
King Street Bus Stance	Groundworks including landscaping, fees, design and 3 bays with Kassel kerbs	280
Sheltered walkway	Rail Station to King Street	150
Sheltered walkway	Shillinghill to King Street car park	75
Sheltered walkway	Drysdale Street to King Street car park	75
Land	LloydsTSB car park	50
Bus Shelters	2 shelters at current stops Whins Road	8
Signage	Signs identifying pedestrian links to and from bus stance and station and access to the town.	10
Real Time	2 additional display units <sup>7</sup> showing all services located at rail station and bus stance.	16
Real Time	1 additional display time at King Street Car Park showing rail times.	10
Information Booklet	Booklet containing rail and bus services	30
One-Ticket	Promotion of existing multi-modal ticket	3
Plusbus	Introduction and promotion of multi-modal ticket	2
<b>Sub Total</b>		<b>794</b>
Contingency	10%	79.4
Optimum bias	15%	119.1
<b>Total Estimated Capital Costs</b>		<b>992.5</b>

**Table G.8 Option 2a: Annual Operating Costs (2008 prices)**

Element	Description	Cost (£000)
		<b>New</b>
King Street Bus Stance	Cleaning and Maintenance	5
Walkways	Cleaning and Maintenance	3.5
Real Time	Display units over and above SEStran commitment <sup>8</sup>	2.5
<b>Total Estimated Annual Operating Costs</b>		<b>11</b>

<sup>7</sup> Capital Costs for display units at each stance have been excluded from this study as they are considered to be part of separate funding initiative for supply of SEStran region wide real time system. Additional capital costs refer to units showing all services and display units being provided at rail station showing bus times. No additional costs have been included for on-board bus equipment linked to real time provision.

<sup>8</sup> Exclusive of Licence

**Table G.9 Option 2b: Capital Costs (2008 prices)**

Element	Description	Cost (£000)
		<b>New</b>
Shillinghill Roundabout	King Street westbound bus lane	40
King Street Bus Station	High quality bus station with waiting facilities, supervisors office, travel shop, kiosk, toilets, covered seating, speaker system, level access throughout and CCTV	1900
King Street Bus Station	Groundworks including 5 bays with Kassel kerbs, landscaping, fees and design	293
Sheltered walkway	Rail Station to King Street	150
Sheltered walkway	Shillinghill to King Street car park	75
Sheltered walkway	Drysdale Street to King Street car park	75
Land	LloydsTSB car park	50
Bus Shelters	2 shelters at current stops Whins Road	8
Signage	Signs identifying pedestrian links to and from bus stance and station and access to the town.	10
Real Time	3 additional display units <sup>9</sup> showing all services located at rail station and bus stance.	24
Real Time	1 additional display time at King Street Car Park showing rail times.	10
Information Booklet	Booklet containing rail and bus services	30
One-Ticket	Promotion of existing multi-modal ticket	3
Plusbus	Introduction and promotion of multi-modal ticket	2
<b>Sub Total</b>		<b>2670</b>
Contingency	10%	267
Optimum bias	15%	400.5
<b>Total Estimated Capital Costs</b>		<b>3337.5</b>

**Table G.10 Option 2b: Annual Operating Costs (2008 prices)**

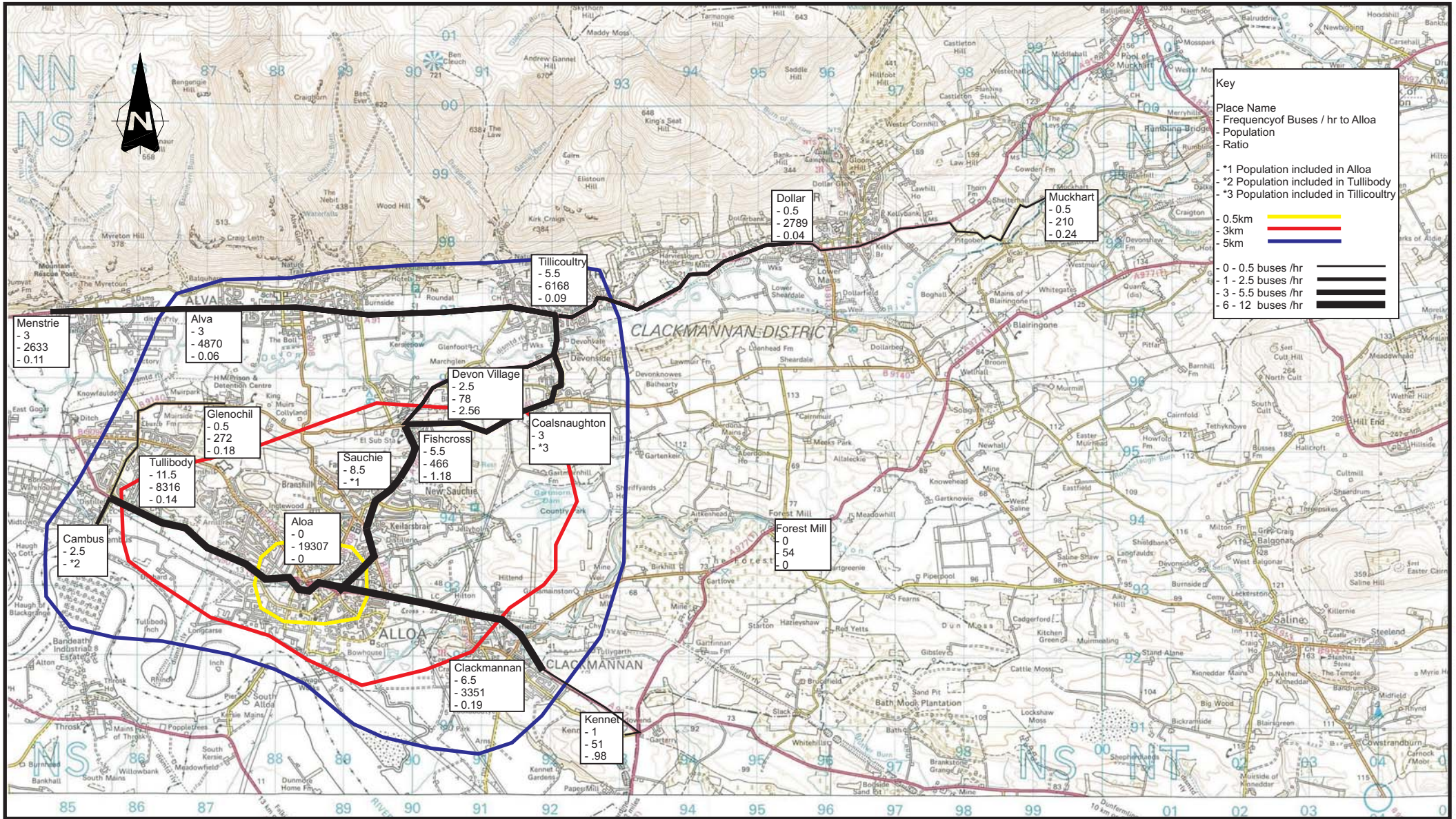
Element	Description	Cost (£000)
		<b>New</b>
King Street Bus Shelter	Cleaning and Maintenance	20
Walkways	Cleaning and Maintenance	3.5
Real Time	Display units over and above SEStran commitment <sup>10</sup>	3.5
<b>Total Estimated Annual Operating Costs</b>		<b>27</b>

<sup>9</sup> Capital Costs for display units at each stance have been excluded from this study as they are considered to be part of separate funding initiative for supply of SEStran region wide real time system. Additional capital costs refer to units showing all services and display units being provided at rail station showing bus times. No additional costs have been included for on-board bus equipment linked to real time provision.

<sup>10</sup> Exclusive of Licence

## Appendix H

### Clackmannanshire Bus Frequencies



## Appendix I

### AST Tables

## Appraisal Summary Table Option 1a

Proposal Details			
Name and address of authority or organisation promoting the proposal:  (Also provide name of any subsidiary organisations also involved in promoting the proposal)		SEStran South East of Scotland Transport Partnership First Floor Hopetoun Gate 8b McDonald Road Edinburgh EH7 4LZ	
Proposal Name:	Option 1a: Shillinghill roundabout traffic management	Name of Planner:	Trond Haugen, SEStran
Proposal Description:	<ul style="list-style-type: none"> <li>Traffic signals on the Shillinghill approach arm to Shillinghill Roundabout</li> <li>Bus lane in westbound direction from the Shillinghill roundabout to a new roundabout providing access to the BP Petrol Station and Kings Street car park</li> <li>Soft measures to improve integration between Shillinghill Bus Stance and the rail station</li> <li>Upgrading or replacing Shillinghill bus stance</li> </ul>	Estimated Total Public Sector Funding Requirement:	Capital Costs (Year 4) in 2008 prices are as follows:  Upgraded Stance: £642,500  New Stance: £917,500
			Annual Operating Costs (Year 4) in 2008 prices are as follows:  Upgraded Stance: £18,200  New Stance: £21,000
			Benefit Cost Ratio: Upgraded Stance: 1.3:1 New Stance: 1.1:1

<b>Background Information</b>	
Geographic Context:	The study area is centred on Alloa Station though residents, in addition to those who work and visit Clackmannanshire could potentially be affected by proposals. The built environment around the station is urban in nature and a number of listed buildings are present within Alloa town centre but not within proximity of Shillinghill.
Social Context:	The population of Clackmannanshire is just over 48,000 recorded at the mid 2006 estimates by the Scottish Registration Office. Alloa is the main town with a population of 19,000 people. Clackmannanshire's population equates to a density of 3.03 people per hectare. Pockets of deprivation exist throughout the study area, notably in Tuillibody and South and East Alloa. Clackmannanshire has the fourth largest share of the 15% most deprived areas within a Local Authority area in Scotland according to the Scottish Index of Multiple Deprivation 2006. An identified housing shortage exists in the Council area with the Structure Plan recognising a 3,500 unit shortfall to 2017.
Economic Context:	The economy of Clackmannanshire has undergone significant restructuring in recent years with a move away from traditional industries such as mining and textiles. A growing number of smaller businesses have been established and Clackmannanshire has the third highest economic growth rate in Scotland as a result. Alloa is seen as a strategic shopping centre for Clackmannanshire and its development is key to it can compete with nearby towns of Stirling and Falkirk.
<b>Planning Objectives</b>	
Objective:	Performance against planning objective:
Minimise walk distances between bus and key town centre destinations, including the station	With the exception of improved signing of routes between the station and main bus stops, this option does not contribute to this planning objective.
Minimise time and cost penalties of interchange – including bus / bus and bus / rail.	This option does not contribute to this objective with the exception of the introduction of soft measures including improvements to interchange which can be achieved by ticketing, information and improved timetabling of services.
Maximise awareness of sustainable travel options	This option does not contribute to this objective with the exception of the introduction of soft measures including printed timetable information, timetable displays and real time information which contribute to raising awareness of travel options.
Minimise delays to buses in Alloa town centre	Modelling results indicate that a net bus journey time increase of 20 seconds prevails when compared to the existing situation when modelled for the AM and PM peak periods.
Minimise disadvantages to non-users of public transport	Modelling results indicate that this option would increase traffic congestion in Alloa and increase journey times for non-public transport users.

Minimise the number and severity of road accidents	Pedestrian vehicle and vehicle-vehicle conflict is slightly reduced but no noticeable benefit is expected.	
Minimise cost to the public purse of transport infrastructure and services	See capital and revenue costs above. Upgrading the existing Shillinghill stance and associated maintenance costs are less than those associated with full replacement of the stance.	
<b>Implementability Appraisal</b>		
Technical:	All parts of the proposals comprise fully-tested and commonly-used features. Therefore, technical risk relating to this option is low.	
Operational:	Road and traffic control infrastructure components of the package will require on-going maintenance, but not at a level that is significantly different from that of existing infrastructure.	
Financial:	Use of high quality materials for road infrastructure, common available technology for traffic control systems and real time information are not anticipated to be significantly different from costs already in existence. Therefore if capital funding for the scheme's implementation can be identified, no significant financial risks are associated with this option.	
Public:	This option does not vary widely from the existing situation, therefore risks associated with public acceptability are likely to be low.	
<b>STAG Criteria</b>		
<b>Criterion</b>	<b>Assessment Summary</b>	<b>Supporting Information</b>
Environment:	No impact	There will potentially be impacts due to improved lighting along key routes, however, these are likely to be negligible.
Safety:	Moderate Benefit	Pedestrian vehicle conflict is reduced. Additionally the adoption of increased bus separation seeks to reduce vehicular conflict. Minor benefit to personal safety arising from improved lighting. Replacing the bus stance will incorporate more extensive waiting facilities (i.e. a heated waiting room), while not considered to be any safer than an enclosed shelter, is likely to give the impression of a safer environment.



<p>Economy:</p>	<p>Upgraded Stance: Moderate benefit</p> <p>New Stance: Minor benefit</p>	<p>See above for details of capital and operating costs in addition to the cost: benefit ratio.</p> <p>60-year PV of journey time disbenefits at 2008 prices for both Upgrade and New Stance: - £220,000</p> <p>Overall 60-year PV value of benefits at 2008 prices:</p> <p>Upgraded Stance: £2,700,000</p> <p>New Stance: £2,800,000</p>
<p>Integration:</p>	<p>Moderate Benefit</p>	<p>With regard to promoting transport integration, see contribution to Transport Planning Objective above. This option contributes to the wider government policy agenda, regional and local policies aimed at encouraging modal shift towards sustainable forms of transport in addition to other aims such as health and reduction of carbon emissions.</p>
<p>Accessibility and Social Inclusion:</p>	<p>No impact</p>	<p>No significant impacts on accessibility and social inclusion result from this option.</p>

## Appraisal Summary Table Option 1b

Proposal Details			
Name and address of authority or organisation promoting the proposal:  (Also provide name of any subsidiary organisations also involved in promoting the proposal)		SEStran South East of Scotland Transport Partnership First Floor Hopetoun Gate 8b McDonald Road Edinburgh EH7 4LZ	
Proposal Name:	Option 1b: Shillinghill to King Street single lane priority	Name of Planner:	Trond Haugen, SEStran
Proposal Description:	<ul style="list-style-type: none"> <li>• Bus left-turn into King Street from Shillinghill approach to Shillinghill roundabout</li> <li>• Bus lane in westbound direction from the Shillinghill roundabout to a new roundabout providing access to the BP Petrol Station and Kings Street car park</li> <li>• Soft measures to improve integration between Shillinghill Bus Stance and the rail station</li> <li>• Upgrading or replacing Shillinghill bus stance</li> </ul>	Estimated Total Public Sector Funding Requirement:	Capital Costs (Year 4) in 2008 prices are as follows:  Upgrade: £661,300  New: £936,300
			Annual Operating Costs (Year 4) in 2008 prices are as follows:  Upgrade: £9,600  New: £13,200
			Benefit Cost Ratio:  Upgrade     1.9:1  New         1.6:1

<b>Background Information</b>	
Geographic Context:	The study area is centred on Alloa Station though residents, in addition to those who work and visit Clackmannanshire could potentially be affected by proposals. The built environment around the station is urban in nature and a number of listed buildings are present within Alloa town centre but not within proximity of Shillinghill.
Social Context:	The population of Clackmannanshire is just over 48,000 recorded at the mid 2006 estimates by the Scottish Registration Office. Alloa is the main town with a population of 19,000 people. Clackmannanshire's population equates to a density of 3.03 people per hectare. Pockets of deprivation exist throughout the study area, notably in Tuillibody and South and East Alloa. Clackmannanshire has the fourth largest share of the 15% most deprived areas within a Local Authority area in Scotland according to the Scottish Index of Multiple Deprivation 2006. An identified housing shortage exists in the Council area with the Structure Plan recognising a 3,500 unit shortfall to 2017.
Economic Context:	The economy of Clackmannanshire has undergone significant restructuring in recent years with a move away from traditional industries such as mining and textiles. A growing number of smaller businesses have been established and Clackmannanshire has the third highest economic growth rate in Scotland as a result. Alloa is seen as a strategic shopping centre for Clackmannanshire and its development is key to it can compete with nearby towns of Stirling and Falkirk.
<b>Planning Objectives</b>	
Objective:	Performance against planning objective:
Minimise walk distances between bus and key town centre destinations, including the station	With the exception of improved signing of routes between the station and main bus stops, this option does not contribute to this planning objective.
Minimise time and cost penalties of interchange – including bus / bus and bus / rail.	This option does not contribute to this objective with the exception of the introduction of soft measures including improvements to interchange which can be achieved by ticketing, information and improved timetabling of services.
Maximise awareness of sustainable travel options	This option does not contribute to this objective with the exception of the introduction of soft measures including printed timetable information, timetable displays and real time information which contribute to raising awareness of travel options.
Minimise delays to buses in Alloa town centre	Modelling results indicate a net bus journey time increase of nearly 50 seconds prevails when compared to the existing situation when modelled for the AM and PM peak periods.
Minimise disadvantages to non-users of public transport	Modelling results indicate that this option has a detrimental effect on non-public transport users' journey times as a result of the introduction of these measures.

Minimise the number and severity of road accidents	Pedestrian vehicle conflict is reduced and the adoption of increased bus separation seeks to reduce vehicular conflict. Therefore this option contributes to this objective.	
Minimise cost to the public purse of transport infrastructure and services.	See capital and revenue costs above. Upgrading the existing Shillinghill stance and associated maintenance costs are less than those associated with full replacement of the stance.	
<b>Implementability Appraisal</b>		
Technical:	All parts of the proposals comprise fully-tested and commonly-used features. Therefore, technical risk relating to this option is low.	
Operational:	Road components of the package will require on-going maintenance, but not at a level that is significantly different from that of existing infrastructure.	
Financial:	Use of high quality materials for road infrastructure, common available and real time information are not anticipated to be significantly different from costs already in existence. Therefore if capital funding for the scheme's implementation can be identified, no significant financial risks are associated with this option.	
Public:	This option does not vary widely from the existing situation and, therefore, risks associated with public acceptability of this option are likely to be low.	
<b>STAG Criteria</b>		
<b>Criterion</b>	<b>Assessment Summary</b>	<b>Supporting Information</b>
Environment:	No impact	There will potentially be impacts due to improved lighting along key routes, however, these are likely to be negligible.
Safety:	Moderate Benefit	Pedestrian vehicle conflict is reduced. Additionally the adoption of increased bus separation seeks to reduce vehicular conflict. Minor benefit to personal safety arising from improved lighting. Replacing the bus stance will incorporate more extensive waiting facilities (i.e. a heated waiting room), while not considered to be any safer than an enclosed shelter, is likely to give the impression of a safer environment.

<p>Economy:</p>	<p>Upgraded Stance: Major benefit</p> <p>New Stance: Moderate benefit</p>	<p>See above for details of capital and operating costs in addition to the cost: benefit ratio.</p> <p>60-year PV of journey time disbenefits at 2008 prices for both Upgrade and New Stance: - £930,000</p> <p>Overall 60-year PV value of benefits at 2008 prices:</p> <p>Upgraded Stance: £4,300,000</p> <p>New Stance: £4,400,000</p>
<p>Integration:</p>	<p>Moderate Benefit</p>	<p>With regard to promoting transport integration, see contribution to Transport Planning Objective above. This option contributes to the wider government policy agenda, regional and local policies aimed at encouraging modal shift towards sustainable forms of transport in addition to other aims such as health and reduction of carbon emissions.</p>
<p>Accessibility and Social Inclusion:</p>	<p>No impact</p>	<p>No significant impacts on accessibility and social inclusion result from this option.</p>

## Appraisal Summary Table Option 1c

Proposal Details			
Name and address of authority or organisation promoting the proposal:  (Also provide name of any subsidiary organisations also involved in promoting the proposal)		SEStran South East of Scotland Transport Partnership First Floor Hopetoun Gate 8b McDonald Road Edinburgh EH7 4LZ	
Proposal Name:	Option 1c: Auld Brig Road, Mill Road to Shillinghill loop	Name of Planner:	Trond Haugen, SEStran
Proposal Description:	<ul style="list-style-type: none"> <li>• Bus-only westbound clockwise loop from Shillinghill roundabout, via Greenside Street, Auld Brig Road and Mill Road with new junction at Mill Road</li> <li>• New eastbound bus stop on King Street</li> <li>• Bus lane in westbound direction from the Shillinghill roundabout to a new roundabout providing access to the BP Petrol Station and Kings Street car park</li> <li>• Soft measures to improve integration between Shillinghill Bus Stance and the rail station</li> <li>• Upgrading or replacing Shillinghill bus stance</li> </ul>	Estimated Total Public Sector Funding Requirement:	Capital Costs (Year 4) in 2008 prices are as follows:  Upgrade: £972,500  New: £1,247,500
			Annual Operating Costs (Year 4) in 2008 prices are as follows:  Upgrade: £9,600  New: £13,200
			Benefit Cost Ratio: Upgrade      5.5:1 New            4.6:1

<b>Background Information</b>	
Geographic Context:	The study area is centred on Alloa Station though residents, in addition to those who work and visit Clackmannanshire could potentially be affected by proposals. The built environment around the station is urban in nature and a number of listed buildings are present within Alloa town centre but not within proximity of Shillinghill.
Social Context:	The population of Clackmannanshire is just over 48,000 recorded at the mid 2006 estimates by the Scottish Registration Office. Alloa is the main town with a population of 19,000 people. Clackmannanshire's population equates to a density of 3.03 people per hectare. Pockets of deprivation exist throughout the study area, notably in Tuillibody and South and East Alloa. Clackmannanshire has the fourth largest share of the 15% most deprived areas within a Local Authority area in Scotland according to the Scottish Index of Multiple Deprivation 2006. An identified housing shortage exists in the Council area with the Structure Plan recognising a 3,500 unit shortfall to 2017.
Economic Context:	The economy of Clackmannanshire has undergone significant restructuring in recent years with a move away from traditional industries such as mining and textiles. A growing number of smaller businesses have been established and Clackmannanshire has the third highest economic growth rate in Scotland as a result. Alloa is seen as a strategic shopping centre for Clackmannanshire and its development is key to it can compete with nearby towns of Stirling and Falkirk.
<b>Planning Objectives</b>	
Objective:	Performance against planning objective:
Minimise walk distances between bus and key town centre destinations, including the station	This option will contribute to this objective further to a new stop for eastbound services on the north side of King Street which reduces walk distances between the proposed new bus stop and rail station. Improved signing of routes between the station and main bus stops may also reduce walking distances and hence contribute to this objective.
Minimise time and cost penalties of interchange – including bus / bus and bus / rail.	Interchange time between eastbound bus services and rail station decreased (see above). Further soft measures may also contribute to this objective including improvements to interchange which can be achieved by ticketing, information and improved timetabling of services.
Maximise awareness of sustainable travel options	This option does not contribute to this objective with the exception of the introduction of soft measures including printed timetable information, timetable displays and real time information which contribute to raising awareness of travel options.
Minimise delays to buses in Alloa town centre	Modelling results indicate a net journey time decrease of over three minutes prevails when compared to the existing situation in the AM and PM peak periods.
Minimise disadvantages to non-users	Modelling results indicate that this option has no significant effects on non-public transport users'

of public transport	journey times as a result of the introduction of these measures.	
Minimise the number and severity of road accidents	Pedestrian vehicle conflict is reduced and the adoption of increased bus separation seeks to reduce vehicular conflict. Therefore this option contributes to this objective.	
Minimise cost to the public purse of transport infrastructure and services.	See capital and revenue costs above. Upgrading the existing Shillinghill stance and associated maintenance costs are less than those associated with full replacement of the stance.	
<b>Implementability Appraisal</b>		
Technical:	All parts of the proposals comprise fully-tested and commonly-used features. Therefore, technical risk relating to this option is low.	
Operational:	Road components of the package will require on-going maintenance, but not at a level that is significantly different from that of existing infrastructure.	
Financial:	Use of high quality materials for road infrastructure, common available technology for traffic control systems and real time information are not anticipated to be significantly different from costs already in existence. Therefore if capital funding for the scheme's implementation can be identified, no significant financial risks are associated with this option.	
Public:	Minor public acceptability risk arising from this option which will involve the overall reduction in car park places both for commercial and residential use along the Mill Road cut through. There is a risk regarding the removal of the 'Still', an Alloa Town Centre landmark.	
<b>STAG Criteria</b>		
<b>Criterion</b>	<b>Assessment Summary</b>	<b>Supporting Information</b>
Environment:	Minor Negative	Minor negative impact on those who work/reside on Mill Road due to increased traffic levels resulting in increased noise and vibration. However, number of properties affected are equivalent to those on Drysdale which will experience an equivalent decrease in traffic and therefore minor negative benefit resulting from decreased noise and vibration levels. Therefore the overall impact with regard to noise and vibration is likely to be neutral. No other significant environmental impacts were identified. There will potentially be impacts due to improved lighting along key routes, however, these are likely to be negligible.
Safety:	Moderate Benefit	Pedestrian vehicle conflict is reduced. Additionally the adoption of increased bus separation seeks to reduce vehicular conflict. Minor benefit to personal safety arising from improved lighting. Replacing the bus stance will incorporate more extensive waiting facilities (i.e. a heated waiting room), while not considered to be any safer than an enclosed shelter, is likely to give the impression of a safer environment.



<p>Economy:</p>	<p>Upgraded Stance: Major benefit</p> <p>New Stance: Moderate benefit</p>	<p>See above for details of capital and operating costs in addition to the cost: benefit ratio.</p> <p>60-year PV of journey time savings at 2008 prices for both Upgrade and New Stance: - £5,700,000</p> <p>Overall 60-year PV value of benefits at 2008 prices:</p> <p>Upgraded Stance: £13,800,000</p> <p>New Stance: £13,900,000</p>
<p>Integration:</p>	<p>Moderate Benefit</p>	<p>With regard to promoting transport integration, see contribution to Transport Planning Objective above. This option contributes to the wider government policy agenda, regional and local policies aimed at encouraging modal shift towards sustainable forms of transport in addition to other aims such as health and reduction of carbon emissions.</p>
<p>Accessibility and Social Inclusion:</p>	<p>No impact</p>	<p>No significant impacts on accessibility and social inclusion result from this option with the exception of those detailed under the above Transport Planning objective regarding walk distances between bus facilities and key town centre locations.</p>

**Appraisal Summary Table 2a**

<b>Proposal Details</b>			
Name and address of authority or organisation promoting the proposal:  (Also provide name of any subsidiary organisations also involved in promoting the proposal)		SEStran South East of Scotland Transport Partnership First Floor Hopetoun Gate 8b McDonald Road Edinburgh EH7 4LZ	
Proposal Name:	Option 2a: King Street Car Park Bus Stance Phase 1	Name of Planner:	Trond Haugen, SEStran
Proposal Description:	<ul style="list-style-type: none"> <li>• New bus stance (3 stops) at the existing King Street car park. Facility to be accessed from rail station roundabout and will serve east and westbound services</li> <li>• Bus lane in westbound direction from the Shillinghill roundabout to a new roundabout providing access to the BP Petrol Station and Kings Street car park</li> <li>• Soft measures to improve integration between Shillinghill Bus Stance and the rail station</li> </ul>	Estimated Total Public Sector Funding Requirement:	Capital Cost (Year 4) in 2008 prices: £992,500
			Annual Operating Cost (Year 4) in 2008 prices: £11,000
			Benefit Cost Ratio 5.6:1

<b>Background Information</b>	
Geographic Context:	The study area is centred on Alloa Station though residents, in addition to those who work and visit Clackmannanshire could potentially be affected by proposals. The built environment around the station is urban in nature and a number of listed buildings are present within Alloa town centre but not within proximity of Shillinghill.
Social Context:	The population of Clackmannanshire is just over 48,000 recorded at the mid 2006 estimates by the Scottish Registration Office. Alloa is the main town with a population of 19,000 people. Clackmannanshire's population equates to a density of 3.03 people per hectare. Pockets of deprivation exist throughout the study area, notably in Tullibody and South and East Alloa. Clackmannanshire has the fourth largest share of the 15% most deprived areas within a Local Authority area in Scotland according to the Scottish Index of Multiple Deprivation 2006. An identified housing shortage exists in the Council area with the Structure Plan recognising a 3,500 unit shortfall to 2017.
Economic Context:	The economy of Clackmannanshire has undergone significant restructuring in recent years with a move away from traditional industries such as mining and textiles. A growing number of smaller businesses have been established and Clackmannanshire has the third highest economic growth rate in Scotland as a result. Alloa is seen as a strategic shopping centre for Clackmannanshire and its development is key to it can compete with nearby towns of Stirling and Falkirk.
<b>Planning Objectives</b>	
Objective:	Performance against planning objective:
Minimise walk distances between bus and key town centre destinations, including the station	With the exception of improved signing of routes between the station and main bus stops, this option does not contribute to this planning objective.
Minimise time and cost penalties of interchange – including bus / bus and bus / rail.	This option does not contribute to this objective with the exception of the introduction of soft measures including improvements to interchange which can be achieved by ticketing, information and improved timetabling of services.
Maximise awareness of sustainable travel options	Marketing associated with this facility may serve to raise awareness of sustainable travel options and improve the image of public transport. Further contributions to this objective could arise further to the introduction of soft measures including printed timetable information, timetable displays and real time information which contribute to raising awareness of travel options.
Minimise delays to buses in Alloa town centre	Modelling results indicate that a net journey time decrease of nearly three minutes prevails when compared to the existing situation in the AM and PM peak periods.
Minimise disadvantages to non-users	Modelling results indicate that this option has no significant effects on non-public transport users'

of public transport	journey times as a result of the introduction of these measures. However, a loss of up to 100 car parking spaces within the King Street car park is likely to be a disadvantage to non-users of public transport.	
Minimise the number and severity of road accidents	Pedestrian vehicle conflict is reduced and the adoption of increased bus separation seeks to reduce vehicular conflict. Therefore this option contributes to this objective.	
Minimise cost to the public purse of transport infrastructure and services.	Provision of bus shelters, rather than a full bus station, will contribute to meeting this objective.	
<b>Implementability Appraisal</b>		
Technical:	All parts of the proposals comprise fully-tested and commonly-used features. Therefore, technical risk relating to this option is low.	
Operational:	Road infrastructure components of the package will require on-going maintenance, but not at a level that is significantly different from that of existing infrastructure.	
Financial:	Use of high quality materials for road infrastructure, common available technology for traffic control systems and real time information are not anticipated to be significantly different from costs already in existence. Therefore if capital funding for the scheme's implementation can be identified, no significant financial risks are associated with this option.	
Public:	Potential risk associated with the loss of 100 car parking spaces at King Street Car Park.	
<b>STAG Criteria</b>		
<b>Criterion</b>	<b>Assessment Summary</b>	<b>Supporting Information</b>
Environment:	No impact	There will potentially be impacts due to improved lighting along key routes, however, these are likely to be negligible.
Safety:	Moderate Benefit	Pedestrian vehicle conflict is reduced. Additionally the adoption of increased bus separation seeks to reduce vehicular conflict. Minor benefit to personal safety arising from improved lighting and extended CCTV. Replacing the bus stance will incorporate more extensive waiting facilities (i.e. a heated waiting room), while not considered to be any safer than an enclosed shelter, is likely to give the impression of a safer environment.

Economy:	Major Benefit	<p>See above for details of capital and operating costs in addition to the cost: benefit ratio.</p> <p>60-year PV of journey time benefits at 2008 prices: £5,400,000</p> <p>Overall 60-year PV value of benefits at 2008 prices: £14,200,000</p>
Integration:	Moderate Benefit	<p>With regard to promoting transport integration, see contribution to Transport Planning Objective above. This option contributes to the wider government policy agenda, regional and local policies aimed at encouraging modal shift towards sustainable forms of transport in addition to other aims such as health and reduction of carbon emissions.</p>
Accessibility and Social Inclusion:	No impact	<p>No significant impacts on accessibility and social inclusion result from this option with the exception of those detailed under the above Transport Planning objective regarding walk distances between bus facilities and key town centre locations.</p>

**Appraisal Summary Table 2b**

<b>Proposal Details</b>			
Name and address of authority or organisation promoting the proposal:  (Also provide name of any subsidiary organisations also involved in promoting the proposal)		SEStran South East of Scotland Transport Partnership First Floor Hopetoun Gate 8b McDonald Road Edinburgh EH7 4LZ	
Proposal Name:	Option 2b: King Street Car Park Bus Station Phase 2	Name of Planner:	Trond Haugen, SEStran
Proposal Description:	<ul style="list-style-type: none"> <li>• Bus Station with saw-tooth arrangement with associated facilities</li> <li>• Bus lane in westbound direction from the Shillinghill roundabout to a new roundabout providing access to the BP Petrol Station and Kings Street car park</li> <li>• Soft measures to improve integration between Shillinghill Bus Stance and the rail station</li> </ul>	Estimated Total Public Sector Funding Requirement:	Capital Cost (Year 4) in 2008 prices: £3,337,500
			Annual Operating Cost (Year 4) in 2008 prices: £27,000
			Benefit Cost Ratio 1.3:1

<b>Background Information</b>	
Geographic Context:	The study area is centred on Alloa Station though residents, in addition to those who work and visit Clackmannanshire could potentially be affected by proposals. The built environment around the station is urban in nature and a number of listed buildings are present within Alloa town centre but not within proximity of Shillinghill.
Social Context:	The population of Clackmannanshire is just over 48,000 recorded at the mid 2006 estimates by the Scottish Registration Office. Alloa is the main town with a population of 19,000 people. Clackmannanshire's population equates to a density of 3.03 people per hectare. Pockets of deprivation exist throughout the study area, notably in Tuillibody and South and East Alloa. Clackmannanshire has the fourth largest share of the 15% most deprived areas within a Local Authority area in Scotland according to the Scottish Index of Multiple Deprivation 2006. An identified housing shortage exists in the Council area with the Structure Plan recognising a 3,500 unit shortfall to 2017.
Economic Context:	The economy of Clackmannanshire has undergone significant restructuring in recent years with a move away from traditional industries such as mining and textiles. A growing number of smaller businesses have been established and Clackmannanshire has the third highest economic growth rate in Scotland as a result. Alloa is seen as a strategic shopping centre for Clackmannanshire and its development is key to it can compete with nearby towns of Stirling and Falkirk.
<b>Planning Objectives</b>	
Objective:	Performance against planning objective:
Minimise walk distances between bus and key town centre destinations, including the station	With the exception of improved signing of routes between the station and main bus stops, this option does not contribute to this planning objective.
Minimise time and cost penalties of interchange – including bus / bus and bus / rail.	This option does not contribute to this objective with the exception of the introduction of soft measures including improvements to interchange which can be achieved by ticketing, information and improved timetabling of services.
Maximise awareness of sustainable travel options	Marketing associated with this facility may serve to raise awareness of sustainable travel options and improve the image of public transport. Further contributions to this objective could arise following the introduction of soft measures including printed timetable information, timetable displays and real time information which aim to raise awareness of sustainable travel options.
Minimise delays to buses in Alloa town centre	Modelling results indicate that a net journey time increase of 19 seconds prevails when compared to the existing situation in the AM and PM peak periods.
Minimise disadvantages to non-users	Modelling results indicate that this option has no significant effects on non-public transport users'

of public transport	journey times as a result of the introduction of these measures. However, a loss of up to 100 car parking spaces within the King Street car park would be a disadvantage to non-users of public transport.	
Minimise the number and severity of road accidents	Pedestrian vehicle conflict is reduced and the adoption of increased bus separation seeks to reduce vehicular conflict. Therefore this option contributes to this objective.	
Minimise cost to the public purse of transport infrastructure and services.	A new bus station is significantly more expensive to construct and maintain than any of the remaining retained options, however, costs could be offset through the revenue generating potential of the facility through bus operator departure charges and rental of retail units.	
<b>Implementability Appraisal</b>		
Technical:	All parts of the proposals comprise fully-tested and commonly-used features. Therefore, technical risk relating to this option is low.	
Operational:	Road infrastructure components of the package will require on-going maintenance, but not at a level that is significantly different from that of existing infrastructure.	
Financial:	Use of high quality materials for road infrastructure, common available technology for traffic control systems and real time information are not anticipated to be significantly different from costs already in existence. Therefore if capital funding for the scheme's implementation can be identified, no significant financial risks are associated with this option.	
Public:	Potential risk associated with the loss of 100 car parking spaces at King Street Car Park. It is likely that bus operators will resist paying charges associated with the bus station.	
<b>STAG Criteria</b>		
<b>Criterion</b>	<b>Assessment Summary</b>	<b>Supporting Information</b>
Environment:	No impact	There will potentially be impacts due to improved lighting along key routes, however, these are likely to be negligible. Significant visual impact associated with the construction of the proposed bus station. However negative aspects can be mitigated through consultation and high quality design.
Safety:	Moderate benefit	Pedestrian vehicle conflict is reduced. Additionally the adoption of increased bus separation seeks to reduce vehicular conflict. Minor benefit to personal safety arising from improved lighting. Replacing the bus station will incorporate more extensive waiting facilities (i.e. a heated waiting room) and the facility will be manned by staff during the hours of operation.



Economy:	Minor benefit	<p>See above for details of capital and operating costs in addition to the cost: benefit ratio.</p> <p>60-year PV of journey time disbenefits at 2008 prices: £580,000</p> <p>Overall 60-year PV value of benefits at 2008 prices: £8,500,000</p>
Integration:	Moderate Benefit	<p>With regard to promoting transport integration, see contribution to Transport Planning Objective above. This option contributes to the wider government policy agenda, regional and local policies aimed at encouraging modal shift towards sustainable forms of transport in addition to other aims such as health and reduction of carbon emissions.</p>
Accessibility and Social Inclusion:	No impact	<p>No significant impacts on accessibility and social inclusion result from this option with the exception of those detailed under the above Transport Planning objective regarding walk distances between bus facilities and key town centre locations.</p>

**Benefit: Cost Analysis**

**Capital**

		Unit	Cost	Total
Bus Shelter	Whins Road	2	£4,000	£8,000
Shillinghill Bus Stance	Upgrade	1	£80,000	£80,000
Shillinghill Bus Stance	New	1	£300,000	£300,000
Shillinghill Bus Stance	Replacement kerb and resurfacing including design and fees)	1	£50,000	£50,000
King Street Bus Stance (Shelters & stops only)	New	1	£45,000	£45,000
King Street Bus Stance (Access and Stance incl design + fees)	New	1	£280,000	£280,000
King Street Bus Station (Buildings, stances + design fees)	New	1	£1,900,000	£1,900,000
King Street Bus Station (Site work, landscape, design fees etc)		1	£293,000	£293,000
Information	Booklet	20,000	£2	£30,000
Real time Bus	Displays only	1	£8,000	£8,000
Real Time Rail	Displays only	1	£10,000	£10,000
One Ticket Promotion	Share of print run	1	£3,000	£3,000
Plus Bus Promotion	Leaflet	10,000	£0	£2,000
Walkway	Station-King Street	1	£150,000	£150,000
Walkway	King Street-Shillinghill	1	£75,000	£75,000
Walkway	King Street-Drysdale Street	1	£75,000	£75,000
Co-op land	King Street-Drysdale Street	1	£50,000	£50,000
Signage	Various pedestrian signs	1	£10,000	£10,000
Shillinghill Roundabout	Traffic Signals	1	£40,000	£40,000
Shillinghill Roundabout	Slip lane + King Street Bus Lane	1	£55,000	£55,000
Shillinghill Roundabout	King Street Bus Lane	1	£40,000	£40,000
Mill Street link (Incl Turning Circle)	Auld Brigg Road junction	1	£95,000	£95,000
Mill Street link	Drysdale Street junction (include resite of still)	1	£75,000	£75,000
Mill Street link	Mill Street redevelopment	1	£75,000	£75,000

Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a New	Option 2b New
£8,000	£8,000	£8,000	£8,000	£8,000	£8,000	£8,000	£8,000
£80,000		£80,000		£80,000			
	£300,000		£300,000		£300,000		
£50,000	£50,000	£50,000	£50,000	£50,000	£50,000		
						£45,000	
						£290,000	
							£1,900,000
							£293,000
£30,000	£30,000	£30,000	£30,000	£30,000	£30,000	£30,000	£30,000
£16,000	£16,000	£16,000	£16,000	£16,000	£16,000	£16,000	£24,000
£10,000	£10,000	£10,000	£10,000	£10,000	£10,000	£10,000	£10,000
£3,000	£3,000	£3,000	£3,000	£3,000	£3,000	£3,000	£3,000
£2,000	£2,000	£2,000	£2,000	£2,000	£2,000	£2,000	£2,000
£150,000	£150,000	£150,000	£150,000	£150,000	£150,000	£150,000	£150,000
£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000
						£75,000	£75,000
						£50,000	£50,000
£10,000	£10,000	£10,000	£10,000	£10,000	£10,000	£10,000	£10,000
£40,000	£40,000						
		£55,000	£55,000	£55,000	£55,000		
£40,000	£40,000	£40,000	£40,000	£40,000	£40,000	£40,000	£40,000
				£95,000	£95,000		
				£75,000	£75,000		
				£75,000	£75,000		
£514,000	£734,000	£529,000	£749,000	£774,000	£994,000	£804,000	£2,670,000

**Optimum Bias**

Set at 15%	Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a	Option 2b
	£77,100.00	£110,100.00	£79,350.00	£112,350.00	£116,100.00	£149,100.00	£120,600.00	£400,500.00

**Contingency**

Set at 10%	Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a	Option 2b
	£51,400.00	£73,400.00	£52,900.00	£74,900.00	£77,400.00	£99,400.00	£80,400.00	£267,000.00

**Operational**

Discounted Rate 3.50%

**Maintenance Costs**

	Unit	Costs	Total
General Maintenance Shelter New (Clean and Repair)	60	3,600	216,000
General Maintenance New Shelter New (Clean and Repair)	60	7,200	432,000
General Maintenance New Station New	60	30,000	1,800,000
Maintenance RTP1 (above SEStran Commitment)	New	2,500	150,000

	Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a New	Option 2b New
	£216,000		£216,000		£216,000		£216,000	
		£432,000		£432,000		£432,000		
								£1,800,000
	£150,000	£150,000	£150,000	£150,000	£150,000	£150,000	£150,000	£199,500
<b>Total</b>	<b>£366,000</b>	<b>£582,000</b>	<b>£366,000</b>	<b>£582,000</b>	<b>£366,000</b>	<b>£582,000</b>	<b>£366,000</b>	<b>£1,999,500</b>

**Final Cap/Op Costs**

Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a	Option 2b
<b>£1,008,500.00</b>	<b>£1,499,500.00</b>	<b>£1,027,250.00</b>	<b>£1,518,250.00</b>	<b>£1,333,500.00</b>	<b>£1,824,500.00</b>	<b>£1,371,000.00</b>	<b>£5,337,000.00</b>

**Passenger Numbers**

**Predictions (Journeys)**

Year One	155,000	
Year Two	220,000	142%
Year Three	249,000	113%
Year Four	254,000	102%

**Actuality**

Four Week (Period 1)	32,485
Four Week (Period 2)	31,469
Four Week (Period 3)	36,267
Total (Period 1, 2 & 3)	100,221

**Revised Prediction (Journeys)**

Year One	433,957
Year One	368,863
Year Two	417,486
Year Three	425,870
Year Four	434,421
Year Sixty	485,851

**Revised Prediction (Users)**

Year One	184,432	Assumed Return Journey
Year Two	208,743	
Year Three	212,935	
Year Four	217,211	
Year Sixty	242,926	

**Survey Data**

**Response Number**

227

**Response Answers**

	wouldn't travel anyway	more direct	cheaper fares	reduced journey times	frequency	reliability	Safer environment	Comfort and cleanliness	Information	other no	Total
1st Choice	18	36	75	28	19	19	3	6	12	9	225
2nd Choice	0	14	11	35	43	34	11	7	13	1	169
3rd Choice	0	8	2	14	28	32	4	16	35	1	140

**Weighting Figures**

These multiples are based on work carried out on large data sets by the ONS

1st Choice	6
2nd Choice	3
3rd Choice	1

**Raw Weighting Data**

	wouldn't travel anyway	more direct	cheaper fares	reduced journey times	frequency	reliability	Safer environment	Comfort and cleanliness	Information	other no
1st Choice	108	216	450	168	114	114	18	36	72	54
2nd Choice	0	42	33	105	129	102	33	21	39	3
3rd Choice	0	8	2	14	28	32	4	16	35	1
<b>Total</b>	<b>108</b>	<b>266</b>	<b>485</b>	<b>287</b>	<b>271</b>	<b>248</b>	<b>55</b>	<b>73</b>	<b>146</b>	<b>58</b>

**Usable Weighting Data**

Based on ONS methodology of Simple Gravity Principle for data sets ('Wouldn't travel anyway' and 'other' removed as dealt with anecdotally in the report text)

wouldn't travel anyway	more direct	cheaper fares	reduced journey times	frequency	reliability	Safer environment	Comfort and cleanliness	Information	other no
0.0000	0.1453	0.2649	0.1567	0.1480	0.1354	0.0300	0.0399	0.0797	0.0000

**Predictions**

**Current Bus / Rail Interchanges**

Total Number (Users)	Percentage	12%
Year One		22,132
Year Two		25,049
Year Three		25,552
Year Four		26,965
Year Sixty		29,151

**Never Interchange**

Total Number (Users)	Percentage	8%
Year One		14,755
Year Two		16,699
Year Three		17,035
Year Four		17,377
Year Sixty		19,434

**Current Other Modes / Potential Interchangers**

Total Number (Users)	Year One	147,545
	Year Two	166,995
	Year Three	170,348
	Year Four	173,768
	Year Sixty	194,341

**Potential Bus/Rail Interchangers (Rail)**

Based on PAN 75: improvements to Public Transport facilities would result in a 10% increase in the uptake of PT options

Total Number (Users)	Year One	14,755
	Year Two	1,945
	Year Three	325
	Year Four	342
	Year Sixty	2,057
	<b>Total</b>	<b>19,434</b>

**Potential Bus/Rail Interchangers (Bus)**

Based on PAN 75 improvements to Public Transport facilities would result in a 10% increase in the uptake of PT options (figures based on Bus Passengers currently travelling to places served by Alloa Train Station)

Total Number (Users)	Year One	16,754
	Year Two	1,709
	Year Three	171
	Year Four	188
	Year Sixty	207
	<b>Total</b>	<b>18,822</b>

**Potential Bus/Rail Interchangers (All)**

Total Number (Users)	Year One	31,509
	Year Two	3,654
	Year Three	506
	Year Four	530
	Year Sixty	2,264
	<b>Total</b>	<b>38,463</b>

**Potential Bus/Rail Interchangers by Year 60 (Based on Preference)**

<i>more direct</i>	<i>cheaper fares</i>	<i>reduced journey times</i>	<i>frequency</i>	<i>reliability</i>	<i>Safer environment</i>	<i>Comfort and cleanliness</i>	<i>Information</i>
5,588	10,188	6,029	5,693	5,210	1,155	1,533	3,067

**Relevant Weightings to Options**

Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a	Option 2b
SE	SE	R	R	RJT	RJT	RJT	RJT
CC	CC	SE	SE	R	R	R	R
I	I	CC	CC	SE	SE	SE	SE
		I	I	CC	CC	CC	CC
				I	I	I	I

**Potential Interchangers by Year 60 (Based on Options)**

	Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a	Option 2b
Bus	2,817	2,817	5,366	5,366	8,316	8,316	8,316	8,316
Rail	2,908	2,908	5,540	5,540	8,587	8,587	8,587	8,587
<b>Total</b>	<b>5,756</b>	<b>5,756</b>	<b>10,965</b>	<b>10,965</b>	<b>16,994</b>	<b>16,994</b>	<b>16,994</b>	<b>16,994</b>

**Capital / Operational Cost Per Option (60 Years)**

Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a	Option 2b
<b>£1,008,500.00</b>	<b>£1,499,500.00</b>	<b>£1,027,250.00</b>	<b>£1,518,250.00</b>	<b>£1,333,500.00</b>	<b>£1,824,500.00</b>	<b>£1,371,000.00</b>	<b>£5,337,000.00</b>

**Ticket Prices and Patronage**

<b>Bus</b>	Less 3 km	Less 5 km	Greater 5 km
Fare	£1.70	£1.70	£2.70
Patronage	41%	26%	33%

<b>Rail</b>	Glasgow	Stirling	Edinburgh	Other
Fare	£6.70	£2.50	£6.80	£6.00
Patronage	44%	32%	11%	13%

**Discounted Rate**

3.50%

**Fare Box Revenue Gained Per Option (Year 1)**

	Option 1a <i>Upgrade</i>	Option 1a <i>New</i>	Option 1b <i>Upgrade</i>	Option 1b <i>New</i>	Option 1c <i>Upgrade</i>	Option 1c <i>New</i>	Option 2a	Option 2b
Bus	£32,246.86	£32,246.86	£61,433.79	£61,433.79	£95,210.61	£95,210.61	£95,210.61	£95,210.61
Rail	£12,810.95	£12,810.95	£24,406.26	£24,406.26	£37,825.03	£37,825.03	£37,825.03	£37,825.03
<b>Total</b>	<b>£45,057.81</b>	<b>£45,057.81</b>	<b>£85,840.06</b>	<b>£85,840.06</b>	<b>£133,035.64</b>	<b>£133,035.64</b>	<b>£133,035.64</b>	<b>£133,035.64</b>

**Discounted Fare Box Revenue Gained Per Option (60 Years)**

	Option 1a <i>Upgrade</i>	Option 1a <i>New</i>	Option 1b <i>Upgrade</i>	Option 1b <i>New</i>	Option 1c <i>Upgrade</i>	Option 1c <i>New</i>	Option 2a	Option 2b
Bus	£1,783,236.37	£1,783,236.37	£3,397,260.53	£3,397,260.53	£5,265,103.01	£5,265,103.01	£5,265,103.01	£5,265,103.01
Rail	£708,439.65	£708,439.65	£1,349,655.10	£1,349,655.10	£2,091,706.84	£2,091,706.84	£2,091,706.84	£2,091,706.84
<b>Total</b>	<b>£2,491,676.02</b>	<b>£2,491,676.02</b>	<b>£4,746,915.63</b>	<b>£4,746,915.63</b>	<b>£7,356,809.86</b>	<b>£7,356,809.86</b>	<b>£7,356,809.86</b>	<b>£7,356,809.86</b>



**Existing Transport Costs**

Based on origin data accrued from the survey and Value of Non-Working Time Per Person as contained in the STAG Refresh

**Value of Non Working Time**  
Per Hour

Commute	Other
<b>£5.04</b>	<b>£4.46</b>

**Survey Data Origins (Km from station)**

Kilometres	Percentage	Users	Time (secs)
0-0.5	7.00%	1,360	600
0.5-3.0	77.00%	14,964	810
3.1-5.0	10.00%	1,943	1,143
>5.1	6.00%	1,166	1,717

**Users by Type**

Survey data indicated 12% journeys were commute based and 88% Others. Business Use was negligible

Kilometres	Commute	Other
0-0.5	163	1197
0.5-3.0	1796	13169
3.1-5.0	233	1710
>5.1	140	1026
<b>Total</b>	<b>2332</b>	<b>17102</b>

**Existing Transport Costs**

Year 1  
Discounted 60 Years

Commute	Other	Total
£2,882.99	£18,121.65	£21,004.64
<b>£160,005.96</b>	<b>£1,005,751.75</b>	<b>£1,165,757.71</b>

**Estimated Bus Station Users**

463,000

**Interchange Station Improvements per Alighting Passenger**  
Information and Cost benefit based on ATOC (2002) study and in TRL report 'Demand for Public Transport: A Practical Guide' 2004

	Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a	Option 2b
Intercom								
Real Time Information	✓	✓	✓	✓	✓	✓	✓	✓
Additional Staff								
CCTV	✓	✓	✓	✓	✓	✓	✓	✓
Heated	✓	✓	✓	✓	✓	✓	✓	✓
Departure Information	✓	✓	✓	✓	✓	✓	✓	✓
Seat	✓	✓	✓	✓	✓	✓	✓	✓
Better Lighting	✓	✓	✓	✓	✓	✓	✓	✓
Printed timetable	✓	✓	✓	✓	✓	✓	✓	✓

**Interchange Station Facilities (60 Years)**

Information and Cost benefit based on ATOC (2002) study and in TRL report 'Demand for Public Transport: A Practical Guide' 2004

	Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a	Option 2b
Intercom	£69,450.00	£69,450.00	£69,450.00	£69,450.00	£69,450.00	£69,450.00		£69,450.00
Real Time Information	£152,790.00	£152,790.00	£152,790.00	£152,790.00	£152,790.00	£152,790.00	£152,790.00	£152,790.00
Additional Staff								£83,340.00
CCTV	£55,560.00	£55,560.00	£55,560.00	£55,560.00	£55,560.00	£55,560.00	£55,560.00	£55,560.00
Heated		£32,410.00		£32,410.00		£32,410.00		£32,410.00
Departure Information	£69,450.00	£69,450.00	£69,450.00	£69,450.00	£69,450.00	£69,450.00	£69,450.00	£69,450.00
Seat	£101,860.00	£101,860.00	£101,860.00	£101,860.00	£101,860.00	£101,860.00	£101,860.00	£101,860.00
Better Lighting	£18,520.00	£18,520.00	£18,520.00	£18,520.00	£18,520.00	£18,520.00	£18,520.00	£18,520.00
Printed timetable	£37,040.00	£37,040.00	£37,040.00	£37,040.00	£37,040.00	£37,040.00	£37,040.00	£37,040.00
<b>Total</b>	<b>£435,220.00</b>	<b>£537,080.00</b>	<b>£435,220.00</b>	<b>£537,080.00</b>	<b>£435,220.00</b>	<b>£537,080.00</b>	<b>£435,220.00</b>	<b>£620,420.00</b>

**Facilities Benefits (60 Years)**

Option 1a Upgrade	Option 1a New	Option 1b Upgrade	Option 1b New	Option 1c Upgrade	Option 1c New	Option 2a	Option 2b
<b>£435,220.00</b>	<b>£537,080.00</b>	<b>£435,220.00</b>	<b>£537,080.00</b>	<b>£435,220.00</b>	<b>£537,080.00</b>	<b>£435,220.00</b>	<b>£620,420.00</b>

**Journey Time Effects**

IVT = 0.06 (per minute)

A negative figure equates to the new option taking longer

	Option 1a <i>Upgrade</i>	Option 1a <i>New</i>	Option 1b <i>Upgrade</i>	Option 1b <i>New</i>	Option 1c <i>Upgrade</i>	Option 1c <i>New</i>	Option 2a	Option 2b
East - West (AM)	-8.00	-8.00	21.00	21.00	62.00	62.00	70.00	20.00
East - West (PM)	-56.00	-56.00	-55.00	-55.00	102.00	102.00	113.00	65.00
West - East (AM)	1.00	1.00	11.00	11.00	-2.00	-2.00	-13.00	-63.00
West - East (PM)	40.00	40.00	-24.00	-24.00	23.00	23.00	5.00	-41.00

**Journey Time Costs / Benefits**

Option 1a <i>Upgrade</i>	Option 1a <i>New</i>	Option 1b <i>Upgrade</i>	Option 1b <i>New</i>	Option 1c <i>Upgrade</i>	Option 1c <i>New</i>	Option 2a	Option 2b
<b>-£217,566.86</b>	<b>-£217,566.86</b>	<b>-£927,665.18</b>	<b>-£927,665.18</b>	<b>£5,659,044.95</b>	<b>£5,659,044.95</b>	<b>£5,353,150.63</b>	<b>-£581,199.21</b>