

A81 Milngavie - Bearsden Corridor Study

STAG Final Report



Prepared by:
Richard Hernan
Senior Consultant

Checked by:
David Arthur
Associate Director

Approved by:
Neil Halket
Director

A81 Milngavie - Bearsden Corridor

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225 Bath Street, Glasgow, G2 4GZ
Telephone: 0141 220 6400 Website: <http://www.aecom.com>

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1 Introduction

Capabilities on project:
Transportation

1 Introduction

1.1 Introduction

AECOM has been commissioned by Strathclyde Partnership for Transport (SPT) and East Dunbartonshire Council (EDC) to undertake an update of a Scottish Transport Appraisal Guidance (STAG) study which was undertaken in 2008. The previous study appraised the transport situation on the A81 within Bearsden and Milngavie; this led to the development of intervention options designed to improve the transport situation in the area. SPT and EDC have engaged AECOM to undertake this update exercise to ensure that the findings from the previous study are still valid in the current context of the corridor. The main purpose of this study is to support the delivery of the Council's Local Transport Strategy 2013-2017 and emerging Local Development Plan and future Local Transport Strategies.

Since 2008, EDC and their partner organisations, including SPT, have delivered or are in the process of delivering a number of projects which derive from the options developed in the 2008 Study. This includes the development of integrated travel hubs, walking and cycling improvements and implementation of SCOOT traffic control.

AECOM have also been commissioned to undertake a Strategic Environmental Assessment which will run in parallel with this study.

1.2 Scope of Study

The objective of this study is to undertake a review of the 2008 study and update it to reflect current transport and socio-economic factors within the study area. This study therefore includes the following tasks:

- Review and update the suite of pertinent national, regional and local policy documents which informed the 2008 study;
- Review and update all pertinent background data available through existing public resources or made available by the client group;
- Identify current and future problems and opportunities associated with transportation within the corridor;
- Analyse the impact the changes in background data and policies have on previous objectives and conclusions;
- Undertake a stakeholder consultation exercise;
- Update transport planning objectives to reflect the current / future needs of the corridor;
- Review 2008 options, and if required develop new transport intervention options; and
- Undertake an appraisal exercise in line with the 2008 study to review and update transport intervention options.

It should be noted that the 2008 study was a proportionate study which predominantly relied on a qualitative appraisal; accordingly this update exercise has also been completed in line with the level of appraisal completed in 2008.

1.3 Study Area

The study area boundary encompasses the towns of Bearsden and Milngavie, in East Dunbartonshire. The focus of this study is the A81 road corridor and how it serves the social, economic and transport needs of the communities of the study area. Below is a summary of some of the key characteristics of the area.

1.3.1 Geographic and Travel Characteristics

East Dunbartonshire covers approximately 17,000 hectares, the area is located to the north of the city area of Glasgow and is home to many commuter towns and villages supplying the city. The 2011 census provides origin - destination between Council areas for the purposes of work and study. The data indicates that over 50% of the resident population of East Dunbartonshire work within Glasgow, with 18% travelling to Glasgow by rail, 14% by bus and 60% by car. Around 25% of the resident population of East Dunbartonshire work within the Council area. The authority has a population of close to 110,000 people and trends suggest that the population is both ageing and declining. The largest settlements areas within the authority are:

- Bearsden (27,237 inhabitants);
- Bishopbriggs, (22,870 inhabitants);
- Kirkintilloch, (19,689 inhabitants); and
- Milngavie (12,948 inhabitants).

The A81, along with the A809, is the main road corridor for general traffic and bus services between the study area and Glasgow City Centre, and intermediate locations such as Maryhill. A limited number of services also penetrate the Kessington residential area of Bearsden. A comparison of census data shows that in 2001 bus transport commanded a modal share of 9.5% for journeys to work, however this reduced to 7.5% by 2011. The A81 is also the main bus corridor linking the study area with outlying villages, such as Balfron and Strathblane which are located outside East Dunbartonshire, in Stirling.

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Four railway stations serve the study area, two of which, Hillfoot and Milngavie are adjacent to the A81, enabling interchange between bus and rail. Bearsden and Westerton are located approximately 1 – 1.2 miles east of the A81 corridor. All the stations, with the exception of Westerton, are located on a branch line which commences near Westerton and terminates at Milngavie. Rail directly connects the area with the economic centres of Glasgow, and Edinburgh, as well as other intermediate stations within the Glasgow conurbation. In the 2001 Census rail transport commanded a modal share of 9.9% for journeys to work, however this increased to 13% by 2011.

Walking facilities are primarily by footways located along both sides of most roads, and pedestrian crossing facilities where appropriate. Cycling in the study area is a predominantly on-road; EDC and their partners are committed to providing a segregated cycleway called the “Bearsway” along the A81, between Kessington in Bearsden to Milngavie. The 2011 Census highlights that overall walking commands a modal share of 17.3% and cycling 1.1% in the study area.

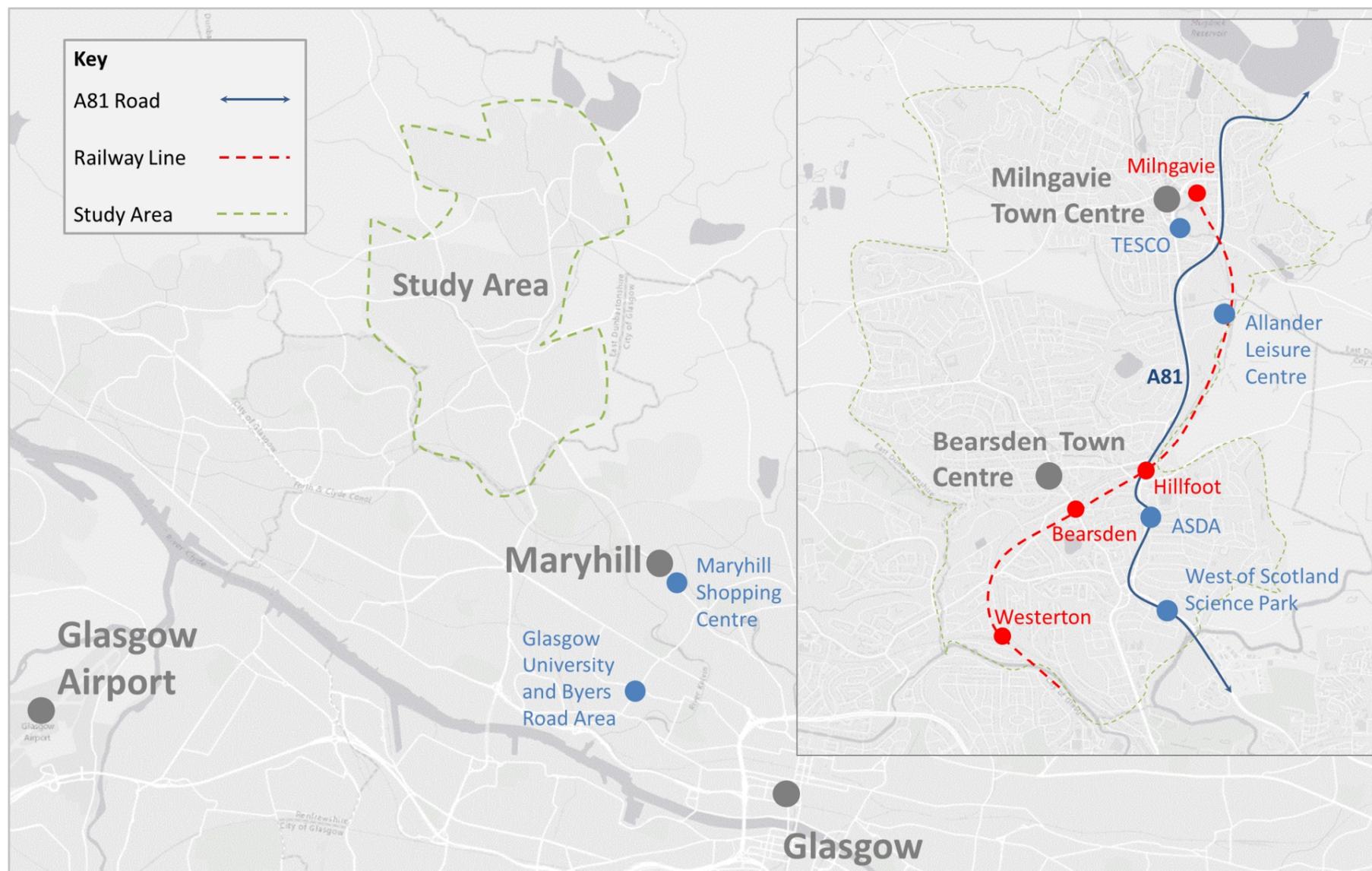


Figure 1.1 Study Area

Bearsden Town Centre – Bearsden Town Centre serves as a local retail centre, which includes food stores, banks, cafes, jewellers and a post office. Bearsden is served by a number of bus services which link the area with local residential areas and Glasgow City Centre. Bearsden Rail Station is situated south of the town centre.

Milngavie Town Centre – Milngavie Town Centre has a number of retail and public services. This includes travel agencies, banks, cafes and restaurants whilst a Tesco and M&S supermarket are located within the town centre. The town centre also contains key local services, such as, a library, post office, doctor surgeries and dental practices. Parking demand is high but the town centre is served by a number of bus services and has direct rail connections to the west of Glasgow, the city centre and Edinburgh. A number of local tourist attractions are located within the town, including the West Highland Way which begins at Milngavie Town Centre.

A81 Corridor – The A81 within East Dunbartonshire and Glasgow has a significant number of attractors / generators located adjacent to it, including;

- Asda and Tesco Supermarkets – with employment and shopping opportunities;
- Town Centre – attracts employment, entertainment, shopping and leisure trips;
- Allander Sports Centre (Milngavie) – employment and leisure opportunities;

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- West of Scotland Science Park (Bearsden / Maryhill, Glasgow) – large research and employment park providing educational and employment opportunities; and
- Maryhill Shopping Centre (Maryhill, Glasgow) – includes a large Tesco Store which attracts shoppers and workers;

Beyond the A81 the following facilities are accessible directly from the study area;

- Byres Road (Glasgow) – Entertainment facilities also providing employment;
- Glasgow University (Glasgow) – The main campus of the University is located to the south of the A81 close to Great Western Road.

Glasgow – both Bearsden and Milngavie have significant number of people who travel to the City of Glasgow, which is the largest city in Scotland and, as such, has a significant economic pull on the region. The city centre provides significant levels of highly skill employment opportunities across many sectors, including banking, financial services, and consultancy and engineering services. In addition, the city has a vast range of retail, leisure, entertainment, cultural and education facilities, which will all attract trips from the study area.

Greater Glasgow Conurbation – The region as a whole has a multitude of facilities and services which generate / attract trips from the study area, including;

- Out of Town Shopping – Glasgow has a number of “out of town” shopping centres which have catchment areas which encompass the study area, including the Braehead area which includes an events arena, IKEA Xscape leisure centre and hotels.
- Glasgow International Airport – Trips from the study area to the airport are not only for the purposes for onward travel, the airport and its surroundings are a significant employer in the region.
- Southern General / New South Glasgow Hospital – The new South Glasgow Hospital, due to open 2015, is currently being constructed on the site of the Southern General Hospital in Govan, on the outskirts of Glasgow. Both the existing and new hospitals will attract a significant number of trips from the study area, both for patients, those visiting and employment.

1.3.2 Social and Economic Characteristics

Economic activity rates in East Dunbartonshire are above the Scottish average with 84% of the working population in employment. Just over 70% of households in East Dunbartonshire have access to a car, ranking the council among the top three for car ownership in Scotland¹.

East Dunbartonshire has a skilled workforce whilst Glasgow has a demand for highly skilled labour so there is a dependency within East Dunbartonshire on out-commuting to Glasgow. The strong functional relationship between the settlements located within the study area and the city of Glasgow.

For the purposes of this study, the area of interest is located in the vicinity of the A81 Corridor connecting Milngavie and Bearsden through to Canniesburn Toll. This will be referred to as the ‘study area’ and is illustrated in Figure 1.1 above.

1.4 STAG Appraisal

STAG is the official appraisal framework developed by the Scottish Government to aid transport planners and decision-makers in the development of transport policies, plans, programmes and projects in Scotland. It is necessary that all transport projects, for which Scottish Government support or approval is required, are appraised in accordance with STAG and the appraisal of schemes in accordance with STAG is recommended to local authorities.

STAG has two parts:

- Part 1: initial appraisal and broad assessment of impacts, designed to decide whether a proposal should proceed, subject to meeting the planning objectives and fitting with relevant policies; and
- Part 2: detailed appraisal against the Government’s objectives.

The appraisal of each proposal is presented in a self-contained Appraisal Summary Table (AST): AST1 tables are used for Part 1 appraisals, and AST2 tables for Part 2 appraisals.

For the purposes of this report, both the STAG Part 1 and STAG Part 2 appraisals are documented.

1.5 2008 Study Summary

EDC engaged Faber Maunsell (now AECOM) in 2008 to undertake a STAG study with the aim to;

- Set out a range of potential multi-modal options for the A81 corridor including Canniesburn Toll;

¹ Figures taken 2011 Scottish Census

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- Establish a consultation framework for ensuring there is effective user engagement; and
- Use the STAG appraisal process to the completion of the STAG Part 2 appraisal, including recommending a preferred option which will be flexible, robust and capable of responding to changing demands upon the corridor.

This study was informed by a 2003 Atkins study which considered options to mitigate the transport impacts of a major multi-use masterplan development proposed in Bearsden alongside the A81, generally known as Kilmardinny. The Atkins report recommended that a new rail station should be built if the development was taken forward. The report also recommended complementing the rail station option with improved active travel links, a bus shuttle service and bus priority.

1.5.1 Key Problems

A number of problems were identified in 2008 through an analysis of available on-line resources, in particular 2001 census information, the key problems identified are summarised below,:

- High car ownership and the use of the private car as the dominant mode of transport for most trip purposes and destinations;
- The potential development at Kilmardinny will increase the demand for travel along the A81 corridor;
- Perceptions towards public transport are generally indifferent, with the quality of available information, frequency and reliability of service, and cost and comfort generally rated poorly;
- Parking facilities at the local rail stations is operating above-capacity;
- Bus demand is heavily peaked and can be full to standing at key journey times;
- There is no priority for buses along the route and journey times do not compare favourably to those of the private car;
- There are no local bus feeder services between the residential areas and the rail stations and bus and rail timetables are not well integrated;
- Cycle lanes are discontinuous and often obstructed by parked vehicles;
- Walking routes are seen perceived to have issues with cleanliness;
- Localised congestion occurs at many key junctions along the route.

Through consideration of the range of problems affecting transport in the area, the aspirations of stakeholders, and both local and national policy; five key Transport Planning Objectives were considered suitable to be taken forward throughout the appraisal process, and these are as follows:

- To achieve a modal shift from car based journeys to those using sustainable modes;
- Improve journey time reliability for bus-based modes of transport through the corridor;
- Measures should not materially increase journey times for private vehicles in the peak through the study area;
- Measures should increase the accessibility to Public Transport from the Kilmardinny Development Site; and
- Reduce 85th percentile speeds on routes within the study area over the period.

1.5.2 2008 Options

The options developed in the 2008 study are listed below in Table 1.1 - some options have been delivered and/or superseded. These options are considered throughout this study where appropriate.

Table 1.1 2008 Scheme Options

Option	Components schemes	Status
Increase car parking at Bearsden, Milngavie, Hillfoot and Westerton rail stations	a) Partial decking of the Tesco car park, close to Milngavie station.	Not taken forward, Tesco planning application refused.
	b) Multi occupancy vehicle spaces in the existing station car park at Milngavie.	Not taken forward
	c) At Hillfoot station, utilise area of land to the north west of the station for parking (area currently occupied by advertising board).	Not taken forward

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Option	Components schemes	Status
	d) Partial decking of the station car park at Bearsden	Not taken forward
	e) Provision of additional parking at Westerton.	Not taken forward
Parking controls in town centres (only to be taken forward following delivery of increased parking at rail stations)	Implementation of MVA study recommendations, with focus on: a) Parking charges and waiting restrictions at Milngavie Town Centre to prevent rail users for using parking earmarked for town centre retail. b) Introduction of de-criminalised parking. c) Parking guidance system for Milngavie Town Centre	East Dunbartonshire Council decriminalised parking enforcement in spring 2014. It is proposed the parking charging will be introduced across town centre car parks in 2015. As yet no progress has been made on the introduction of a parking guidance system.
Rail P&R at Kilmardinny (only to be taken forward as part of the development proposal)	Provision of a rail halt and associated parking.	Included within Local Plan 2 and the proposed Local Development Plans Main Issues Report.
Quality Bus Corridor (QBC)	a) Bus information and signalling technology on the A81. b) Burnbrae Roundabout to Boclair Road – southbound bus lane (24 hour). c) Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only).	Money from the Bus Improvement Fund was secured to provide these facilities, but as yet no visible progress on delivery.
Rail improvements	a) Longer trains to cater (increase some 3 car units to 6 car). b) Improved integrated ticketing between bus and rail.	Unknown SPT and partners working towards introducing integrated ticketing across different modes and operators. SPT's Zonocard currently provides this service.
Enhanced Walking and Cycling	a) Provide pedestrian facilities on desire lines (including link to rail stations). b) New pedestrian crossing (Burnbrae Roundabout to Hillfoot)	Improvement to the pedestrian environment around Hillfoot Station was included within the recent development of a travel hub. New crossing to be installed by the developer of the new Waitrose supermarket, which is currently being constructed.

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Option	Components schemes	Status
	c) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station.	No visible progress on this option.
	d) Completion of the cycle link between Mains estate and Allander Leisure Centre.	No visible progress on this option.
	e) Review all existing cycle lanes to ensure compliance with 'Cycling by Design'.	No visible progress on this option.
	f) Full implementation of East Dunbartonshire Cycling Strategy with respect to the study area – specific proposals have been identified for Bearsden and Milngavie.	It is understood that East Dunbartonshire Council is currently progressing this option. The Council are currently implementing a segregated two-way cycleway on the A81, called the "Bearsway".
Bus Feeder services	a) New shuttle bus connecting residential areas to stations.	No visible progress on this option.
	b) Adapting existing bus routes to serve stations.	No visible progress on this option.
	c) Super-Taxi service	No visible progress on this option.
Junction Improvements	a) TROs/buildouts where on-street parking is close to a junction to ensure good visibility splays.	This option is being considered alongside the "Parking controls in town centres" option
	b) Implementation of a gyratory at the A81/Roman Road / Roman Drive junction (incorporating ban of right turn from Boclair Road).	No visible progress on this option.
Variable Message Signs	Electronic signs to warn drivers of any traffic issues on the route, or adjoining routes.	No visible progress on this option.
Highway Options to enforce or reduce speeds.	a) Carriageway marking/localised narrowing. b) Vehicle activated speed warning signs.	No visible progress on this option.

1.6 Rail Station at Allander

It should be noted that the client group have engaged AECOM to undertake a high level review of the feasibility, both from an engineering and operational perspective, of implementing a rail station at Allander, near to Kilmardinny, Bearsden. This is primarily for two reasons;

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1. As a major option developed in 2008, support by analysis by Atkins in 2003, the client group requested a more detailed analysis of this option; and
2. Bearsden North Community Council engaged Oxford Rail Studies (ORS) to undertake a study which considered the feasibility of a rail station at Allander from primarily an engineering point of view. This study suggested that a station is potentially feasible. It was considered important to the client group that the findings of the ORS report is considered and understood.

This review was undertaken in parallel to this STAG study - the report is appended to this report as Appendix B.

Notwithstanding the above, it is important to note that despite the additional work / focus on the rail station at Allander, this study is an objective led, not solution led process, and there are no predetermined options.

1.7 Structure of the Report

Following this introductory Chapter, the remainder of this report is set out as follows:

- Chapter 2 – Planning Policy Context;
- Chapter 3 – Evidence Review;
- Chapter 4 – Stakeholder Consultation;
- Chapter 5 – Planning Objectives and Constraints and Uncertainties;
- Chapter 6 – Option Development and Sifting;
- Chapter 7 – STAG Part 1 Appraisal;
- Chapter 8 – STAG Part 2 Appraisal;
- Chapter 9 – Monitoring and Evaluation;
- Chapter 10 – Risk and Uncertainty; and
- Chapter 11 –Conclusions.

In addition, Appendix A contains the consultation material and feedback from the consultation event, Appendix B contains a high level feasibility of a new rail station at Allander. Appendix C contains the AST1 tables, and Appendix D contains the AST2 tables. Appendix E details the scheme and cost assumptions used during the development of options, and Appendix F details a Policy Assessment Framework exercise undertaken during STAG 2.

2 Planning Policy Context

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2 Planning Policy Context

2.1 Introduction

The aim of this chapter is to provide a brief overview of the national and local policy relating to this study, which will influence the appraisal process. This includes a review of policy at national, regional and local levels relating to walking, cycling, public transport, private car and planning issues.

For ease of reference this section has been broadly separated into:

- Transport Policy – A review of pertinent transport policy documents at national, regional and local levels; and
- Planning Policy - A review of pertinent planning policy documents at national, regional and local levels.

2.2 National Transport Policy Documents

2.2.1 National Transport Strategy

The Scottish Government and Transport Scotland published a National Transport Strategy (NTS) for Scotland in December 2006. The NTS sets out the context for the activities of Regional Transport Partnerships and local authorities, and further develops the Scottish Government's aims and objectives for transport, as set out within the "Scotland's Transport Future - The Transport White Paper". The White Paper sets out the Scottish Government's vision for transport, and its proposals sought to reform transport delivery at national and regional levels across Scotland. The white papers objectives were to;

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

The NTS thus considers Scotland's transport needs, and the needs of travellers, over the medium to long-term.

The NTS identifies the following relevant trends and projections in transport:

- Overall growth in travel: in Scotland, the estimated average distance travelled per person per year increased by 59% between 1985/86 and 2004/05;
- Increasing dominance of the car: 23% of journeys under one mile and 57% of journeys between one and two miles were undertaken by car in 2004/05. Latest forecasts suggest road traffic in Scotland will grow by 12% between 2005 and 2010 and by 22% between 2005 and 2015;
- A recovery in bus and rail passenger numbers: bus passenger numbers have risen in six of the seven years before the report was published. Rail passenger numbers have been rising and are now comparable with 1960s levels.

The NTS goes on to outline the key factors influencing the trends above as follows:

- Economic growth;
- Rising disposable income;
- Changes in land use patterns; and
- Transport users do not pay full costs of journeys.

Based on the trends and factors outlined above, the NTS identifies the key challenges affecting transport in Scotland as follows:

- Congestion and journey time reliability: In 2005, 11% of car journeys were reported as being delayed by congestion, with this figure rising to nearly 25% of journeys undertaken during weekday rush hours;
- Emissions: The transport sector is the second biggest contributor of greenhouse gas emissions in Scotland, behind energy supply, contributing 22% of emissions. Between 1990 and 2004 the emissions from the transport sector increased by 7%, and during the same period, emissions from aviation increased by 50%; and

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- Social inclusion issues: Access to high quality affordable public transport is particularly important for certain groups, such as those seeking education, training or employment, older or disabled people or those with young children. Access to transport can be a particular challenge for those living in disadvantaged communities. Improving public transport for all is a key requirement.

The key high-level expectations detailed in the NTS are therefore summarised as follows, each one having significant relevance to the A81 Corridor Study.

- Delivery of the White Paper objectives (described above);
- 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.

The NTS is also accompanied by three documents relating to:

- **Scotland's Railways**, where the vision is to:
 - Offer world class train services which connect the city regions and major towns, providing journey times and a quality of service that is competitive with car and air.
 - Provide access to inter-urban services through high quality interchange stations that link with feeder rail services from intermediate stations and offer easy transfer from car, bus, tram, subway, ferry, cycle and walking.
 - Make commuter train services attractive to passengers by ensuring that the journey to work is a high quality, reliable travel option and by ensuring that rolling stock choices take account of environmental considerations, including air quality and noise emissions.
 - Support heavily loaded freight trains carrying an increasingly wide range of products with effective interchange to road and sea.
 - Achieve a rail industry that delivers efficiently and effectively to support the aims and vision.
- **Bus Action Plan**, which incorporates:
 - A clear vision of how local bus services meet local needs;
 - Greater use of bus plans with explicit actions to deliver vision;
 - Close partnership working between transport authorities and bus operators; and
 - Improved communication with all stakeholders.
- **Freight Action Plan**, which aims to:
 - Enhance Scotland's competitiveness;
 - Support the development of the freight industry in Scotland;
 - Maintain and improve the accessibility of rural and remote areas;
 - Minimise the adverse effect of freight movements on the environment, particularly through the reduction of emissions and noise; and
 - Ensure freight transport policy integration.

2.2.2 A Walking Strategy for Scotland

The Scottish Government published "Let's Get Scotland Walking – The National Walking Strategy" in 2014. The strategic aims of the document are;

- Create a culture of walking where everyone walks more often as part of their everyday travel and for recreation and well-being;
- Better quality walking environments with attractive, well designed and managed built and natural spaces for everyone; and
- Enable easy, convenient and safe independent mobility for everyone.

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2.2.3 National Cycling Strategy

The Scottish Government's Cycling Action Plan for Scotland (CAPS, 2010), is the flagship policy for the promotion of cycling in Scotland, and clearly states many of the reasons for the promotion of cycling, along with a vision as follows:

“Cycling is a fun, healthy and a virtually free activity for those who have access to a bike. Learning to cycle safely can help young people become confident, independent teenagers and adults. Designing our communities to make walking and cycling safe and easy, leads to increased visibility of cyclists and pedestrians and helps create attractive places to live. Choosing to commute to work and to school by bike helps reduce congestion in our towns and cities, is one of the cheapest forms of travel and can help maintain a healthy mind and body. That is why we would like to see, by 2020, 10% of all journeys in Scotland made by bike”

This vision, for 10% of everyday journeys in Scotland to be made by bike by 2020, was reinforced in the follow-up to this document, CAPS 2013, published in June 2013. CAPS 2013 considers various themes in the promotion of cycling, such as infrastructure, education, marketing and safety. Consideration should also be given by local authorities to:

- The promotion of safe local links between town and countryside;
- Promoting cycling as an alternative to travel by car with regard to recreational and leisure cycling; and
- Consider the multi-purpose value of cycling investment for health, leisure and transport interests.

2.2.4 An Action Plan for Buses

The Scottish Government published 'Moving into the Future – An Action Plan for Buses in Scotland' alongside the National Transport Strategy in 2006.

The action plan states that “to improve bus services through effective transport planning we need:

- A clear vision of how local bus services meet local needs;
- Greater use of bus plans with explicit actions to deliver vision;
- Close partnership working between transport authorities and bus operators; and
- Improved communication with all stakeholders.”

While “to support the development of the bus industry in Scotland we need:

- Targeted financial support that meets transport aims (e.g. encouraging investment in cleaner and more innovative buses);
- Legislation that supports transport aims;
- Consideration of national standards where required;
- Use of Quality Partnerships and Quality Contracts where appropriate;
- Involvement of all stakeholders; and
- Promotion of accessibility and social inclusion.

2.2.5 Rail Utilisation Strategy (Generation Two)

The Scotland Rail Utilisation Strategy (Generation Two) (RUS) builds on the Scotland RUS established in 2007. The RUS recommends an industry strategy looking in detail to 2024 as well as setting out the longer term vision for the route.

A Scotland specific utilisation strategy has been produced which;

- Considers passenger demand across the network;
- Freight demand across the network; and
- Gaps in service provision, it is noted that overcrowding is an issue on some suburban routes into Glasgow. Track utilisation is said to be high across many parts of the network.

The document also states:

“In order to address the gaps a number of options were identified for development and testing. They have been appraised using Scottish Transport Appraisal Guidance (STAG) principles and financially reviewed where appropriate.”

Within the RUS is guidance for promoters and developers regarding the investment in rail stations. The “Investment in Stations” document, published in 2011, states five specific areas need to be covered in the early stages of developing a new rail station; these are;

- A capacity utilisation statement;
- A statement of reasons for the promotion of a new station;

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- A summary of how a new rail facility is the best means of delivering transport improvements, the promoter must demonstrate that all modes have been considered;
- Basic station design and operation requirements; and
- A site suitability agreement.

2.2.6 Summary National Transport Policy

Predominantly current national transport policy themes and objectives remain the consistent with those in 2008. There is a policy focus on providing a sustainable transport network which promotes accessibility, environment, integration, health and economic vitality. The changes in national transport policy are unlikely to have a significant impact on the appraisal exercise undertaken in 2008, and the interventions generated.

2.3 Regional Transport Policy Documents

2.3.1 SPT Regional Transport Strategy

'A Catalyst for Change' – The Regional Transport Strategy (RTS) for the West of Scotland 2007-2021 was published in 2007 by SPT.

The vision of the RTS is:

"A world-class, sustainable transport system that acts as a catalyst for an improved quality of life for all".

The shared goals of the RTS are to:

- Develop the economy;
- Promote social inclusion and equality; and
- Improve health and protect the environment.

The objectives of the RTS are:

- **Safety and Security:** To improve safety and personal security on the transport system;
- **Modal Shift:** To increase the proportion of trips undertaken by walking, cycling and public transport;
- **Excellent Transport System:** To enhance the attractiveness, reliability and integration of the transport network;
- **Effectiveness and Efficiency:** To ensure the provision of effective and efficient transport infrastructure and services to improve connectivity for people and freight;
- **Access for All:** To promote and facilitate access that recognises the transport requirements of all;
- **Environment and Health:** To improve health and protect the environment by minimising emissions and consumption of resources and energy by the transport system;
- **Economy, Transport and Land-Use Planning:** To support land-use planning strategies, regeneration and development by integrating transport provision.

Regional Transport Strategy Delivery Plan 2014 – 2017

The Delivery Plan sets out a framework for SPT to deliver the RTS outcomes, objectives and initiatives over the next three years. The delivery plans includes references to the following;

- Continuing investment in modernising the subway network; to date improvement works have included refurbished stations at Hillhead, Partick, Kelvinhall and Ibrox. Over the next three years St. Enoch, Govan and Buchanan Street stations will be refurbished and design work undertaken for the remaining stations. It is also anticipated contracts for new rolling stock and infrastructure will be awarded.
- SPT will continue to seek a solution for multi-modal / multi-operators smarted, integrated ticketing in the SPT area.
- SPT, working together with Glasgow City Council, will deliver the bus rapid transit scheme, "Fastlink", which will primarily link Glasgow City Centre with the New South Glasgow Hospital in Govan. SPT in partnership with Renfrewshire Council will continue to explore an extension beyond Govan to Renfrew and Braehead.
- The partnership has invested around £4 million in road infrastructure improvement projects since 2007, which includes the A81.

This update study has been highlighted within the delivery plan as a strategic road enhancement within the improved connectivity outcome.

2.3.2 Summary of Regional Transport Policy Documents

The overarching themes of the RTS remain unchanged; therefore, they are unlikely to alter the analysis and conclusions of the 2008 study. However, significant progress has been made towards delivering the RTS outcomes by SPT and partner

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organisations. This will improve accessibility, social inclusion, safety, attractiveness of transport and integration within the SPT area, including East Dunbartonshire. Investment in road infrastructure, cycle facilities and bus infrastructure has been made along the A81, with further investment proposed.

The subway modernisation program will improve the attractiveness, operation, safety and security of the system; this may encourage more patronage from Bearsden and Milngavie. Interchange is possible between bus and rail services from the study area and the subway network. Fastlink will also enhance connectivity between Bearsden and Milngavie with south west Glasgow via interchange at Glasgow City Centre, particularly the new hospital.

2.4 Local Transport Policy Documents

2.4.1 East Dunbartonshire Local Transport Strategy

EDC published the current Local Transport Strategy (LTS) in late 2013, covering the period 2013-2017. The LTS sets out the local context: an ageing population and low deprivation, low unemployment and high car ownership compared to the rest of Scotland, although these trends slowed or reversed in light of the recent economic downturn. The LTS sets out the Council's position in relation to transport policy. EDC and the Community Planning Partnership's overarching vision is:

"Working together to achieve the best with the people of East Dunbartonshire"

The Council sets out seven transport objectives within the LTS:

- Delivering a **safe** transport network across all modes;
- Improving the **health and wellbeing** of the community through promoting sustainable travel, attractive well designed streets and active travel routes throughout East Dunbartonshire;
- Enhancing the **accessibility** of services, facilities and businesses in East Dunbartonshire, which promotes social inclusion;
- Delivering **reliable and efficient** public transport services through close working with key transport partners and providers in order to achieve modal shift;
- Ensuring that existing roads and footways are **maintained** incorporating high environmental and design standards;
- Developing a transport network that supports both the local and wider region through delivering **sustainable economic growth** and travel, while conserving and enhancing the natural and historic environment where possible; and
- Ensuring that the impacts from transportation on the **environment** and air quality are mitigated in order to work towards the targets set out in the Climate Change Act 2008.

The LTS includes a review of the Council's previous LTS from 2009-2013 and lists the transport related achievements accomplished during its lifetime, improvements to the A81 route corridor is listed as one of these achievements. Outstanding issues from the previous LTS are also listed.

The LTS presents a number of interventions aimed at improving the transport situation in East Dunbartonshire across all modes. These measures range from localised interventions to more large scale Council wide solutions. Interventions which could have relevance to the A81 corridor are as follows;

- *"Work with partners to deliver parking and infrastructure improvements, such as shelter facilities, associated with cycling at railway stations"*
- *Work with bus operators and SPT to develop real time information on primary bus routes and at key stops*
- *Undertake a technical study to determine the merits, costs and feasibility of developing new rail stations at Woodilee, Westerhill and Allander*
- *Work with transport partners to enhance integration between bus and rail services in East Dunbartonshire through improved timetabling*
- *Continue to improve bus infrastructure including the upgrade of shelters and lay-bys and measures such as priority signals and lanes, which will be undertaken in line with high environmental and design standards*
 - o *Road network adjacent to Hillfoot Railway Station*
 - o *A803 through Bishopbriggs*
 - o *Kirkintilloch town centre*
 - o *A81 Corridor through Bearsden and Milngavie*
- *Assess and implement bus priority measures such as signals and lanes to reduce bus journey time and improve punctuality*
- *Work with bus operators to assess the viability of developing new express bus services*
- *Work with SPT to develop an integrated transport network that could improve connectivity between residential areas and railway stations*

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- *Investigate and work with SPT and bus operators to explore an opportunity to improve the current frequency of bus services between Bearsden / Milngavie and Bishopbriggs / Kirkintilloch*
- *Develop and implement travel hubs on the A81 Route Corridor (Hillfoot, Kessington and Burnbrae)*
- *Work with partners to promote priority car share parking at railway stations*
- *Examine the feasibility of either increasing car park capacity or develop a Park & Ride facility adjacent to railway stations and bus routes and deliver proposed intervention(s)*
- *Continue to deliver improvements to the A81 Route Corridor to mitigate congestion and improve air quality (RP3)”*

Additionally the LTS sets Council wide actions, those which are relevant to the A81 include;

- *“Identify opportunities and develop the active travel network across East Dunbartonshire and incorporating existing local, regional and national routes, which will be undertaken in line with high environmental and design standards*
- *Remove unnecessary or redundant street furniture, install the appropriate signage where required and improve information relating to active travel routes across East Dunbartonshire*
- *Work with SPT to improve ticketing through integration across all modes of public transport*
- *Develop and manage a Quality Bus Partnership with operators and SPT in order to improve services, standards and reliability*
- *Ensure the Council maintains an up-to-date travel plan*
- *Ensure Transport Assessments and Travel Plans are submitted when assessing developments*
- *Assess the benefits and install electronic information signs to warn drivers of delays, incidents and journey time Information*
- *Investigate and deliver the appropriate junction and road improvements where applicable to enhance operation and safety and reduce queuing and vehicular delay.*
- *Implement the parking strategy in relation to both on and off street proposals*
- *Manage parking issues through the introduction of decriminalised parking enforcement*
- *Identify appropriate locations and implement the SCOOT system to improve traffic management*
- *Monitor and review demand for parking in town centre car parks across East Dunbartonshire to manage capacity and operations*
- *Provide the relevant level of maintenance activities in relation to roads, footways, street lighting, car parks, cycle ways and bridges.”*

2.4.2 Core Paths Plan

The East Dunbartonshire Core Paths Plan lists the following paths of relevance to the A81 corridor as Core Paths:

- Path 12: Craigdhu Wedge East West Spur. Ties into A81 from west, to south of Burnbrae Roundabout;
- Path 13: Milngavie Precinct to Glasgow Road via Lennox Park (town centre southeast to A81/Auchenhowie Road);
- Path 14: Milngavie Reservoir – partly adjacent to A81 Strathblane Road at north of corridor;
- Path 16: Douglaston Loop – rural setting looping first south from A81 at very north end of corridor;
- Path 17: Allander Way from Glasgow Road to Glasgow Boundary (south east from A81/Auchenhowie Road); and
- Path 13 and Path 17 join across the A81/Auchenhowie Road junction.

2.4.3 Summary of Local Transport Policy Documents

The LTS sets objectives across all modes of travel within the council area, with a particular focus on encouraging active travel and increased public transport usage. The ultimate ambition is to encourage modal shift away from the private car. Generally the themes of the LTS remain broadly similar to the previous LTS which was discussed in the 2008 study. The actions for the corridor have been informed by previous study, particularly the 2008 study.

2.4.4 Summary of Transport Policy

Overall the transport policy suite covers all modes and sets ambitions to encourage greater active and sustainable travel which will reduce private car usage. Naturally the LTS which is informed by local problems and opportunities is more prescriptive, detailed and relevant to transport interventions in the study area, whilst taking cognisance of national and regional policy.

2.5 National Planning Policy Documents

2.5.1 National and Planning Policy Framework

Transport and planning policies at a national level are determined by the Scottish Government. The overall transport context is set by the National Transport Strategy which was informed by the earlier transport White Paper entitled ‘Scotland’s Transport Future’. Planning issues are covered by Scottish Planning Policies and Advice Notes.

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Scotland's Transport Future

Scotland's Transport Future was published by the Scottish Government in June 2004. The policy document outlines a vision for Scotland's transport future 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.”

The overall aim of the strategy is “to promote economic growth, social inclusion, health and protection of our environment through a safe, integrated, effective and efficient transport system”.

The objectives, which expand on this aim, are to:

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

2.5.2 National Planning Framework 3

The National Planning Framework 3 (NPF3) sets out the Scottish Government's development priorities over the next 20-30 years and identifies national developments which support the development strategy. Like the two previous National Planning Frameworks, NPF3 will be a spatial expression of the Government's Economic Strategy. All local development plans in Scotland must take into account the vision set out in the NPF3.

Within the NPF3 Spatial Priorities it is identified that infrastructure capacity is limiting the delivery of new housing. Although new infrastructure may be developed to deliver greater capacity it is considered more viable and sustainable to make best use of existing infrastructure to maximise their capacities. The document is explicit in its support for increased levels of walking and cycling both within urban and rural areas. The document also supports transport improvements across all modes to deliver strategic efficiencies.

2.5.3 Scottish Planning Policy

The 2014 Scottish Planning Policy (SPP) acts as Scotland's overarching policy framework. It is a statement of Scottish Government policy on how nationally important land use planning matters should be addressed across the country. It provides policy guidance and support on how development plans, applications and appeals should be dealt with, aiming to promote consistency in the application of policy across Scotland whilst simultaneously allowing sufficient flexibility to reflect local circumstances.

The SPP provides policy guidance and support to the Scottish Government's transport vision through the integration of land use, economic development, environmental issues and transport planning.

The SPP replaces the previous 2010 SPP and a number of former policy documents including the former SPP17 – Planning for Transport. Transport is now referenced within the section titled “A Connected Place” within the main SPP report.

The policy principles for promoting sustainable and active travel are;

- optimise the use of existing infrastructure;
- reduce the need to travel;
- provide safe and convenient opportunities for walking and cycling for both active travel and recreation, and facilitate travel by public transport;
- enable the integration of transport modes; and
- facilitate freight movement by rail or water.

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SPP makes it clear that new development should be served by public transport services which connect to a range of destinations. Development plans should clearly identify new transport infrastructure requirements, supported by robust analysis.

The latest SPP is more focused on maximising opportunity from existing infrastructure, rather than developing completely new infrastructure. SPP integrates with the placemaking, connectivity, active travel and sustainability agendas in a more ordered way than the previous SPP. Regarding new rail station development;

“The strategic case for a new station should emerge from a complete and robust multimodal transport appraisal in line with Scottish Transport Appraisal Guidance. Any appraisal should include consideration of making best use of current rail services; and should demonstrate that the needs of local communities, workers or visitors are sufficient to generate a high level of demand, and that there would be no adverse impact on the operation of the rail service franchise. Any appraisal should include consideration of making best use of current rail services”

In addition, SPP states that funding partners must be identified before rail proposals are included within a development plan and prior to detailed technical assessment and design work being undertaken.

The SPP sets out an order of priority for development planning which promotes access to local amenities through active travel and more sustainable modes of transport in the following order of priority: walking, cycling, public transport and finally, cars. It also indicated that plans should facilitate integration between transport modes.

It also stated that planning permission should not be granted for significant travel-generating uses at locations which would increase reliance on the car and where cycling and walking links to local facilities cannot be made available, where the distance to public transport facilities is too great or where the Transport Assessment does not satisfactorily identify ways in which sustainable transport targets can be met.

2.5.4 Designing Streets

Designing Streets is the first policy statement in Scotland for street design and aims to make a move from the rigid application of standards towards situation specific design solutions. Streets have two main functions: place and movement, Designing Streets aims to place more emphasis on the sense of place than has previously been seen.

2.5.5 Summary of National Planning Policy

The purpose of national planning policy is to promote sustainable economic development, which includes prioritising sustainable transport links and reducing the need to travel. SPP, the most recent policy is clear in its promotion of sustainable travel, particularly active travel, and making best use of existing infrastructure. Overall, national planning documents broadly represent the policy context found in 2008 and the transport hierarchy remains the same, although there is a notable change in tone regarding rail interventions.

2.6 Regional Planning Policy

2.6.1 Glasgow and Clyde Valley Strategic Development Plan

The Glasgow and Clyde Valley Strategic Development Plan Joint Committee is described as a Local Government Joint Committee comprising the eight separate Local Authorities listed below working together on strategic development planning matters:

- Glasgow City;
- East Dunbartonshire;
- North Lanarkshire;
- South Lanarkshire;
- East Renfrewshire;
- Renfrewshire;
- Inverclyde; and
- West Dunbartonshire.

The Strategic Development Plan (SDP) provides “a development strategy over the next 20 years of where new development should be located and a policy framework to help shape good quality places and enhance the quality of life in the city region. The Plan focuses on growing the economy of the city region in a low carbon and sustainable manner and setting out a planning framework which positively encourages investment within Glasgow and the Clyde Valley.”

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In the competitiveness section of the SDP it is stated that if low carbon economy in the city-region is to be achieved; climate change targets are to be met; the city-region's carbon footprint to be minimised; and the vision is to be delivered by 2035, transport within the city-region must undergo a significant step change in terms of

- an increase in the levels of active travel;
- the level and quality of public transport provision, increasing patronage and integration; and
- the scale of shift from private to public modes.

The SDP identifies 14 public transport corridors across the city region, all of which converge on the city centre of Glasgow. The corridors are based on public transport corridors identified within the SPT funded the "West of Scotland Conurbation Public Transport Study". The A81 is the core road within corridor number 14. The options for improving transport along this corridor are to improve / develop rail service frequency and improve core bus frequencies and routings. Neither Milngavie nor Bearsden were identified as strategic economic centres.

The SDP also identifies Strategic Economic Investment Locations (SEIL) throughout the conurbation; these areas are safeguarded and promoted for economic investment and development. The West of Scotland Science Park and Clydebank Riverside are the two closest SEILs to the study area. The Science Park is safeguarded for life sciences and green technologies, and it straddles the border between East Dunbartonshire and Glasgow on A81 Maryhill Road. The Clydebank Riverside, is safeguarded for business / financial sector and life sciences, this may provide employment opportunities for residents in the study area.

In summary the SDP reflects the ambitions of national / regional planning and transport policy ambitions, notably the SDP does not specifically support improved transport infrastructure but it does support service improvements. Service improvements are generally subject to commercial considerations which the client group have limited influence. Local development and SEILs may provide greater economic and employment in and around the study area.

2.7 Local Planning Policy

2.7.1 East Dunbartonshire Adopted Local Plan 2

The strategic policy direction is sustainable growth whilst maintaining the four guiding principles of the 2005 Local Plan which are:

- Sustainable growth;
- The sequential approach;
- The integration of land uses and transportation; and
- Social inclusion.

EDC adopted the Local Plan 2 in October 2011. The main policies which concern transportation, are;

- **TRANS 1** – Development and Transport, the Council will take an integrated approach to development and transport with the aims of ensuring that the need for travel is reduced, that active and travel by public transport is facilitated and encouraged and the effect of air quality is ameliorated;
- **TRANS 2** – Road Design Guidance and Parking Standards, development proposals must ensure that road layout and design ensures the safety of all users;
- **TRANS 4** – Rail Network and Park & Ride Facilities, the Council will support proposals which encourage extended capacity of rail infrastructure as opportunities arise; and
- **TRANS 5** – Active Travel Network, the Council will develop proposals defining and enhancing a safe and comprehensive active travel network, incorporating footpaths, cycleways and bridleways.

TRANS 4 also states "*The Council will define and reserve sites...for new rail halts at Woodilee, Westerhill and Allander, pending an investigation...into the merits, costs and feasibility of these facilities*". It also affirms the Councils support of the "*principle of expanded park and ride capacity, related provision for active travel (including secure cycle storage) and convenient feeder bus service*".

This policy is still in place although at the time of this study EDC were in the process of implementing their Local Development Plan. The Council published their Main Issues Report in 2013. The main issue report reinforced the local transport strategy objectives and actions regarding transport and where appropriate identified areas of land for particular interventions. The main issues report maintains the Council's ambition to assess the merits, costs and feasibility of a rail station at Allander.

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2.7.2 Emerging Local Development Plan (LDP)

It should be noted that EDC are currently progressing their new local development plan which will replace Local Plan 2. In 2013 the Council published their Main Issues Report (MIR) to present the Councils understanding and ambitions for the LDP and seek the views of residents and stakeholders regarding land planning issues and opportunities prior to drafting the LDP. The MIR identified key principles which should guide the LDP, which are;

- *“1. Promoting sustainable economic growth*
- *2. Ensuring good design and strong sense of place*
- *3. Encouraging regeneration by prioritising brownfield development over greenfield release*
- *4. Addressing climate change challenges by promoting sustainable development*
- *5. Integrating new development with active and sustainable transport networks”*

The MIR also discusses issues and including housing, town centres, environment and transport across each of the towns. For Bearsden and Milngavie the preferred option includes;

- Developing public transport infrastructure and paths for active travel to serve Kilmardinny, including improved links to Hillfoot, investigating the viability of a rail park and ride facility and developing bus priority measures on key routes;
- Ensuring reasonable parking provision is provided to address the needs of the town centres and compliment the transport hubs, however this should not encourage an increase in car travel to town centres;
- Continue to implement options developed in the 2008 study.

2.7.3 Economic Development Strategy

EDC has adopted a new Economic Development Strategy (EDS) for the period 2013 to 2016, this policy is complementary to the Local Transport Strategy and the emerging Local Development Plan. The EDS lays out a vision and strategic priorities for East Dunbartonshire and is aimed at supporting residents, businesses and communities as well as contributing to growth at the national scale.

The overarching purpose of this Economic Development Strategy is:

“The creation of more, high quality jobs for the area by focussing on business creation and growth and the retention of balanced communities with enhanced infrastructure and services.”

This policy has developed a number of actions / projects which support the Strategic Priorities specified in the strategy, designs to improve commercial and economic development. Of particular influence on this study is Strategic Priority 3: *“Ensure that the key enablers of the economy are in place to support business to aid economic recovery and growth providing access to employment opportunities for East Dunbartonshire’s Workforce”*. A number of transport options have been identified to help deliver this priority, which include:

- *Ensure that future investment in paths, cycleways and other infrastructure projects and enhances links between natural tourism assets, town centres and villages;*
- *Undertake a technical study to determine the merits, costs and feasibility of developing new rail halts at Woodilee, Westerhill and Allander; and*
- *Implement Decriminalised Parking and improve parking management in key locations – town centres and railway stations*
- *Continue to improve walking, cycling and public transport infrastructure on the key transport corridors in East Dunbartonshire.”*

2.7.4 Summary of Local Planning Policy Documents

Local planning policy supports the national desire to promote sustainable economic development; however, there is particular support for integrating land uses and promoting active travel in particular. In addition there is a clear ambition to investigated the feasibility of three rail facilities across the Council area, including Allander adjacent to the A81 and improve public transport links in general.

2.7.5 Summary of Planning Policy

Generally national, regional and local planning policies have similar ambitions for promoting sustainable economic development, which includes supporting greater sustainable travel. In relation to the study area although the ambitions of the local policies and national / regional policies are similar the method of achieving them differs slightly. National policies generally supports making best use of existing infrastructure, whilst the regional policy specifically supports improvements to public transport services. Local policy appears to support infrastructure interventions such as bus priority measures, rail stations and park and ride. These improvements are however extensions / alterations to existing infrastructure.

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2.8 Summary

A comprehensive review of policy documents at national, regional and local level has been undertaken. Significant themes, common to many of the documents relate to:

- Ensuring social inclusion;
- Protecting the environment;
- Growing the economy;
- Encouraging more sustainable travel;
- Improving safety; and
- Integrating transport and land use.

Generally the themes, objectives and actions of the policy suite at national, regional and local levels remain consistent with those considered within the 2008 Study. The review of policy documents identified a number of key issues to consider when identifying potential options to develop the transport corridor.

Firstly, the need to improve public transport for all, as noted in the NTS; more specifically the SDP identifies improvements to rail frequency and bus services frequency and routing. Therefore, the options developed should seek to improve public transport provision in the study area. In addition, policies at a national and local level referred to social inclusion and the ageing population which are also important to consider this when assessing transport solutions.

The review identified that support for active travel is more clearly represented compared with the review conducted as part of the 2008 Study. The SPP refers to place making, connectivity and active travel, highlighting the need to consider walking and cycling with regards to street design, connections to places of interest as well as the quality of active travel measures implemented. Furthermore, the Designing Streets policy statement emphasises the need to consider the sense of place during design.

The need for an integrated transport network is stated throughout the policies, including the Scotland's Transport Future document. This integration of public transport and active travel is considered critical in the promotion of sustainable travel. As well as the integration between transport modes, policies have also identified a need to integrate land use and transport; for example, national policy stated planning permission should not be granted for significant travel generating uses at locations which would increase reliance on the car where walking / cycling links are not available and the distance to public transport is too great. This will be particularly important to consider with regards to the Kilmardinny development and associated transport improvements that will need to take place.

There is a more clearly defined position regarding rail station proposals. As discussed above, the Scottish Planning Policy highlights the need for promoters of new rail station facilities to undertake a STAG appraisal, which includes consideration of demand and impact on the existing network. Furthermore, funding partners must be identified before any rail proposals are included within a development plan. In addition, the SPP noted the importance of maximising opportunity from existing infrastructure rather than developing new infrastructure.

3 Evidence Review

Capabilities on project:
Transportation

3 Evidence Review

3.1 Introduction

This Chapter provides the background and context for the study area and will consider socio-economic characteristics, economic development, transport, environmental and safety issues. The analysis following builds upon the data in the 2008 Study, which was based mainly on data from the 2001 Census, and highlights the changes following the 2011 Census.

The following sections will deal with each of these aspects in turn, considering the study area, East Dunbartonshire and Glasgow City as the study area provides a strong functional link between the two authorities. A review will then be undertaken of the key problems and opportunities based on all available data concerning the above issues, which provides an account of the 'real' problems facing the study area, as opposed to any 'perceived' issues that may arise from the consultation process.

For ease of reference this chapter has been broken down into the following sub-sections:

- Socio-Economic Characteristics;
- Economic Development;
- Transport Provision;
- Travel Patterns and Choices; and
- Environment.

It should be noted that the majority of data and statistical sources discussed in this chapter is subject to sampling and non-sampling errors.

3.2 Socio-Economic Characteristics

3.2.1 Population

As of April 2011, the residential population within the study area was estimated to be some 40,036 persons, a decrease of 1.5% from 2001. Whilst in absolute terms population decline has been modest, it has not fallen as much for East Dunbartonshire as a whole. However, in relative terms population decline within the study area has been high in the context of population growth in Glasgow.

Table 3.1 shows a temporal and spatial comparison of population between the study area, East Dunbartonshire and Glasgow.

Table 3.1 Usual Residential Population

Year	Study Area	East Dunbartonshire	Glasgow
2001	40,800	108,200	577,900
2011	40,200	105,000	593,200
Change	-1.5%	-2.9%	2.7%
CAGR	-0.2%	-0.3%	0.3%

Source: 2001 Data SCROL (Scottish Census Results Online), 2011 data Scotland's Census 2011. Figures rounded to the nearest hundred.

CAGR: Compounding (annual) average growth rate.

The composition of the population has changed between 2001 and 2011, as shown in Table 3.2; the proportion of the population in the study area over 65 has increased. This is similar to the overall trend in East Dunbartonshire, however in contrast, in the proportion of the population over 65 has fallen significantly. The proportion of the working age population has remained broadly similar between 2001 and 2011 in both the study area and council area.

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Table 3.2 Population Composition Change

Year	Age Bracket	Study Area	East Dunbartonshire	Glasgow
2001	Under 16	8,361	22,049	106,501
	16 - 64	24,140	66,234	366,080
	Over 65	8,262	19,960	105,288
2011	Under 16	7,276	18,695	95,512
	16 - 64	24,299	65,851	415,272
	Over 65	8,610	20,480	82,461
Change	Under 16	-13%	-15%	-10%
	16 - 64	1%	-1%	13%
	Over 65	4%	3%	-22%

Source: 2001 Data SCROL (Scottish Census Results Online), 2011 data Scotland's Census 2011.

3.2.2 Education

A significant proportion of residents within the study area attained a Level 4 (College Higher National Diploma or University) equivalent qualification or higher. As illustrated in Table 3.3, for residents aged over 16, nearly half (44.9%) have attained a Level 4 equivalent qualification or higher which was considerably higher than the East Dunbartonshire area (34.8%) and Glasgow (25.9%).

Due to the changing age group that was asked the question, data from 2001 and 2011 is not directly comparable.

Table 3.3 Education Statistics

Level of Education	Study Area (%)	East Dunbartonshire (%)	Glasgow (%)
No qualification	15.0	19.9	32.0
Highest qualification attained - Level 1	15.2	19.3	19.7
Highest qualification attained - Level 2	15.7	16.3	13.4
Highest qualification attained - Level 3	9.2	9.8	9.0
Highest qualification attained - Level 4 or higher	44.9	34.8	25.9

Source: Scotland's Census 2011.

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3.2.3 Employment

ONS data shows that in East Dunbartonshire as a whole, since 2007, unemployment rose in both East Dunbartonshire and Glasgow as could be expected from the aftermath of the economic and financial crises.

Table 3.4 shows, that approximately 4% of East Dunbartonshire's working age population (16-64) was unemployed in 2007/2008. The level of unemployment rose to 6.8% during the economic downturn then, fell back to 5.7% in period 2013/2014. Unemployment statistics in Glasgow City area were more dramatic in their fluctuation, with the level of unemployment rising from 6.2% to 12.3% and then falling back towards 9.3%.

Table 3.4 Unemployment in East Dunbartonshire and Glasgow City Council areas

Period	East Dunbartonshire		Glasgow City	
	Average Number	%	Average Number	%
2007/2008	2,000	3.9	17,100	6.2
2008/2009	3,500	6.8	27,000	9.7
2009/2010	3,200	6.0	32,600	12.0
2010/2011	3,200	6.4	35,400	12.3
2011/2012	3,200	6.3	34,500	12.1
2012/2013	2,100	3.9	25,200	9.3
2013/2014	2,900	5.7	27,800	9.6

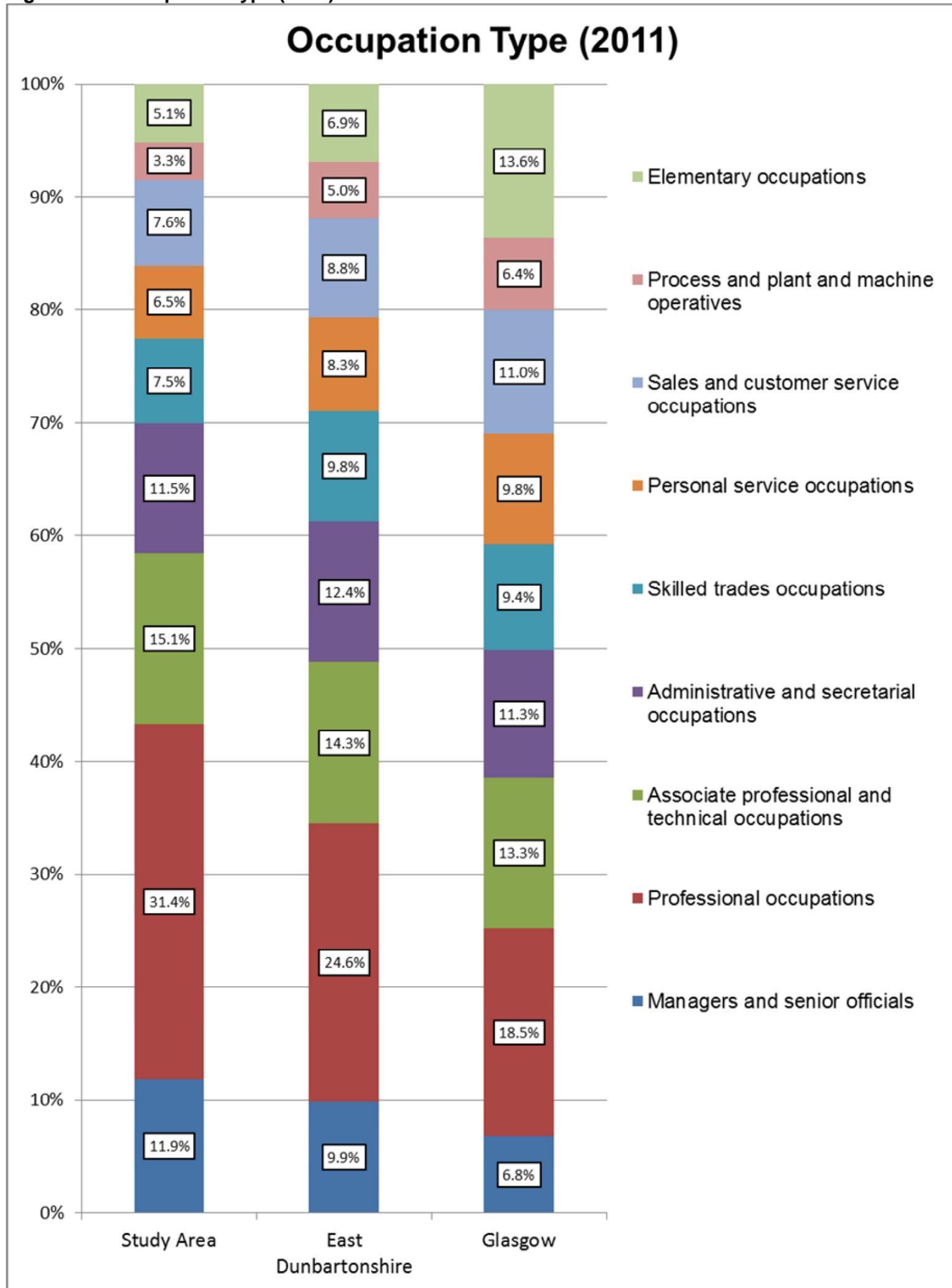
Source: NOMIS/ONS Annual Population Survey, periods defined as October to September of the following year.

As shown in Figure 3.1, high concentrations of workers employed in the Education, Finance, Real estate and Professional, scientific and technical sectors live within the study area relative to other areas in Glasgow. More than two fifths (43.3%) of all employed persons in the study area are employed in either managerial or professional positions compared with 25.3% of employed persons in Glasgow.

Few concentrations of low skilled workers are found within the study area, with those employed in 'Elementary' and 'Process and plant and machine operatives' being 8.4% of the Study Area, 11.9% of East Dunbartonshire and 20.0% of Glasgow.

Capabilities on project:
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Figure 3.1 - Occupation Type (2011)



Source: 2011 data Scotland's Census 2011

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Table 3.5 shows that between 2001 and 2011, the percentage of those in management and senior positions dropped considerably from 18.4% to 11.9% in the study area coupled with a rise of those in professional occupations up from 23.9% to 31.4%. There was a large decrease in all three areas in the 'Real estate activities' industry sector.

There is a relatively equal share of those working in the 'Wholesale and retail trade, repair of motor vehicles and motorcycles' sector, with 12.6% working in the Study area and 15.2% in Glasgow working in these areas.

Table 3.5 Employment by Sector (2011)

	Study Area (%)		East Dunbartonshire (%)		Glasgow (%)	
	2011	Change in share from 2001	2011	Change in share from 2001	2011	Change in share from 2001
Industry Sector						
Agriculture, forestry and fishing	0.2	-0.2	0.4	-0.3	0.3	-0.1
Mining and quarrying	0.3	0.0	0.3	0.0	0.2	0.0
Manufacturing	5.8	-3.1	6.1	-4.1	5.5	-5.3
Electricity, gas, steam and air conditioning supply	0.8	-0.2	0.8	-0.2	0.7	-0.3
Water supply, sewerage, waste management and remediation activities	0.4	0.4	0.5	0.5	0.6	0.6
Construction	6.3	0.5	8.0	0.6	6.9	-0.6
Wholesale and retail trade, repair of motor vehicles and motorcycles	12.6	1.1	13.8	1.6	15.2	1.4
Transport and storage	3.5	-2.5	4.3	-2.3	5.0	-2.8
Accommodation and food service activities	4.5	1.5	4.2	1.2	7.8	2.4
Information and communication	4.3	-1.7	3.7	-3.0	3.9	-3.8
Financial and insurance activities	6.2	0.0	6.3	-0.6	5.2	0.1
Real estate activities	2.1	-13.6	1.7	-11.3	1.5	-11.8

Capabilities on project:
Transportation

	Study Area (%)		East Dunbartonshire (%)		Glasgow (%)	
	2011	Change in share from 2001	2011	Change in share from 2001	2011	Change in share from 2001
Professional, scientific and technical activities	8.4		6.3		5.4	
Administrative and support service activities	2.7	-4.5	3.3	-4.6	5.3	-1.1
Public administration and defence, compulsory social security	6.8		7.2		5.8	
Education	14.6	0.5	12.0	0.9	9.1	0.8
Human health and social work activities	16.0	1.0	16.7	1.4	16.3	2.3
Other	4.6	-0.5	4.6	0.0	5.4	-0.7
Occupation						
Managers and senior officials	11.9	-6.5	9.9	-6.0	6.8	-4.6
Professional occupations	31.4	7.5	24.6	7.2	18.5	5.6
Associate professional and technical occupations	15.1	-2.4	14.3	-3.0	13.3	-1.4
Administrative and secretarial occupations	11.6	-2.3	12.4	-2.4	11.3	-3.1
Skilled trades occupations	7.5	0.5	9.8	0.4	9.4	-0.6
Personal service occupations	6.5	1.4	8.3	2.0	9.8	2.4
Sales and customer service occupations	7.6	2.1	8.8	2.4	11.0	2.8
Process and plant and machine operatives	3.3	-0.8	5.0	-1.1	6.4	-1.8

Capabilities on project:
Transportation

	Study Area (%)		East Dunbartonshire (%)		Glasgow (%)	
	2011	Change in share from 2001	2011	Change in share from 2001	2011	Change in share from 2001
Elementary occupations	5.1	0.4	6.9	0.3	13.6	0.9

Source: SCROL (2001), Scotland's Census (2011)

Table 3.6 shows the Location Quotients, which is a guide to showing the relative concentration of workers in certain sectors or occupations in comparison to Glasgow.

The study area has a much higher proportion of workers in management positions and professional occupations (location quotients of 1.76 and 1.70) compared with East Dunbartonshire as a whole. The study area has a far lower proportion of workers in 'Accommodation and food service activities' (0.57) and 'Administration and Support Services' (0.51) industry sectors than Glasgow.

It should be noted that between 2001 and 2011 the categories for industry sectors changed as new categories were added and others consolidated. The new 2011 categories are shown and approximate changes in share have been calculated by pairing approximate 2011 and 2001 categories alongside agglomerating some 2001 categories. It was not possible to find a good match for 'Professional, scientific and technical activities.' The changes should therefore be considered an approximate guide.

Table 3.6 Location Quotients (2011)

	Study Area %		East Dunbartonshire %	
	2011	Change from 2001	2011	Change from 2001
Industry Sector				
Agriculture, forestry and fishing	0.80	-1.42	1.27	-1.38
Mining and quarrying	1.39	-0.18	1.31	-0.22
Manufacturing	1.05	0.22	1.11	0.17
Electricity, gas, steam and air conditioning supply	1.06	0.07	1.05	0.09
Water supply, sewerage, waste management and remediation activities	0.59	0.59	0.81	0.81
Construction	0.92	0.14	1.16	0.17

Capabilities on project:
Transportation

	Study Area %		East Dunbartonshire %	
	2011	Change from 2001	2011	Change from 2001
Wholesale and retail trade, repair of motor vehicles and motorcycles	0.83	0.00	0.91	0.02
Transport and storage	0.71	-0.07	0.88	0.01
Accommodation and food service activities	0.57	0.03	0.54	-0.02
Information and communication	1.11	0.33	0.94	0.08
Financial and insurance activities	1.21	-0.01	1.22	-0.14
Real estate activities	1.36	0.19	1.09	0.12
Professional, scientific and technical activities	1.57	-	1.18	-
Administrative and support service activities	0.51	-0.60	0.61	-0.60
Public administration and defence, compulsory social security	1.18	1.18	1.25	1.25
Education	1.60	-0.09	1.32	-0.02
Human health and social work activities	0.98	-0.09	1.02	-0.07
Other	0.86	0.02	0.86	0.10
Occupation				
Managers and senior officials	1.76	0.15	1.46	0.07
Professional occupations	1.70	-0.16	1.33	-0.02
Associate professional and technical occupations	1.14	-0.05	1.07	-0.10

Capabilities on project:
Transportation

	Study Area %		East Dunbartonshire %	
	2011	Change from 2001	2011	Change from 2001
Administrative and secretarial occupations	1.02	0.06	1.10	0.07
Skilled trades occupations	0.80	0.10	1.05	0.11
Personal service occupations	0.66	-0.02	0.85	-0.01
Sales and customer service occupations	0.69	0.02	0.80	0.02
Process and plant and machine operatives	0.52	0.02	0.78	0.05
Elementary occupations	0.38	0.01	0.51	-0.01

Source: SCROL (2001) and Scotland's Census (2011). Location quotients have been calculated by taking the ratio between the proportion of the workforce employed in a given area and the proportion of the workforce employed in Glasgow for a given sector or occupation. A ratio over 1 suggests a concentration of a particular type of worker.

As shown in Table 3.7, although between 2001 and 2011 the population of Glasgow increased by 15,345, the total number of people in work (Full time, Part time and Self-employed, aged 16-74) increased by 18,099. In the study area and East Dunbartonshire, the number of people employed fell slightly.

Table 3.7 Employment Change (2011)

	Study Area		East Dunbartonshire		Glasgow	
	2011	Change from 2001	2011	Change from 2001	2011	Increase from 2001
Total Employed	17,821	-238	47,521	-502	241,178	18,099

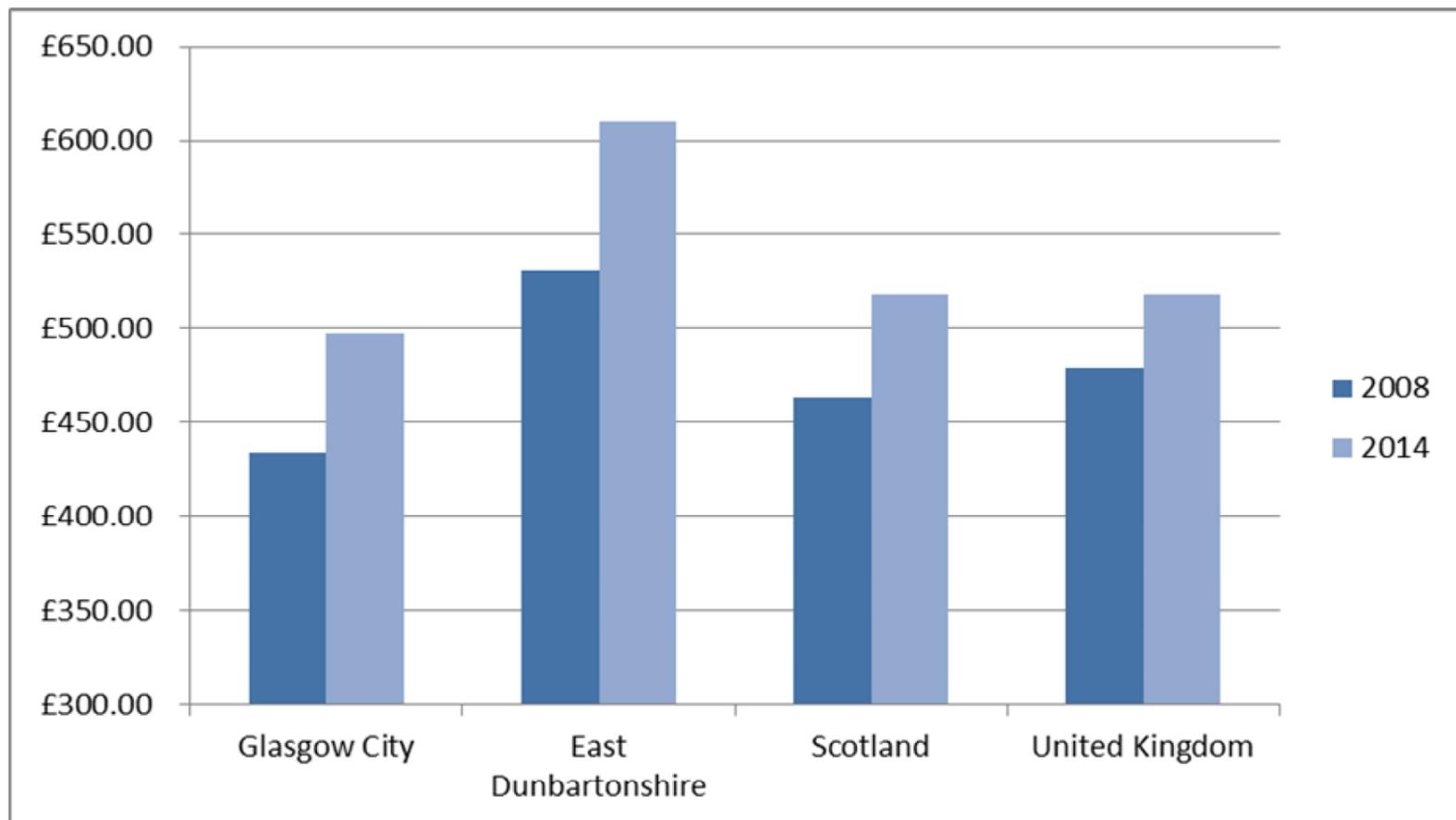
Source: SCROL (2001) and Scotland's Census (2011)

3.2.4 Income

The level of salary earned by workers in East Dunbartonshire is higher than the average across the United Kingdom. Figure 3.2 and Table 3.8 show the median gross weekly wage for workers residing in East Dunbartonshire was £610.40 gross per week in 2014. This compares with estimated average gross weekly wages in the UK, Scotland and Glasgow which are £518.00, £518.20 and £497.50 respectively.

Capabilities on project:
Transportation

Figure 3.2 Full-Time Gross Median Weekly Pay (2008 and 2014)



Source: 2008 and 2014 Annual Survey of Hours and Earnings, ONS

The change in median earnings over all these areas has not been uniform. Table 3.8 shows that East Dunbartonshire had a 15.0% rise in the weekly pay. Arguably, with higher education levels and a higher skilled workforce, it could be expected that workers within the study area earn more than what the average East Dunbartonshire wage level suggests, but this information is not available at a more disaggregate level.

Table 3.8 Changes in Gross Weekly Pay for Full Time Workers Living in the Area (2008 to 2014)

Area	2008	2014	Change	% Change
Glasgow City	£434.10	£497.50	£63.40	14.6%
East Dunbartonshire	£530.80	£610.40	£79.60	15.0%
Scotland	£462.90	£518.20	£55.30	11.9%
United Kingdom	£479.10	£518.00	£38.90	8.1%

Source: 2008 and 2014 Annual Survey of Hours and Earnings, ONS (Median Earnings)

Capabilities on project:
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3.2.5 Home and Car Ownership

It is shown in Table 3.9 that the number of households increased in the Study Area, East Dunbartonshire and Glasgow.

Table 3.9 Number of Households

Year	Study Area	East Dunbartonshire	Glasgow
2011	16,385	43,473	285,693
2001	15,673	42,206	271,596
Change	712	1,267	14,097
Change (%)	4.5%	3.0%	5.2%

Source: SCROL (2001), Scotland's Census (2011)

Table 3.10 shows 88.1% of dwellings within the study area are owned. By comparison, 81.3% of dwellings are owned within East Dunbartonshire and 45.6% of dwellings are owned in Glasgow.

Between 2001 and 2011, home ownership remained relatively consistent in the study area, with a slight shift from renting from the Council to private landlords. A similar trend is noticed in East Dunbartonshire where ownership grew by a small percentage (0.4%), council renting dropped to other social housing and private landlords.

Glasgow experienced the most drastic change in housing structures because the council's housing stock was transferred to other social housing providers following votes by their tenants. Overall, social renting drops 2.6% of total share and 9% increase in private rental. There were a substantial number of residents living rent free (4.5%) in 2001 which almost entirely disappeared to 0.9% in 2011.

There was a 3.0% decrease in home ownership in Glasgow between 2001 and 2011. Furthermore, Glasgow had a lower base of home ownership prior to this measured drop, so this drop is even more substantial.

Capabilities on project:
Transportation

Table 3.10 Home Ownership (2011)

Ownership	Study Area (%)		East Dunbartonshire (%)		Glasgow (%)	
	2011	Change in share from 2001	2011	Change in share from 2001	2011	Change in share from 2001
Owned	88.1	-0.2	81.3	0.4	45.6	-3.0
Rented from council	5.6	-2.2	8.5	-5.0	0.0	-25.9
Other social rented	1.0	0.1	3.5	1.8	36.7	23.3
Private rented (Unfurnished)	3.9	3.2	5.1	4.2	15.3	13.1
Private rented (Furnished)	0.5	-0.6	0.6	-0.6	1.5	-4.1
Living Rent Free	0.9	-0.3	0.9	-0.8	0.9	-3.6

Source: SCROL (2001), Scotland's Census (2011)

As shown in Figure 3.3, the study area has higher levels of car/van availability in comparison to the other two areas. 86.5% of households within the study area owned, or had access, to at least one car. This level of car ownership/access, whilst only slightly higher compared to East Dunbartonshire (81.0%), is significantly higher than for Glasgow, where only 49.2% of households owning a car.

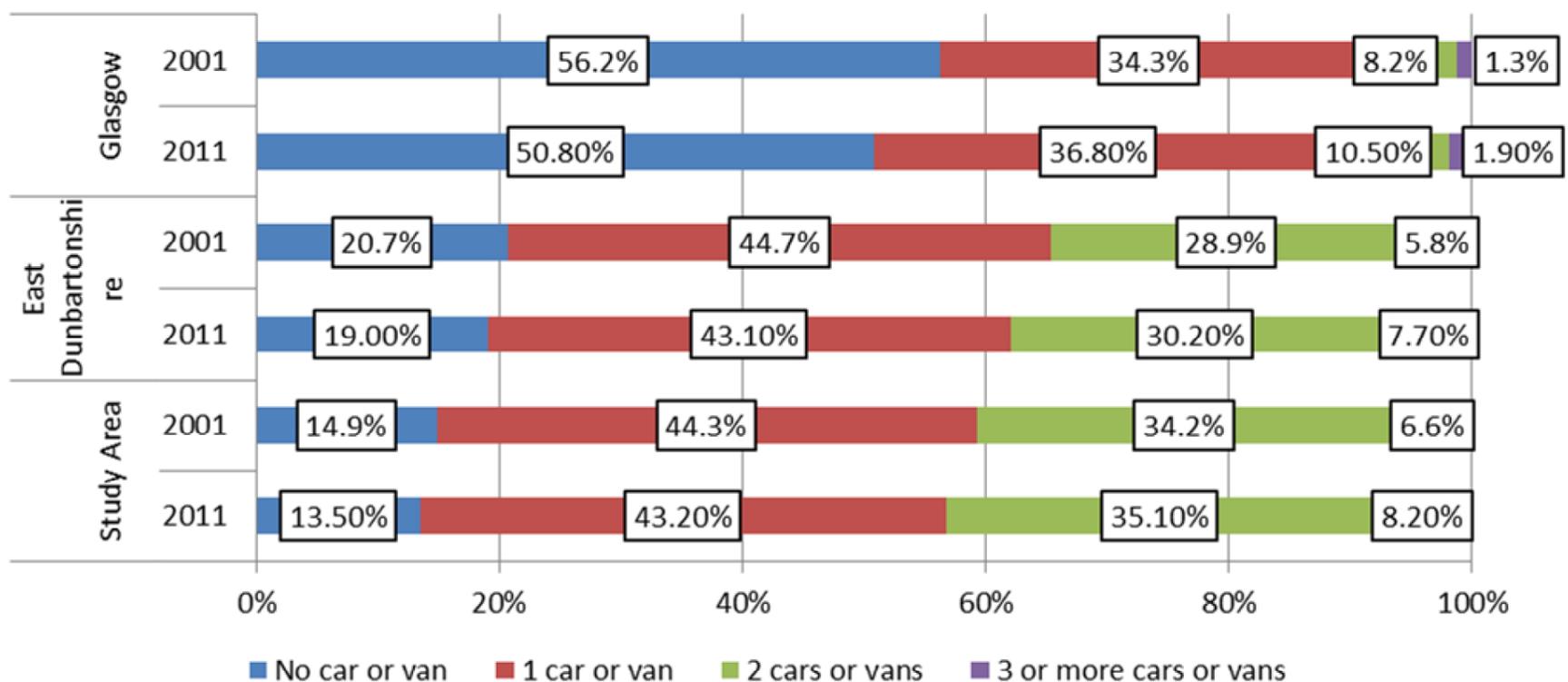


Figure 3.3 Private Vehicle Ownership/Access (2011)

Source: Scotland's Census (2011)

Car ownership/access, per household, grew across all three areas. The number of those in Glasgow with access to cars/vans grew substantially with the number of respondents reporting 'No Car or Van' dropping from 56.2% to 50.8% as the number of households grew by 5.2% between 2001 and 2011. This equates to an absolute increase of households with access to at least

Capabilities on project:
Transportation

one car by 21,596 as shown in Table 3.11. The Study Area had an increase in the number of households with access to a car/van (842).

Table 3.11 Changes Number of Cars/Vans available to households between 2001 and 2011 (Number of Households)

	Study Area		East Dunbartonshire		Glasgow	
	2011	Change from 2001	2011	Change from 2001	2011	Change from 2001
No car or van	2,204	-130	8,252	-472	145,193	-7,498
1 car or van	7,081	135	18,757	-96	105,007	11,741
2 cars or vans	5,756	401	13,128	939	30,019	7,830
3 or more cars or vans	1,344	306	3,336	896	5,474	2,025
Total with Access to car	14,181	842	32,221	1739	140,500	21,595

Source: SCROL (2001) and Scotland's Census (2011)

3.2.6 Deprivation

An analysis of the 2012 Scottish Index of Multiple Deprivation (SIMD), as shown in Figure 3.4 below, indicates that very few areas within the study area fall within the most deprived areas of Scotland. Rather, most of the study area has been classified as having some of the lowest levels of deprivation in Scotland. Areas of low deprivation typically have a higher level of affluence, earnings, education and lower levels of crime and unemployment, many of the characteristics discussed earlier in this Chapter.

In contrast to the study area, many areas within Glasgow fall within the 15% most deprived areas in Scotland. The A81, between the study area and Glasgow, predominantly passes through areas of deprivation, including areas which fall within the 10% most deprived areas in Scotland. Notwithstanding this, in general terms much of the "west end" of Glasgow is classified as having some of the lowest levels of deprivation in Scotland.

Summary of Socio-Economic Characteristics

The data available highlights a number of characteristics pertinent to this study:

- Population decline within the study area between 2001 to 2011 can be contrasted with the population growth in Glasgow;
- Residents within the study area attained higher level of qualifications in comparison to all residents in East Dunbartonshire and Glasgow, with growth;
- There is a high proportion of residents in professional or managerial professions in the study area compared to East Dunbartonshire and Glasgow, however growth in these two occupation groups grew approximately 1% in all three areas between 2001 and 2011;
- Unemployment levels within East Dunbartonshire are much lower than in Glasgow City. It is likely that this is even lower within the Study Area due to its higher education levels;
- Average weekly pay for full time workers is higher in East Dunbartonshire compared with Glasgow;
- The study area has high and growing levels of car ownership/access (85.1% in 2001 and 86.5% in 2011);
- The majority of the study area has been classified as having some of the lowest levels of deprivation in Scotland.

Capabilities on project:
Transportation

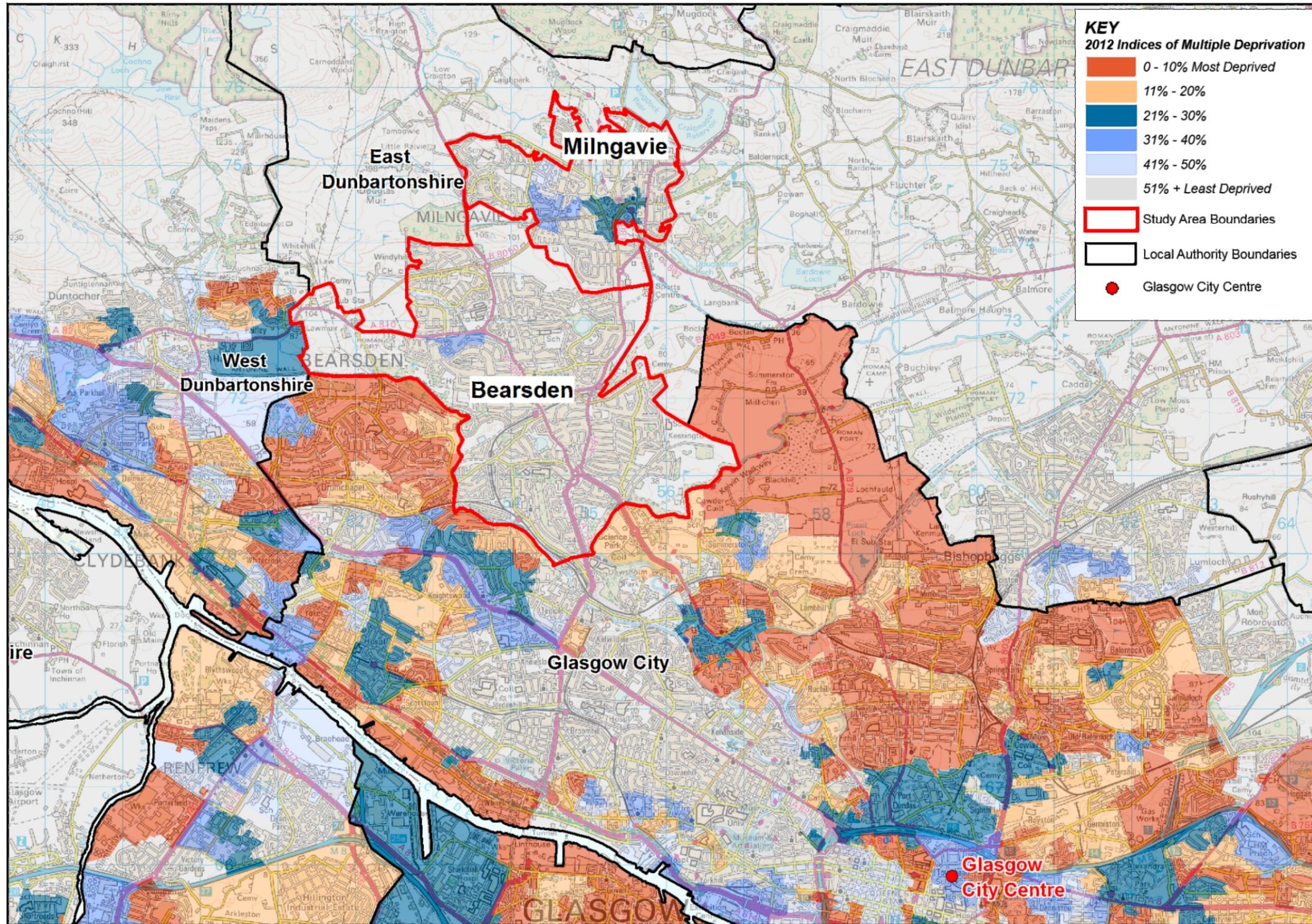


Figure 3.4 Scottish IMD Analysis: Localities of Bearsden and Milngavie

Source: SIMD 2012

Capabilities on project:
Transportation

3.3 Economic Development

3.3.1 The Lower Kilmardinny / Westpark Site

One of the catalysts for the 2008 Study was the impending release of green belt land for development through a masterplan for a mix of uses, primarily residential at an area east of the A81 known as Kilmardinny. The development site comprises approximately 38 hectares of land, bounded to the north and west by the A81 and, to the east and south by the Glasgow-Milngavie rail line. The site is primarily open land with the existing West of Scotland rugby ground located at its northern end and Allander Sports Centre further south.

Since 2008 the masterplan for the site was finalised to predominantly include residential housing and has been subject of a Planning Appeal Decision made in June 2010 by a reporter appointed by the Scottish Ministers. The reporter granted the development. The development proposals included residential units, offices, sports facilities, rail station with park-and-ride facilities, open space, landscaping, walkways and formation of new access roads. The development was originally going to include over 500 residential units; however, the subsequent development of a Waitrose supermarket (discussed below) will reduce this figure to around 320 units.

As part of the Reporters decision was a requirement for the developer or their successors to contribute the following;

- £10 million towards the costs of a replacement sports centre; and
- £654,048 to meet the estimated cost of seven transportation projects under the title of A81 Route Corridor Strategy Works, which are;
 - o an enhanced bus stop facility;
 - o implementation of SCOOT along the A81;
 - o utilisation of the area to the north west of Hillfoot Station for parking;
 - o bus information and signalling;
 - o advanced signing for southbound traffic between Boclair Road and Canniesburn Toll;
 - o a 24 hour southbound bus lane on Burnbrae Roundabout to Boclair Road; and
 - o Implementation of a by-directional bus lane (peak hour only) between Boclair Road and Canniesburn Toll.

At present AECOM is aware the SCOOT has been implemented along the A81, between the Kessington and Hillfoot areas of Bearsden. It is understood at the time of this study the Council and the developers were in the process of agreeing the AMSIC (Approval of Matters Specified in Conditions), therefore the details of the transport projects listed above have not been confirmed. AECOM have been informed that at the time of writing this report the Council were minded to approve the AMSIC, subject to legal agreement.

A Transport Assessment was produced for the development which identified that the development would generate the trips shown in Table 3.12, excluding trips generated by the Allander Leisure Centre.

Table 3.12 – Estimated Trips to be Generated by the Kilmardinny Development

Time Period	Arrivals	Departures
7am – 8am	196	260
8am – 9am	372	438
9am – 10am	288	240
3.30pm – 4.30pm	396	306
4.30pm – 5.30pm	478	458
5.30pm – 6.30pm	407	407

In addition to the above, land has been reserved for a park and ride facility sufficient for at least 150 vehicles, including disabled parking provision. The reporter accepted that this would be rail based as evidence suggested bus Park & Ride would not be appropriate for Kilmardinny.

Capabilities on project:
Transportation

3.3.2 Waitrose Development

As mentioned above a new Waitrose supermarket is to open in Milngavie, located in the northern section of the Kilmardinny masterplan site. It is anticipated that this development be a key trip attractor in the area and will result in higher traffic levels along the A81. As part of the development a number of improvements are to be taken forward including, new crossing facilities, minor alterations to the Burnbrae Roundabout and the installation of MOVA at the A81 / A709 Auchenhowie Road junction.

3.3.3 Milngavie Business Improvement District

In 2014 Milngavie became a Business Improvement District (BID) which aims to promote and improve the town centre. The “My-way” initiative will deliver projects to improve the town centre realm to attract both business and visitors. A business plan has been produced which sets a list of actions for the coming five years, which includes;

- “Contribute to and agree design and location of Integrated Transport hub development for Milngavie Town Centre with Council”;
- Increase cycle parking; and
- Explore feasibility of a seasonal courtesy bus service and source external funding.

A successful BID will increase footfall and trips to Milngavie which may increase demand on the transport network.

3.3.4 Future Development

In addition to the above, a review has been undertaken of residential development proposals contained within the Councils emerging Local Development Plan and the current Local Plan 2. The purpose of this exercise is to identify the key future drivers of demand in the study corridor, a list of these are contained below in Table 3.13.

Table 3.13 – Future Development Site and Estimated Vehicle Trips

Housing Sites	Town	Indicative Capacity	Est AM Vehicle Trips	Est PM Vehicle Trips	Est Daily Vehicle Trips
Bearsden Golf Course ¹	Bearsden	40	53	64	212
Land to the Rear of Boclair House	Bearsden	20	27	32	106
Craigton Road ²	Milngavie	120	160	193	635
Crossveggate East	Milngavie	16	21	26	85
Douglas Academy South ²	Milngavie	13	17	21	69
Douglas Academy East ²	Milngavie	7	9	11	37
Fire Station Field - Craigdhu Road ²	Milngavie	40	53	64	212
Kessington	Bearsden	80	107	129	423
Keystone Road	Milngavie	10	13	16	53
Former St Andrews College (Bearsden) ³	Bearsden	107	143	172	566
18 Strathblane Road (Milngavie)	Milngavie	6	8	10	32
Total		459	611	738	2430

1. It is predicted that this development will predominantly be accessed from the A809/A801, not the A81;

2. Due to this sites location it is likely that trips will be distributed between the A81 and A809/A810 corridors; and

3. A significant proportion of this sites trips are already on the network and the site will predominantly be accessed from the A809/A801.

The trips estimated in the Table above are generated by the Trip Rate Information Computer System (TRICS) database. The TRICS database includes vehicular and multi-modal surveys of various types from existing developments around the UK.

In accordance with the TRICS Good Practice Guide, the most important data field in terms of site compatibility is the locational type and not the specific demographic characteristics of the region. Sites in a town centre with a good level of public transport access and a permeable walking environment would naturally achieve a more sustainable modal split that a development that is located within a remote rural area.

Capabilities on project:
Transportation

By narrowing search criteria that closely matches the residential development proposals, trip rates have been extracted and applied to proposals in order to estimate the number of vehicular trips. The selection criterion has excluded residential developments located within Greater London and sites within city centre, inner city and suburban locations.

The full criteria selected in TRICS is as follows:

- Land Use: 03A Residential, Houses Privately Owned
- Number of Dwellings: 50 - 300
- Survey Type: Vehicular
- Location Type: Edge of Town
- Car Ownership Rate within 5 Miles: 1.1 – 1.5
- Weekdays: Monday, Tuesday, Wednesday, Thursday, Friday

Based on the TRICs analysis the developments are predicted to generate approximately 2430 additional vehicle trips per day.. However, not all developments will be primarily accessed from the A81, these are;

- Bearsden Golf Course – this development will be primarily accessed via the A809 and A810;
- Craighton Road – the trips generated by this development are likely to be distributed between A809 and A81 corridors;
- Douglas Academy South – the trips generated by this development are likely to be distributed between A809 and A81 corridors;
- Douglas Academy East – the trips generated by this development are likely to be distributed between A809 and A81 corridors;
- Fire Station Field - Craighdu Road the trips generated by this development are likely to be distributed between A809 and A81 corridors;and
- Former St Andrews College (Bearsden) – this development will be primarily accessed via the A809 and A810.

Therefore, the developments are predicted to add approximately 1200 daily vehicular trips, assuming that 50% of the trips generated by the Craighton Road, Douglas Academy and Fire Station Field use the A81. In May 2013 the average daily traffic flow on the A81 is 19661² vehicles; the development proposals would represent an increase of approximately 6%. To put the 1200 trips into perspective Kilmardinny is predicted to generate 1794 trips (all modes) between 7am-10am alone. Excluding Kilmardinny the developments are not anticipated to be at a scale large enough to have a significant impact on the operation and capacity of A81 transport network.

It should be note that the analysis above has been undertaken using development information provided by East Dunbartonshire Council. Many of the developments that have been assessed are at this stage only included within the proposed Local Development Plan, there is no guarantee that these developments will be built. Therefore, the estimated trips are likely to be an upper estimate in reality. It should also be noted that the TRICS analysis is based on weekday trips whereas the traffic count data is seven day averages. Typically weekday traffic is higher than seven day week data, therefore the figures above present a robust analysis. The trip estimation has utilised the TRICS database and trip distribution has been based on a review of development location using online mapping.

Summary of Economic Development

The proposed Kilmardinny site will have a direct impact on the economy of the area by providing housing, employment and leisure opportunities to local residents and through attracting inward investment. The development is likely to have a significant impact upon transport in the area as it will generate additional trips along the A81 Corridor. Its importance to the development of the area is reflected in the options developed as part of this study, discussed in later Chapters.

It should be noted that the EDC is currently in the process of developing their Local Development Plan which has a list of emerging sites which may be taken forward and released for development. However, only a handful of these sites are located within Bearsden and Milngavie, and those sites are not anticipated to be at a scale large enough to have a significant impact on the operation and capacity of A81 transport network.

² Average seven day traffic counts provided by East Dunbartonshire Council

Capabilities on project:
Transportation

3.4 Transport Provision

The following section summarises the transport situation along the A81, within the study area. This will include a review of transport infrastructure, service provision, costs and trends. This will help determine the problems and opportunities associated with transport in the corridor, each active mode in the corridor has been considered;

- Active Travel – Walking and Cycling;
- Public Transport – Bus and Rail; and
- Road Based Private Transport.

3.4.1 Active Travel - Walking and Cycling

Walking is facilitated throughout the corridor by continuous footways along both sides of the A81, which includes street lighting. At uncontrolled crossing points dropped kerbs and tactile paving are generally provided. Crossing the A81 is further facilitated by pedestrian phases at signalised junctions and several dedicated signalised pedestrian crossings. Recent improvements to pedestrian infrastructure in the area include: upgrading selected signalised crossings to puffin controlled, a new pedestrian refuge island at Mosshead Road and an enhancement of the public realm around Hillfoot Station.

Red crossing strips are used along the A81 at junctions with minor side roads to better demarcate pedestrian crossing areas and provide an increased prominence of walking, sense of place and better highlight the crossing to drivers. The installation of these crossing strips was supported financially by the Scottish Government. The strips do not alter junction priorities and both pedestrians and drivers are expected to exercise the same level of caution as at any other junction.

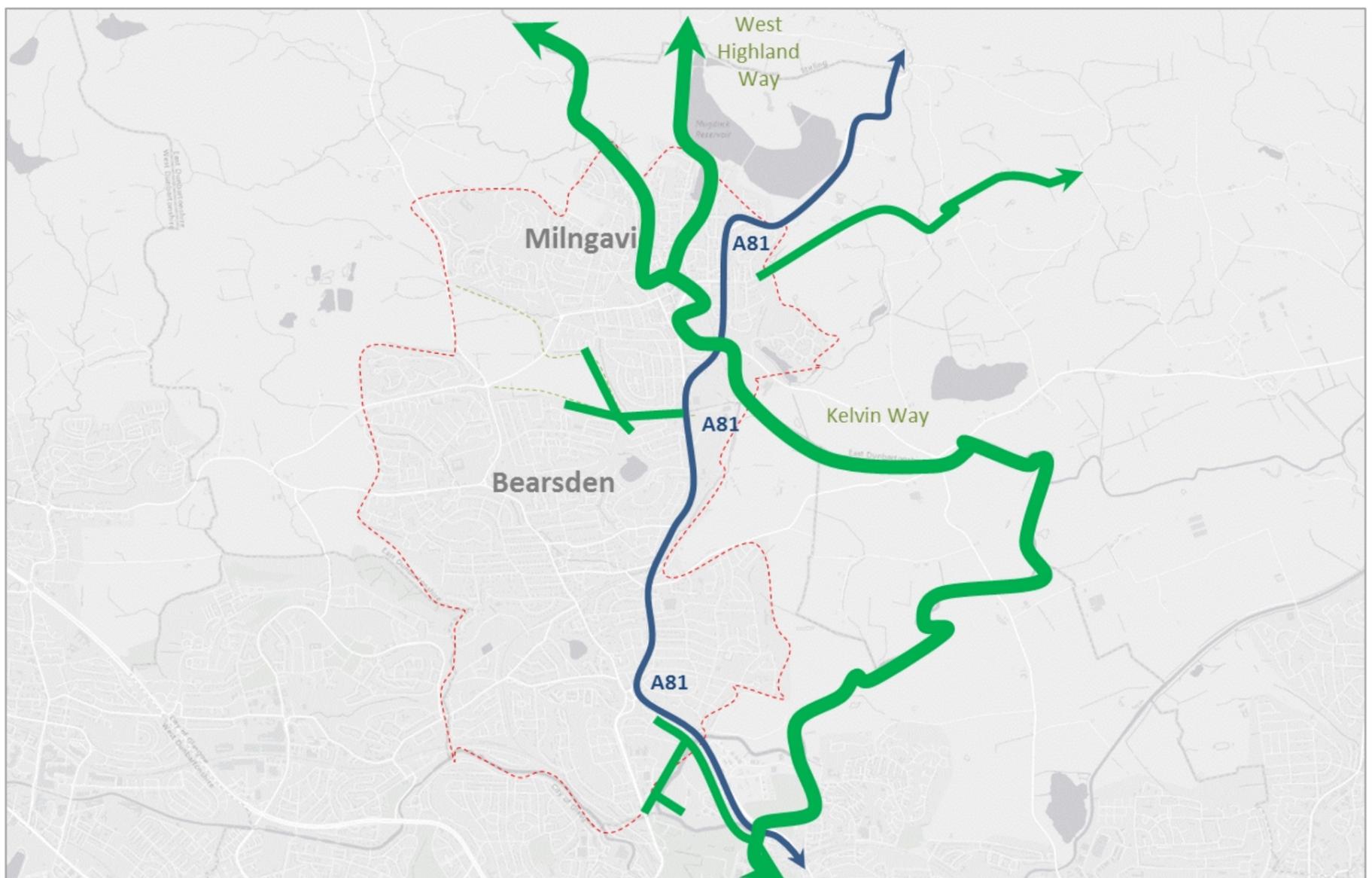


Figure 3.5 Off-Road Cycle Routes in Study Area source *Sustans Mapping*

Generally direct cycle links are provided as advisory on-road facilities, discontinuous cycle facilities are provided in the form of advisory cycle lanes on certain parts of the A81 and advanced stop lines at some junctions. The effectiveness of cycle lanes is reduced by various vehicles (cars, buses, refuse lorries) parking across them. As shown in Figure 3.5 above, off-road facilities are provided in the local area, the two most significant are the Kelvin Way and West Highland Way. The Kelvin Way generally follows the alignment of the River Kelvin making it a significantly longer route than on-road, therefore it is anticipated that it is primarily a leisure facility. The West Highland Way is an international tourist attraction - the route commences at Milngavie and terminates at Fort William in the Highlands, again this route primarily serves the leisure walker / cyclist.

Capabilities on project:
Transportation

EDC and their partners are also taking forward a highly ambitious segregated cycleway, “The Bearsway” project, which extends from Milngavie at its northern extent to the boundary with Glasgow City Council. The Bearsway will link Milngavie and Bearsden (including the Hillfoot and Kessington Travel Hubs) to Glasgow City Centre via the Kelvin Way and Colleges cycle routes.

The East Dunbartonshire draft Core Paths Plan identified the following paths within the study area as core paths:

- Path 12 – Craighdu Wedge East West Spur. Runs from the A81 (around 200m south of Burnbrae Roundabout) west towards Heather Avenue;
- Path 13 - Milngavie Precinct to Glasgow Road via Lennox Park. This path runs south east from Milngavie town centre to the junction between the A81 and Auchenhowie Road.
- Path 14 - Milngavie Reservoir – part of this path runs adjacent to A81 Strathblane Road at north of corridor;
- Path 16 – Douglaston Loop – rural setting looping first southwards, from the A81 at very north end of corridor near Craigmaddie Reservoir;
- Path 17 - Allander Way from Glasgow Road to Glasgow Boundary. This path runs south east from the junction between A81 and Auchenhowie Road. This links to a corresponding path included by Glasgow City Council in their draft Core Path Plan; and
- Path 13 and Path 17 join across the A81/Auchenhowie Road junction.

3.4.2 Public Transport - Bus

Bus services operating along the A81 corridor are operated by First Glasgow, First South East and Central Scotland and McGills using a mixture of single decker and double decker vehicles, the majority of which are low floor for easy access. In addition a demand responsive MyBus services (M18, 600 and 850) operates in an area which includes Milngavie and the A81.

Figure 3.6 below illustrates the main bus routes from the study area; the vast majority of services from the Bearsden / Milngavie either terminate or pass through Glasgow City Centre. Intermediate localities, such as Maryhill and Partick are well served; offering retail, employment and transport interchange opportunities.

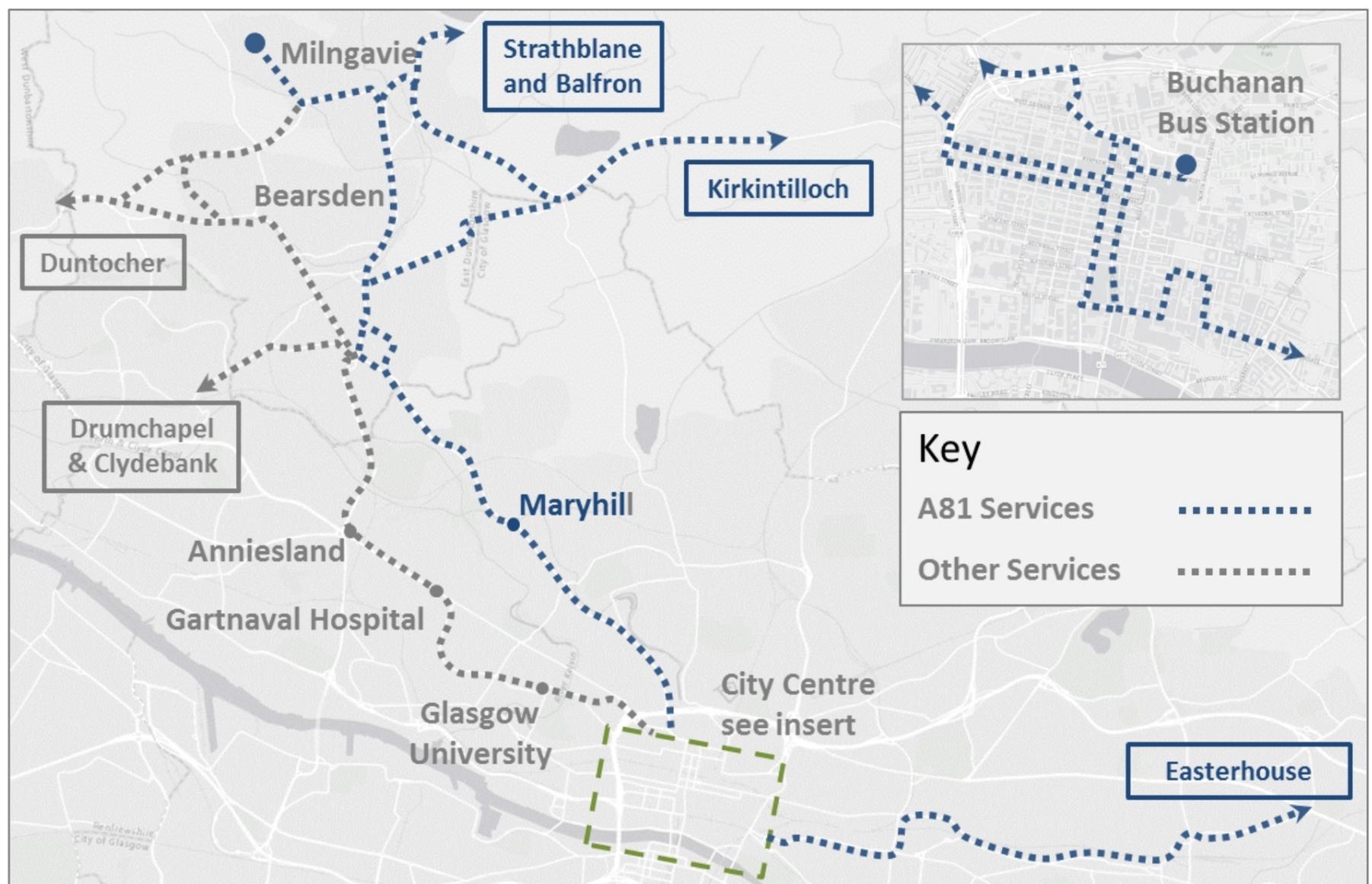


Figure 3.6 Main Bus Service Routes from Study Area

Source Bus Operator Website and Timetables

Capabilities on project:
Transportation

A meeting was held as part of the original 2008 study with the major bus operator on the corridor, First Glasgow. They indicated that they would welcome East Dunbartonshire extending Quality Bus measures along the corridor, and that vehicles were already fitted with the necessary equipment. Any bus priority would also be welcomed, though it was accepted that bus lanes do not offer significant benefit in every case. Some delay was experienced at Craigdhu Road/Park Road, which results in unreliability on the corridor.

Table 3.14 below shows the timetabled services operating along the A81 corridor, which constitute around four services per hour in each direction at most times.

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Table 3.14 Bus Services and Frequencies

Number	Service	Operator	Monday – Friday Frequency		Saturday Frequency		Sunday Frequency	
			Daytime	Evening	Daytime	Evening	Daytime	Evening
C8	Balfron – Milngavie – Glasgow	First Scotland East	2 Outbound, 4 Inbound	1 Outbound	1 Outbound, 2 Inbound	2 Outbound, 1 Inbound	-	-
B10 / 310 / C10	Glasgow – Balfron	First Scotland East	Hourly	Hourly	Hourly	Hourly	4 Inbound, 4 Outbound	1 Inbound, 1 Outbound
47	Kirkintilloch - Milngavie	McGills*	1 every 2 hours	-	1 every 2 hours	-	-	-
47A	Kirkintilloch - Milngavie	McGills*	1 every 2 hours	-	1 every 2 hours	-	-	-
60A	Easterhouse - Milngavie	First Glasgow	Every 20mins	Hourly	Every 20mins	Hourly	Every 30mins	Hourly
347	Parkhead - Milngavie	First Glasgow	5 Outbound between 05:40 – 07:36	4 Inbound between 17:39 – 20:05	3 Outbound between 07:27 – 08:25	1 Inbound	-	-
512	Balfron - Milngavie	First Scotland East	1 Inbound, 1 Outbound	-	-	-	-	-

*SPT supported service

Capabilities on project:
Transportation

In addition to the above services, a number of services pass through Milngavie and Bearsden without travelling along the A81. These bus services are provided by either First or Citybus Glasgow, most notably is the Citybus service 15 which connects Milngavie Station with Glasgow and intermediate residential areas via Bearsden Town Centre, Partick and Glasgow University.

AECOM have been advised by SPT, of a number of issues relating to bus operations within the A81, these include;

- Parking associated with Hillfoot Station on the southbound approach to Boclair Road in Bearsden reduces the carriageway to one lane which reduces capacity and negatively impacts bus journey times and reliability;
- Several bus stops are within lay-bys causing bus difficulties emerging back onto the carriageway, especially at busy times; and
- The bus stop lay-by at Milngavie Station is used by cars as an effective pick-up and drop-off zone.

Bus Facilities

The provision of road side bus passenger facilities varies along the corridor, some stops are flag stops only, and others have sheltered waiting facilities. Those stops with shelters generally include lighting and bench style seating. All stops have timetabling and service information as well as high access kerbing for increased accessibility. SPT have invested in new shelter facilities throughout the EDC area, including along the A81.

There is minimal bus priority in the study area; although downstream (closer to Glasgow) bus priority is provided, primarily by discontinuous bus lanes in both directions which will provide a journey time benefit for residents of Bearsden and Milngavie.

In 2013, EDC were awarded funding through the Bus Improvement Fund (BIF) to improve bus infrastructure along the A81. The Bus Investment Fund was to fund the implementation of the Kessington and Milngavie Travel Hubs. These travel hubs, which were funded as part of a Quality Bus Corridor, are to include:

- Dedicated bus lanes
- Bus priority at traffic signals
- Real time information at bus stops
- Ticketing at bus stops (future collaboration with SPT)
- Parking restrictions
- Enforcement of parking and bus lane restrictions
- Secure cycle storage at bus stops
- Improved pedestrian facilities
- Cycle lanes
- High quality surfacing

At the time of this report the Kessington Hub is in the process of being planned and constructed. These two hubs will form part of a chain of hubs along the A81. A hub at Hillfoot was delivered in 2014 and another is planned at the Burnbrae roundabout adjacent to the new Waitrose development.

Fares

As shown in Table 3.15 below, the main operator in the area, First, have a range of products and fares, which includes;

- First Day ticket – This provides unlimited travel through the First Glasgow bus network;
- First Week – This provides unlimited travel through the First Glasgow bus network, for a seven day period;
- Flexi 10 – This entitles the user to ten flexible single journeys.

The above list is not exhaustive; a £3.45 return fare is available after the morning peak period, monthly tickets can also be purchased. First operates a zonal system where the price of a ticket may vary depending on which zone travel is required, all prices quote cover travel between the study area and Glasgow. All fares are correct as of October 2014.

Capabilities on project:
Transportation

Table 3.15 Bus Fares

Operator	Period	Type		Notes
		Return Journey	Multiple Journey Travel	
First Bus (Glasgow)	1 Day	£3.45 (after 9:00)	£4.10	Multiple journey tickets permit travel across First Glasgow's "City Zone", exclude night services and some express services
	1 Week	N/A	£16.50	
	4 Week	N/A	£45.00	
	Single	£1.95		Milngavie – Glasgow City Centre
McGills (SPT supported)	Single	£2.75		Milngavie – Kirkintilloch Prices on a sliding scale depending on distance i.e a single between Milngavie and Torrance is £2.15
Non A81 Services				
First Bus	As Above			
Citybus Glasgow	1 Day	£3.70		
	1 Week	£15.00		Valid for two journeys a day for a work week (Monday – Friday)
	Single	£2.40		Milngavie - Glasgow

Patronage

Due to commercial sensitivity local bus patronage data is not available, however regional bus passenger journeys are provided annually in the Scottish Transport Statistics. Figure 3.7 shows bus patronage trends across the South West of Scotland and Strathclyde.

Capabilities on project:
Transportation

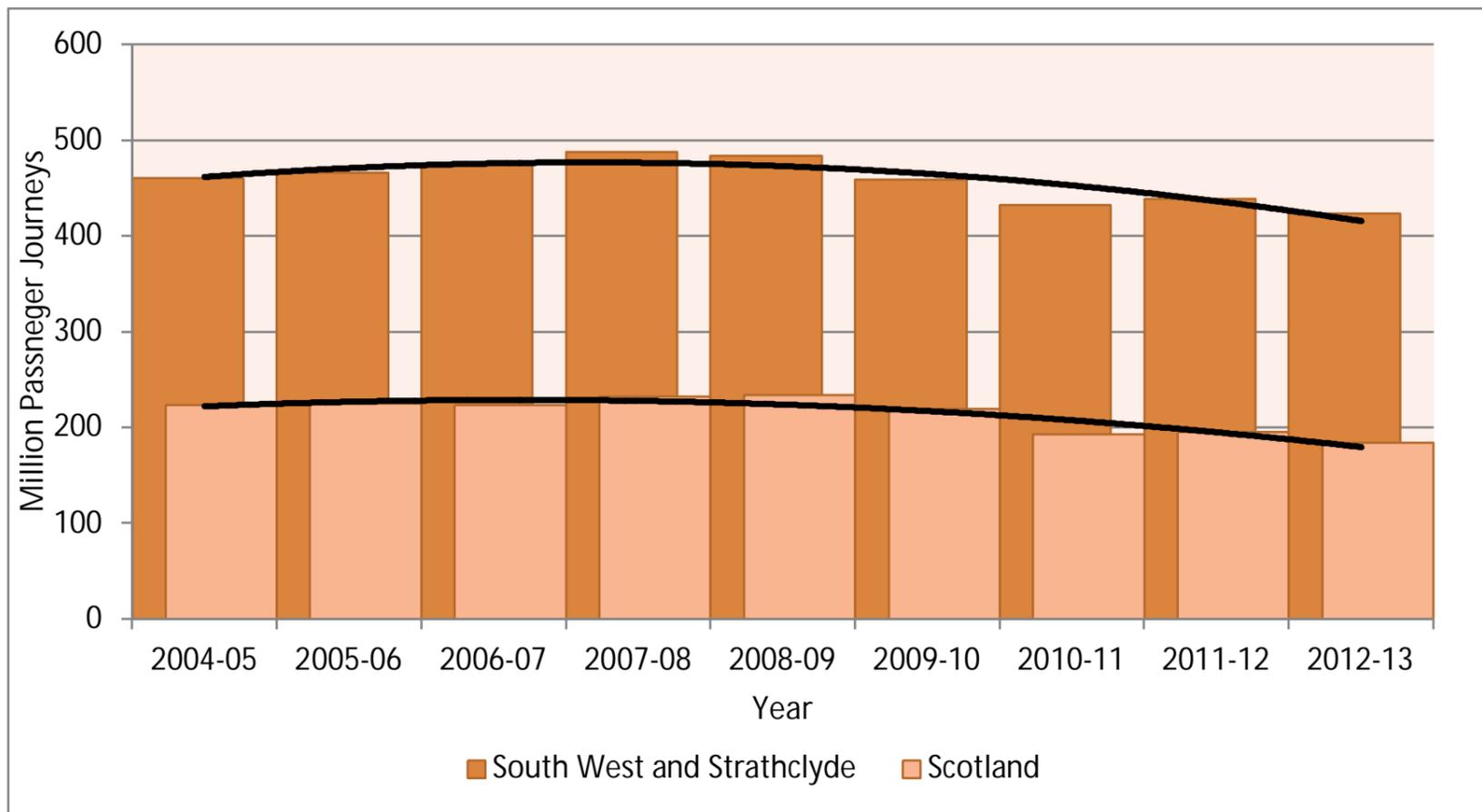


Figure 3.7 Regional Bus Passenger Journey Trends

Figure 3.7 shows that bus passenger journeys are falling both regionally and nationally, regional figures have fallen by 23% over the past five years, nationally it is 13%. There is no reason to believe that the study area and the A81 would represent trends significantly different to regional trends.

AECOM has been informed by SPT that the 47 / 47A service between Milngavie and Kirkintilloch generates approximately 2,600 passenger journeys over a four week period, an average of 650 passengers per week.

Demand Responsive Service

There are three MyBus services that provide Demand Responsive Transport in the vicinity of the A81 and are outlined in Table 3.16. Between 2009/10 and 2013/14, patronage on these services has fluctuated, however, whilst overall patronage has decreased between 2009/10 and 2013/14 for service 600 and 850, there has been an increase in patronage on the M18 service.

Table 3.16 Demand responsive bus services

Service	Coverage	Patronage				
		2009/10	2010/11	2011/12	2012/13	2013/14
600	Most of East Dunbartonshire, including the A81 corridor	6,973	6,674	6,771	6,449	5,625
850	Bearsden and Milngavie	6,935	6,977	6,731	6,399	6,347
M18	Bearsden, Milngavie, Maryhill and North West Glasgow	18,209	18,001	19,710	20,298	18,949

Capabilities on project:
Transportation

Overview of Bus in the Study Area

Table 3.17 summarises the analysis of bus provision in the study area, as detailed above.

Table 3.17 Summary of Bus Service Provision

Mode	Summary
Bus	
Bus Supply	<p>Most services pass directly along the A81 between Milngavie and Glasgow City Centre - these services pass east of Bearsden Town Centre. SPT support a service from Milngavie and Kirkintilloch. Other services link the corridor to outlying villages such as Balfron and Strathblane.</p> <p>Approximately four direct bus services per hour to Glasgow off peak, with additional services during peak periods.</p> <p>Journey time to Glasgow 40-45 minutes</p>
Bus Demand	<p>Through discussions with stakeholders in this study, it has been concluded that it is difficult to obtain any quantitative data on passenger demand and use of bus services in the study area. Commercial operators do not generally share this information. A review of regional patronage data shows a decline in bus passenger journeys - the Census data showed a reduction in the number of work related bus trips of 30% (2001 to 2011) in the study area.</p>
Interchange / Integration	<p>Interchange between bus and rail possible at all four stations in the study, notably at Milngavie where bus services stop at the station building. EDC and partners are developing travel hubs where enhanced walking and cycling facilities will facilitate access to bus services.</p> <p>Predominantly the services remain on the A81 corridor, although some services penetrate the Kessington housing area of Bearsden.</p>
Connectivity	<p>Bus services directly link the study area with Glasgow city centre, Partick, Maryhill, Clydebank, Kirkintilloch and outlying villages.</p>

3.4.3 Public Transport - Rail Services

There are four rail stations within the study area: Milngavie, Hillfoot, Bearsden and Westerton, as shown in Figure 3.8 below. Milngavie is a terminus and Hillfoot and Bearsden are the next stations on the same line. The railway is single track between Milngavie and Hillfoot and a smaller section between Bearsden and Westerton but double tracked elsewhere. Trains run via Anniesland to Glasgow Central and on to stations in South Lanarkshire, as well as to Glasgow Queen Street with some direct trains terminating in Edinburgh.

Westerton Station is served by all trains to and from Milngavie, as well as services from Glasgow to Dalmuir and Helensburgh (to the west). There are around eight services per hour to and from Glasgow during the day.

First Group currently operate the Scotrail franchise and thus all services in East Dunbartonshire, however it was announced in Autumn 2014 that Abellio will take over the franchise in April 2015.

Capabilities on project:
Transportation

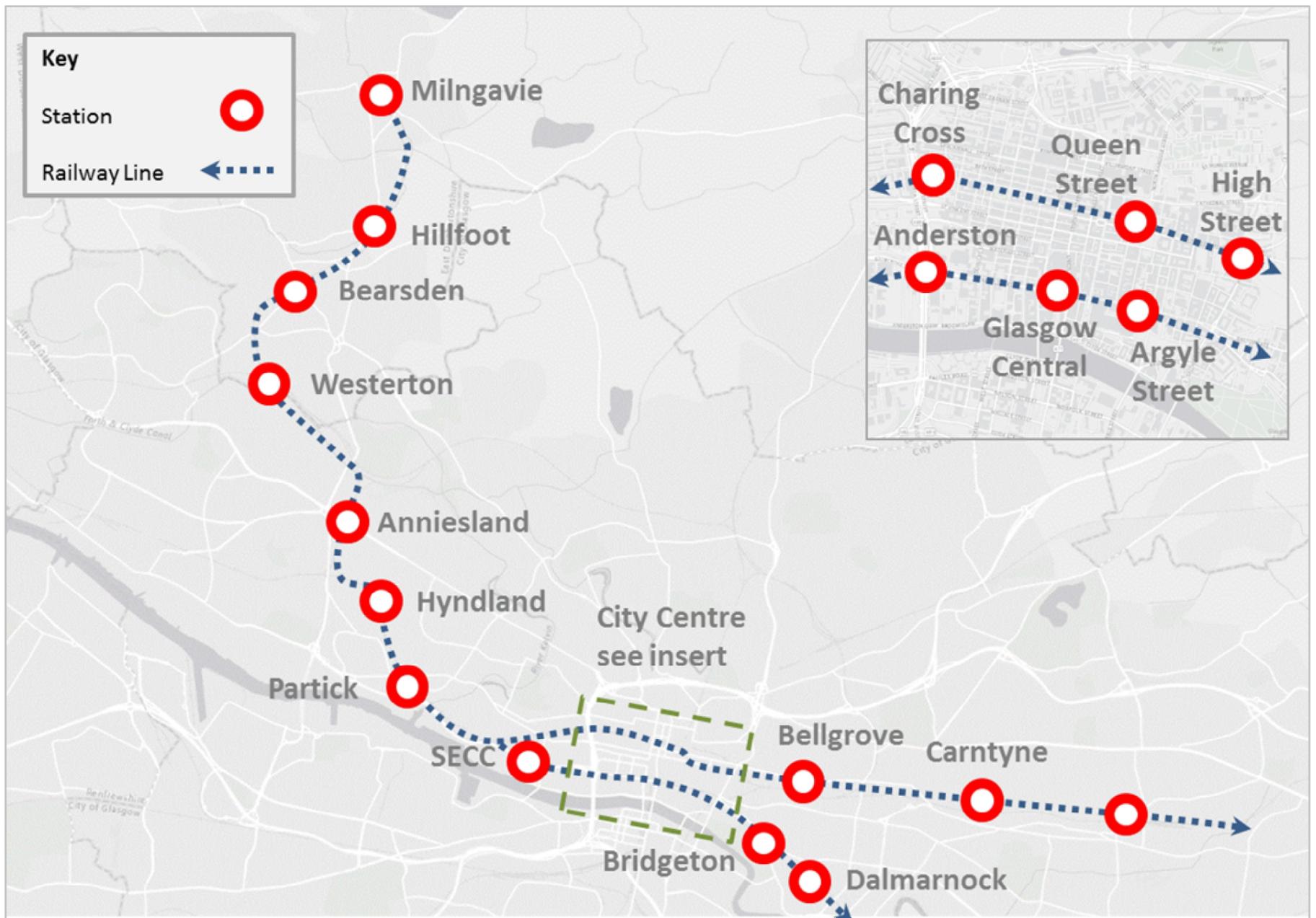


Figure 3.8 Rail Service Routes from Study Area Source Google Maps and National Rail website

There are two services an hour, which continue on from Glasgow to Edinburgh via the Airdrie – Bathgate Rail Link, which was opened in late 2010, each service calls at the four stations in the study area.

The service information for Milngavie, Hillfoot, Bearsden and Westerton stations is shown in Table 3.18 below.

Table 3.18 Rail Services (2014)

Journey	Frequency	Journey Time (mins)
Milngavie – Glasgow ³	4ph (Mon-Sat 07:00-18:00); 2ph (Mon-Sat 18:00-23:00) / (Sun 09:00–23:00)	20-25
Hillfoot – Glasgow ¹		17-22
Bearsden – Glasgow ¹		16-20
Westerton - Glasgow ¹		8ph (Mon-Sat 07:00-18:00); 6ph (Mon-Sat 18:00-23:00) 4ph (Sun 09:00–23:00)
Milngavie – Edinburgh via Airdrie / Bathgate ⁴	2ph (Mon-Sat 07.00-23.00) / (Sun 09.00-18.00); 1ph (Sun 18.00 – 23.00)	91-122

Source: Timetable information – ScotRail Website,

³ <http://www.scotrail.co.uk/sites/default/files/documents/DunbartonshireMay14.pdf>

⁴ <http://www.scotrail.co.uk/sites/default/files/documents/Glas-EdviaABMay14.pdf>

Capabilities on project:
Transportation

Please note, as part of the 2008 study First Scotrail provided comments by email, describing capacity constraints not just on the corridor but also towards the city centre between Hyndland and Partick. First Scotrail advised that this would need to be addressed in order to implement a new park and ride rail station at Allander. It was also explained that the installation of CCTV at Hillfoot station was delivered.

Patronage

Rail station usage at Milngavie, Bearsden and Westerton has increased in recent years, whilst patronage at Hillfoot has increased at a slower rate, as illustrated in Figure 3.9, correct October 2014. According to the Scottish Transport Statistics 2012-13, Milngavie is the 31st busiest rail station in Scotland with Westerton 44th and Bearsden 64th, Hillfoot is outside the 100 busiest rail stations in Scotland (2011-12).

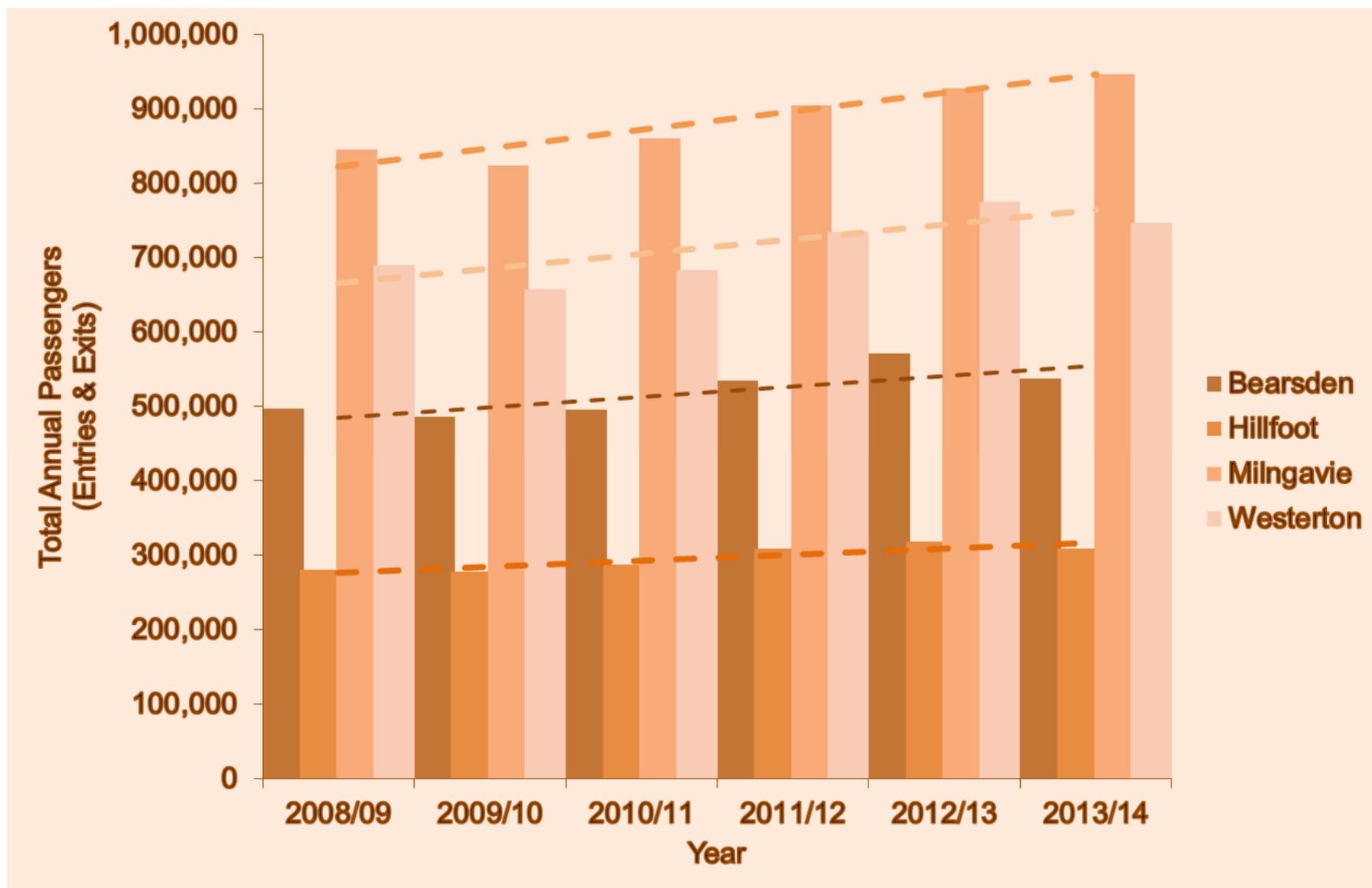


Figure 3.9 Station Usage Estimates *Source: Office of Rail Regulation*

Although the general trend of station usage has increased, it should be noted that in year 2013/14 all stations, with the exception of Milngavie has experienced lower usage levels, than in 2012/13. This reduction may be as a result of a change in dataset methodology. The way station demand is captured in the Strathclyde area on a number of SPT products, such as Zonocard has changed. The “Estimates of Station Usage 2013/14 Report” produced by Steer Davies Gleave on behalf of the Office of Rail Regulation explains;

“The total sales data for these tickets has been obtained from a combination of LENNON [UK Rails transport settlement system] data and off rail sales figures supplied by SPT. The number of journeys on each ticket type has been established by applying appropriate trip rate proxies for each type. The data has been distributed using Zonocard forum travel diary data and LENNON station-station reduced ticket proportions to produce an estimate of station-to-station movements. The new infill results in a drop in entries and exits of approximately 4.4m (2.5% of total Scotland entries and exits).”

The report highlights the ten largest changes as a result of the methodology alteration; all with the exception of one has resulted in a drop in station usage figures. Therefore, it is difficult to determine whether the fall in station usage is not as a result of the change in the data set methodology.

Over the course of the past few years Revenue Protection has improved on the rail network in Strathclyde, reducing the loss of revenue from passengers not purchasing tickets or using invalid tickets. Several rail stations on the network have had automatic

Capabilities on project:
Transportation

ticket barriers installed, including Glasgow Queen Street and Central Stations. Therefore, the recording of station usage over recent years may have increased as a result of more people purchasing valid tickets. Previously if passengers had not purchased a ticket they would not be detected by the ticket / station usage monitoring systems. It is difficult to determine how much impact this will have had on station usage statistics within the study area, however it is likely to have had some influence in station usage numbers.

Station Facilities

Table 3.19 highlights the facilities at all four stations in the study area.

- Milngavie station has two platforms, both of which have level access from the street. The car park at the station has 134 spaces, including three disabled spaces. In addition there are 28 cycle racks and six cycle lockers available. The station has an internal bus stop / taxi pick-up and drop off area for convenient interchange.
- Hillfoot Station, located approximately 2.5km south of Milngavie, is unstaffed with two platforms, one for northbound and one for southbound services. A footbridge connects the platforms while level access is available to the southbound platform and a ramp down to the northbound platform. The car park at Hillfoot station has 16 spaces, two of which are reserved for blue badge holders. There are also five cycle racks available and a taxi rank.
- Bearsden Station is located less than 1km south west of Hillfoot station. There is level access to one platform and a ramp down to the other. The station car park has 92 spaces, and there is also a taxi rank. Spaces for seven cycles are provided – three racks and four lockers.
- A further 1.8km along the line is Westerton Station where there is level access available to both platforms. The car park at Westerton Station has 110 spaces, three of which are for blue badge holders. The car park consists of two long rows of spaces and is constrained by the railway to the south and the road to the north. Four cycle racks are provided, and there is a taxi rank. There is also a bus stop at Westerton Station.

Table 3.19 Facilities at Study Area Stations

Station	Car Park Capacity	Cycle Parking	Step Free Access	On-Site Interchange Facilities	Local Interchange Facilities
Milngavie	134 (including 3 disabled spaces)	28	Whole Station	Yes	Yes
Hillfoot	16 (including 2 disabled spaces)	10	Partial	No	Yes (via Hillfoot Travel Hub)
Bearsden	92 (including 2 disabled spaces)	16	Partial	No	Yes
Westerton	110 (including 3 disabled spaces)	4	Partial	Yes	Yes

Capabilities on project:
Transportation



Figure 3.10 Milngavie Rail Station Car Park

Fares

Table 3.20 below shows ticket prices available at the station for single, return and off peak return journeys from Milngavie, Hillfoot, Bearsden and Westerton to Glasgow as well as Milngavie to Anniesland. The table also shows the increase in ticket prices from 2008 to 2014.

Table 3.20 Rail Ticket Prices

Origin - Destination	Standard Day Single		Standard Day Return		Cheap Day Return (Off Peak)	
	2008	2014	2008	2014	2008	2014
Milngavie – Glasgow	£2.45	£3.20	£3.90	£5.10	£2.90	£3.70
Hillfoot – Glasgow	£2.35	£3.10	£3.60	£4.90	£2.70	£3.50
Bearsden – Glasgow	£2.30	£3.00	£3.50	£4.70	£2.70	£3.50
Westerton – Glasgow	£2.25	£2.90	£3.25	£4.20	£2.40	£3.10
Milngavie – Anniesland	£1.95	£2.50	£3.05	£3.90	£2.30	£3.00

N.B. Fares correct as of November 2014

It is also possible to purchase a rail season ticket for journeys between Milngavie, Hillfoot, Bearsden and Westerton, and Glasgow. A season ticket for journeys between Milngavie and Glasgow costs;

- Weekly - £19.20: £6.30 cheaper than purchasing 5 standard day returns
- Monthly - £73.80: £33.00 cheaper than purchasing 20 standard day returns
- Quarterly - £221.20: £84.80 cheaper than purchasing 60 standard day returns
- Annual - £798.00: £426.00 cheaper than purchasing 240 standard day returns

Capabilities on project:
Transportation

Rail Utilisation Strategy

As discussed in 2008, Network Rail published the Rail Utilisation Strategy (RUS) for Scotland in March 2007, which includes baseline information about the Milngavie branch. The line has a theoretical capacity of 12 paths per hour, but a practical capacity of 10 per hour. The current peak demand (between 8am and 9am) is for 9 paths per hour i.e. 90% of practical capacity. As a 'sector', Milngavie is identified as the 13th busiest into Central Glasgow daily (the busiest two being Central Edinburgh and East Kilbride). Table 3.21 show the number of timetabled trains per hour for the AM and PM Peak periods on the busy section between Hyndland and Partick.

Table 3.21 Number of Trains (timetabled) between Hyndland and Partick

Route	Time	Trains per hour 2008
Hyndland - Partick	0700-0800	13
	0800-0900	15
	1700-1800	14
	1800-1900	10
Partick - Hyndland	0700-0800	13
	0800-0900	16
	1700-1800	16
	1800-1900	12

Network Rail's second generation RUS, published in June 2011, identifies that in 2009 during morning peak the trains travelling to Glasgow are operating at maximum occupied capacity of 70% (meaning for every 10 seats 7 will be occupied) between Milngavie and Westerton. As the service gets closer to the Glasgow termini this increases to 70-99% occupied capacity. Even at the highest peak times services from Milngavie and Glasgow do not operate over 100% occupied capacity.

Table 3.22 summarises a review has been undertaken of the number of timetabled trains per hour for the AM and PM Peak periods on the busy section between Hyndland and Partick in 2014. Generally the number of trains passing between Hyndland and Partick are similar to 2008. However, the total number of passengers boarding/alighting at the stations between Milngavie and Partick has increased by 1,416,725 (22.75%) between 2008 and 2014. Therefore, it is anticipated that the spare capacity on the trains between Milngavie and Glasgow will be significantly less than reported in the second generation utilisation strategy.

Capabilities on project:
Transportation

Table 3.22 Number of Trains (timetabled) between Hyndland and Partick

Route	Time	Trains per hour 2014
Hyndland - Partick	0700-0800	14
	0800-0900	15
	1700-1800	14
	1800-1900	12
Partick - Hyndland	0700-0800	13
	0800-0900	16
	1700-1800	14
	1800-1900	14

Overview of Rail in the Study Area

Table 3.23 summarises the analysis of rail provision in the study area, as detailed above.

Table 3.23 Summary of Rail Service Provision

Mode	Bearsden	Hillfoot	Milngavie	Westerton
Rail Supply	<p>Existing rail services, serve Glasgow City Centre and intermediate stations, such as Partick. Two trains per hour link the area to Edinburgh, Glasgow via the Airdrie Bathgate line, and two trains per hour link the area to Lanarkshire.</p> <p>Approx four direct train services per hour to Glasgow during the day and all peak periods with a reduction in service in evenings and Sundays.</p> <p>Journey time to Glasgow 15-20 minutes</p>	<p>Existing rail services, serve Glasgow City Centre and intermediate stations, such as Partick. Two trains per hour link the area to Edinburgh, Glasgow via the Airdrie Bathgate line, and two trains per hour link the area to Lanarkshire.</p> <p>Approx four direct train services per hour to Glasgow during the day and all peak periods with a reduction in service in evenings and Sundays.</p> <p>Journey time to Glasgow 17-22 minutes</p>	<p>Existing rail services, serve Glasgow City Centre and intermediate stations, such as Partick. Two trains per hour link the area to Edinburgh, Glasgow via the Airdrie Bathgate line, and two trains per hour link the area to Lanarkshire.</p> <p>Approx four direct train services per hour to Glasgow during the day and all peak periods with a reduction in service in evenings and Sundays.</p> <p>Journey time to Glasgow 20-25 minutes</p>	<p>Existing rail services, serve Glasgow City Centre and intermediate stations, such as Partick. Two trains per hour link the area to Edinburgh, Glasgow via the Airdrie Bathgate line, and six trains per hour link the area to Lanarkshire.</p> <p>Approx eight direct train services per hour to Glasgow during the day and all peak periods with a reduction in service in evenings and Sundays.</p> <p>Journey time to Glasgow 12-17 minutes</p>

Capabilities on project:
Transportation

<p>Rail Demand</p>	<p>Rail station usage, rising patronage at Bearsden.</p>	<p>Rail station usage, rising patronage at Hillfoot, at a lower rate than any of the other stations in the study area.</p>	<p>Rail station usage, rising patronage at Milngavie, at a higher rate than any of the other stations in the study area.</p>	<p>Rail station usage, rising patronage at Westerton.</p>
<p>Evidence of Issues</p>	<p>Analysis of station usage and RUS – RUS shows in 2009 trains between Bearsden and Glasgow were close to capacity. Since 2009 station usage information indicates a significant increase on rail usage on the line, therefore this is likely to result in standing room only on peak trains to Glasgow.</p> <p>Anecdotal evidence of insufficient parking provision at rail stations.</p> <p>May be some rail-related parking on adjacent residential streets.</p> <p>The Council will soon introduce charging in town centre car park for long stay parking; therefore commuters may not be able to park near the station</p>	<p>Analysis of station usage and RUS – RUS shows in 2009 trains between Hillfoot and Glasgow were close to capacity. Since 2009 station usage information indicates a significant increase on rail usage on the line, therefore this is likely to result in standing room only on peak trains to Glasgow.</p> <p>Anecdotal evidence of insufficient parking provision at rail stations.</p> <p>May be some rail-related parking on adjacent residential streets. Proposed limited stay parking adjacent to the station to facilitate parking at local shops may limit parking for rail passengers.</p> <p>Station is located on a constrained site bounded on most sides by existing properties and roads.</p>	<p>Analysis of station usage and RUS – RUS shows in 2009 trains between Milngavie and Glasgow were close to capacity. Since 2009 station usage information indicates a significant increase on rail usage on the line, therefore this is likely to result in standing room only on peak trains to Glasgow and insufficient parking provision at rail stations.</p> <p>Anecdotal evidence of insufficient parking provision at rail stations.</p> <p>Previous discussions to increase parking either at the adjacent Tesco site or at the existing car park have not been progressed and are unlikely to be deliverable.</p> <p>The Council will soon introduce charging in town centre car park for long stay parking; therefore commuters may not be able to park near the station.</p>	<p>Analysis of station usage and RUS – RUS shows in 2009 trains between Westerton and Glasgow were close to capacity. Since 2009 station usage information indicates a significant increase on rail usage on the line, therefore this is likely to result in standing room only on peak trains to Glasgow and insufficient parking provision at rail stations.</p> <p>Anecdotal evidence of insufficient parking provision at rail stations.</p> <p>May be some rail-related parking on adjacent residential streets.</p>

3.4.4 Public Transport - Multi Modal Travel and Interchange

ZoneCard

SPT offer a multi-journey / multi – modal product, ZoneCard. ZoneCard enables passengers to purchase one ticket which is valid on the vast majority of bus, rail, subway and ferry services within the SPT area, which is separated into a number of zones. Customers only need to purchase a ticket which covers the zone they wish to travel through. For example a ZoneCard covering a journey between Milngavie and Glasgow City Centre would require the purchase of three zones. Customers are required to purchase all zones that their service passes through. The price of the ticket varies depending on the number of zones purchased. The 2015 Zonocard prices are shown in Table 3.24 below.

Capabilities on project:
Transportation

Table 3.24 Zonecard Prices

Operator	Period	Cost	Notes
SPT ZoneCard (Based on 3 Zones - D1, G8 and G1)	1 week	£24.20	The example is based on the zones required for journeys between Glasgow and the study area. ZoneCard enables travel on both bus and rail. The price varies depending on the number of zones required.
	4 week	£87.10	
	10 week	£206.00	
	1 Year	£944.00	

Interchange at Milngavie Rail Station

Bus interchange is available at Milngavie station; the McGills number 47 and First Edinburgh number B10/310/C10 services stop adjacent to the station building, the Citybus number 15 which does not travel along the A81 links the station with the north-western areas of Milngavie and Bearsden, as mentioned above taxis are also available.

The 15, 10A, 310, B10, C10, 47, 47A, 512, B8 and C8 stop in the station, providing direct access from a number of local areas to the station. All other bus services stop within a short walk of the station on the A81.

The interchange times for passengers arriving at Milngavie train station by bus and then transferring to rail services during the AM peak are limited to the 07:42, 08:18 and 08:42 rail services. The average interchange time for this is just 5 minutes.

During the PM peak interchanging from bus to train the average interchange time is 15 minutes. The interchanges are limited with bus services departing from Milngavie at 17:45, 18:00 and 18:23.

The interchange between passengers changing from bus to train is perhaps the more useful measurement rather than the interchange from train to bus. The rail line follows one single route whereas the different bus services follow multiple routes. An interchange time of 5 minutes from the train to the next available bus does not necessarily mean that the next bus will be the particular route desired by the passenger.

Services which would in effect “double back” on the route already taken by the train line have not been included. This is true of 47 bus services which run parallel to the rail route corridor.

Interchange at Hillfoot Station

Figure 3.11 shows Hillfoot Station, EDC has delivered a travel hub which is design to enhance connectivity and interchange between different modes around the rail station. This has included enhanced facilities for walking, cycling and buses on the A81 adjacent to the rail station. The bus stops are served by various buses (C8, B10/310/C10, 47, 60A, 347, 512). However, buses do not call directly into the station forecourt and there is a level change between bus stops and the platform. The A81 must be crossed between the station and the northbound bus stop.

The SPT supported M18 MyBus and 600 ‘Ring & Ride’ services also cover Hillfoot station.

Average interchange times for passengers travelling from bus to train during the AM peak is 8 minutes heading towards Glasgow and 9 minutes for passengers heading towards Milngavie. During the PM peak it is 7 minutes towards Glasgow and 11 minutes for passengers heading towards Milngavie.

The average interchange times for passengers travelling from train to bus during the AM peak are 5 minutes for passengers heading towards Glasgow and 6 minutes for those travelling towards Milngavie. During the PM peak these averages are 7 minutes towards Glasgow and 12 minutes towards Milngavie.

Capabilities on project:
Transportation



Figure 3.11 Hillfoot Rail Station

Interchange at Bearsden Station

The Glasgow City Bus number 118 bus, between Duntocher, Baljaffray and Glasgow stops on Drymen Road at Bearsden Station (though not directly on the station forecourt). Similarly the Glasgow Citybus numbers 15 (Milngavie – Glasgow via Anniesland), 16 (Baljaffray-Bearsden-Glasgow) and 17 (Duntocher-Bearsden-Glasgow) also stop on Drymen Road.

The area covered by the SPT supported MyBus service for the north west of Glasgow also includes Bearsden station.

Travel from Bearsden to Glasgow can be made by interchanging between bus services (e.g. Duntocher to Bearsden) and rail (e.g. Bearsden to Glasgow). Using the available timetable information as the basis for the investigation, the average interchange time between the modes in the AM peak period is 7 minutes (ranging from 2 to 13 minutes). In the inter-peak period this rises to 13 minutes (ranging from 3 to 23 minutes).

For travel in the opposite direction from Glasgow to Bearsden in the PM peak, there is an average interchange time of 10 minutes (ranging from 2 to 17 minutes).

Public Transport Connectivity

The study area is well connected by public transport to key regional economic centres, both with direct links and via interchange. As well as links to Glasgow, direct services link the area to Edinburgh, Lanarkshire and North West Glasgow. The regional centre (Glasgow) is the primary interchange point for onward services to the rest of Scotland, and England. Access to the northwest of Glasgow is via intermediate stops between the study area and the city centre. However, interchange is generally required to access other areas of the Glasgow conurbation.

Glasgow Airport and, the Braehead leisure and shopping complex are accessible via interchange in Glasgow city centre or using the subway system between Patrick and Govan. Figure 3.12 below is a visualisation of the study areas connectivity by public transport modes.

Capabilities on project:
Transportation

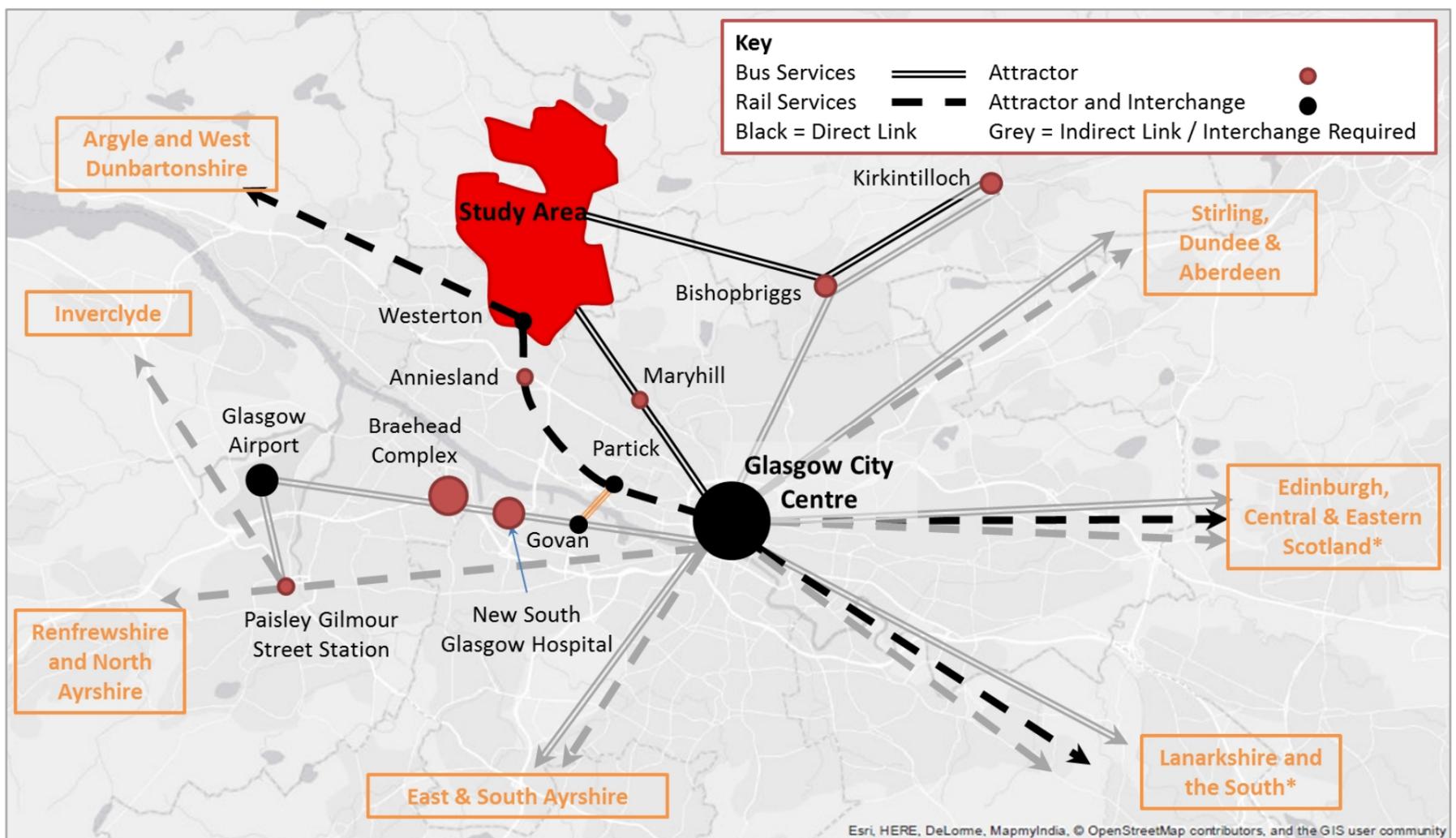


Figure 3.12 Connectivity Diagram

Journey Times

A review has been undertaken of published timetables presented on Traveline Scotland’s website to understand bus journey times and their fluctuation through the day. The analysis of bus times is based on the First Glasgow Service 60A. Table 3.25 below illustrates the journey times to Glasgow City Centre during the morning peak is 44 minutes, around 41 minutes at any other time. The return journey is generally 5 – 9 minutes quicker than its comparative city bound journey. Journey times to / from Maryhill vary by 2 – 6 minutes with the city bound service generally being slower.

SPT suggested to AECOM that more issues affect bus journey times in the southbound direction. This is confirmed perhaps by southbound journeys between Milngavie and Kessington being generally slower in the southbound direction.

Table 3.25 Timetabled Bus Journey Times

Journey	Journey Time (minutes)		
	Morning	Inter Peak	Evening
Milngavie Town Centre to Glasgow City Centre	44	41	39-41
Glasgow City Centre to Milngavie Town Centre	34-35	36	37-39
Hillfoot to Glasgow City Centre	39	33	32-33
Glasgow City Centre to Hillfoot	29	29	30-32
Milngavie to Maryhill Shopping Centre	25	23	22-23
Maryhill to Milngavie Maryhill Shopping Centre	19	19	20-21
Milngavie to Kessington	10	9	9
Kessington to Milngavie	8	8	9

Based on two services in each of the following periods AM – 8:00 – 9:00, IP (Inter-peak) – 12:00 – 13:00 and PM 17:00 – 18:00

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Table 3.26 below details the analysis of journey times based on the published timetables presented on Traveline Scotland's website. The analysis of bus times have been separated into different segments and the average travelling speed has been calculated to understand where bus services suffer greater delay. This analysis is based on the First Glasgow Service 60A.

Table 3.26 Bus Journey Speed – Towards Glasgow (derived from timetable)

Journey (Towards Glasgow City Centre)	Bus Speed (metres per second)		
	Morning	Inter Peak	Evening
Before Milngavie Town Centre – Mosshead Road (at Kilmardiinny)	5	5	5
Mosshead Road (at Kilmardiinny) – Maryhill Road (at Cluny Park)	6	7	7
Maryhill Road (at Cluny Park) – After Maryhill Shopping Centre	4	5	5
Past Maryhill Shopping Centre – Maryhill Road (near Hindshaw Street)	5	5	5
Maryhill Road (near Hindshaw Street) – Cowcaddens Subway	4	5	4
Cowcaddens Subway – Glasgow City Centre	2	2	3

As indicated in Table 3.27 the bus speed slows on the approach to Glasgow. This is perhaps expected due to increased traffic volume and signal controlled junctions / crossing. However, the bus also slows between the East Dunbartonshire – Glasgow boundary and Maryhill Shopping Centre, this could be attributed to;

- Boarding and alighting at Maryhill Rail Station;
- The presence of Maryhill Shopping Centre;
- The road network around Maryhill Shopping Centre which includes two signalised junctions with pedestrian facilities and three signalised pedestrian crossings, all within a 240m length of Maryhill Road;
- The number of signalised junctions (six) and signalised pedestrian crossings (nine); and
- Large residential areas generating significant levels of boarding.

Generally the bus service is operating slower in the morning only at all other times of day the service speed remains constant.

Table 3.27 Bus Journey Speed – Towards Study Area (derived from timetable)

Journey (Towards Study Area)	Bus Speed (metres per second)		
	Morning	Interpeak	Evening
Glasgow City Centre – Near Cowcaddens Underground	4	4	4
Near Cowcaddens Underground – After St Georges Cross	7	5	5
After St Georges Cross – Before Maryhill Shopping Centre	5	5	5
Before Maryhill Shopping Centre – Maryhill Road (Opposite Cluny Park)	5	5	5
Maryhill Road (Opposite Cluny Park) - Mosshead Road (at Kilmardiinny)	8	8	8
Mosshead Road (at Kilmardiinny) – After Milngavie Town Centre	5	5	5

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Bus service speeds heading towards study area remain more stable and constant than services heading towards Glasgow, although the service does run slightly slower in the morning also. Outside the morning peak period both outbound and inbound services operated at similar speeds.

Generally the main bus and rail routes to Glasgow City Centre do not compete along the same corridor; the bus service follows the A81 corridor whilst the rail generally follows a more southerly route via across the Great Western Road and Dumbarton Road corridors. Therefore, other than journeys commencing and ending within East Dunbartonshire the only route rail and bus generally compete is to / from the city centre. Rail journey times between Milngavie and Glasgow Central or Queen Street are generally 20-25 minutes in either direction, and at Hillfoot 17-22 minutes; some express services provide a significantly quicker service.

Between Milngavie Town Centre and Glasgow City Centre similar rail journeys are approximately 15 – 19 minutes quicker than bus. At Hillfoot (excluding express rail services), journeys to Glasgow are generally 8 – 13 minutes slower by bus. It should be noted that the rail and bus services are not directly comparable as they start and terminate at slightly different locations and do not take consideration of any walking time. These times give a general indication on the journey time differences between the two modes.

3.4.5 Road

Figure 3.13 illustrates the location of the study area with respect to the road network.

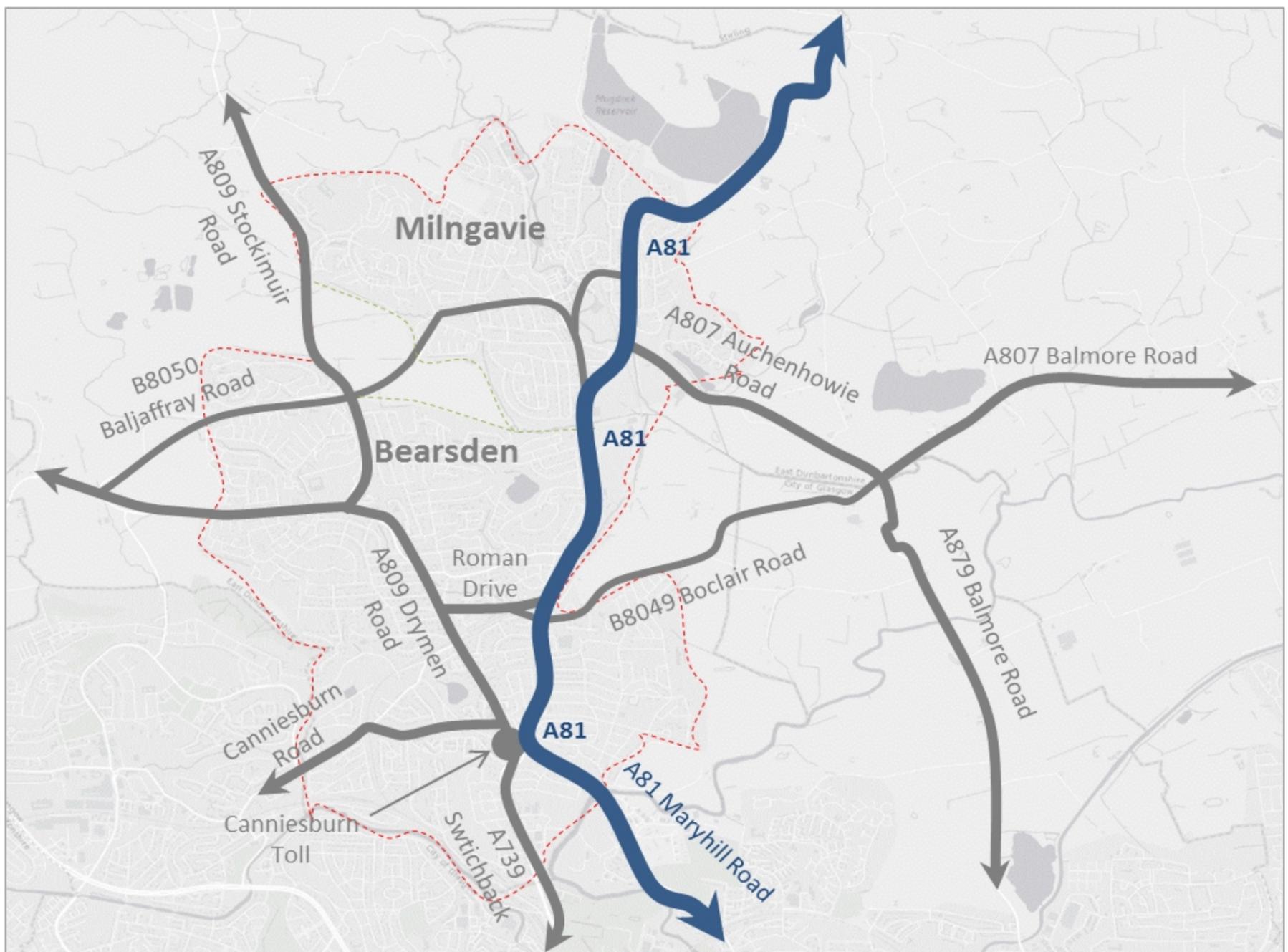


Figure 3.13 Core Road Network within the Study Area (Source: Google Maps 2014)

The A81 runs from the M8 at the north edge of Glasgow City Centre, north through Maryhill (as a four lane single carriageway with bus lanes in each direction), and crosses into East Dunbartonshire at the River Kelvin. It continues north through an urban setting in Bearsden and Milngavie, then in a more rural setting north of Milngavie. The road crosses from East Dunbartonshire

Capabilities on project:
Transportation

into Stirling Council at Mugdock, around three miles north of Milngavie Town Centre and continues north to Port of Monteith and Stirlingshire.

The study area considers the section of the A81 within East Dunbartonshire, from the border with Glasgow City Council to the border with Stirling Council.

The main point of route choice for traffic on this corridor is at the north end. Some traffic, particularly northbound, may choose to take Milngavie Main Street at Burnbrae Roundabout instead of the A81, in order to avoid queuing traffic at the junction with Auchenhowie Road.

The Clyde Tunnel can be reached about 5km south of Canniesburn Toll. The M8 is approximately 7km south of the study section via the Clyde Tunnel, or 6km to the southeast via the A81, giving access to the national strategic road network.

River Kelvin – Boclair Road

Where the A81 (Maryhill Road) enters East Dunbartonshire from the south, it is a dual carriageway with two lanes in each direction. The A81 meets the A739 Switchback Road and the A809 Drymen Road at Canniesburn Toll roundabout. Traffic remaining on the A81 northbound or southbound is able to bypass Canniesburn Toll to the north east. Signals control traffic in both directions on the A81 and exiting the Toll onto Maryhill Road.

To the north of Canniesburn Toll the A81 (Milngavie Road) is a four lane single carriageway. The junction between Kessington Road and Milngavie Road is signal controlled though right turning traffic limits capacity on the A81. A petrol station situated here has an uncontrolled exit into the centre of the junction.

A further signal controlled junction exists where Buchanan Drive and the access to Asda supermarket meet the A81. The junction with Boclair Road and Roman Road, immediately north of the Asda junction, is a critical junction with a large proportion of right turning vehicles from all arms and significant queuing in peak periods. To the north, the A81 is often limited to one lane in each direction by on street parking around Hillfoot station. Cyclist advanced stop lines are in place at the junction between Boclair Road, Roman Road and the A81 Milngavie Road.

Boclair Road – Burnbrae Roundabout

Continuing north the A81 crosses the railway and there is a signal controlled crossing to the north of the junction with Roman Drive. At this point the A81 is a wide single carriageway with on-street parking, some in marked bays.

From around Burnmouth Place, there are advisory cycle lanes in each direction on the A81 – sometimes on the outside of marked parking bays – these continue on the A81 until Burnbrae Roundabout, where they continue further north on the B8030 Main Street. The character of the A81 remains similar as far as the Burnbrae Roundabout, a wide single carriageway (around 12.5m) with ghost island road markings for right turners, on street parking, and access to residential properties and streets, particularly on the west side.

Burnbrae Roundabout – Mugdock Reservoir

North of Burnbrae Roundabout, the A81 (Glasgow Road) is a single carriageway with a footpath only on the east side. Passing under the railway the A81 meets the A807 Auchenhowie Road at a signal controlled junction. North of this junction the A81 is once again a wide single carriageway, until the signal controlled junction with Woodburn Way and Baldernock Road where width is constrained.

The single carriageway A81 (Strathblane Road) continues to the north with frequent residential accesses and on street parking, and emerges into a rural setting close to the Stirling Council boundary.

Traffic Flow Data

EDC bi-annually commission Automatic Traffic Counts on key routes throughout the Council Area; this includes the A81 Milngavie Road, A81 Maryhill Road, A807 Auchenhowie Road and B8049 Boclair Road. The surveys are undertaken over a seven week period which provided an average daily traffic flow. For the A81 Milngavie Road in May 2013, the average daily traffic recorded was 19,661 vehicles. Figure 3.14 shows traffic flow trends on the A81 and its surrounding roads. Figure 3.14 shows that in general traffic growth has plateaued in recent years; this could be associated with an ageing population, the recent economic downturn and transfer to rail.

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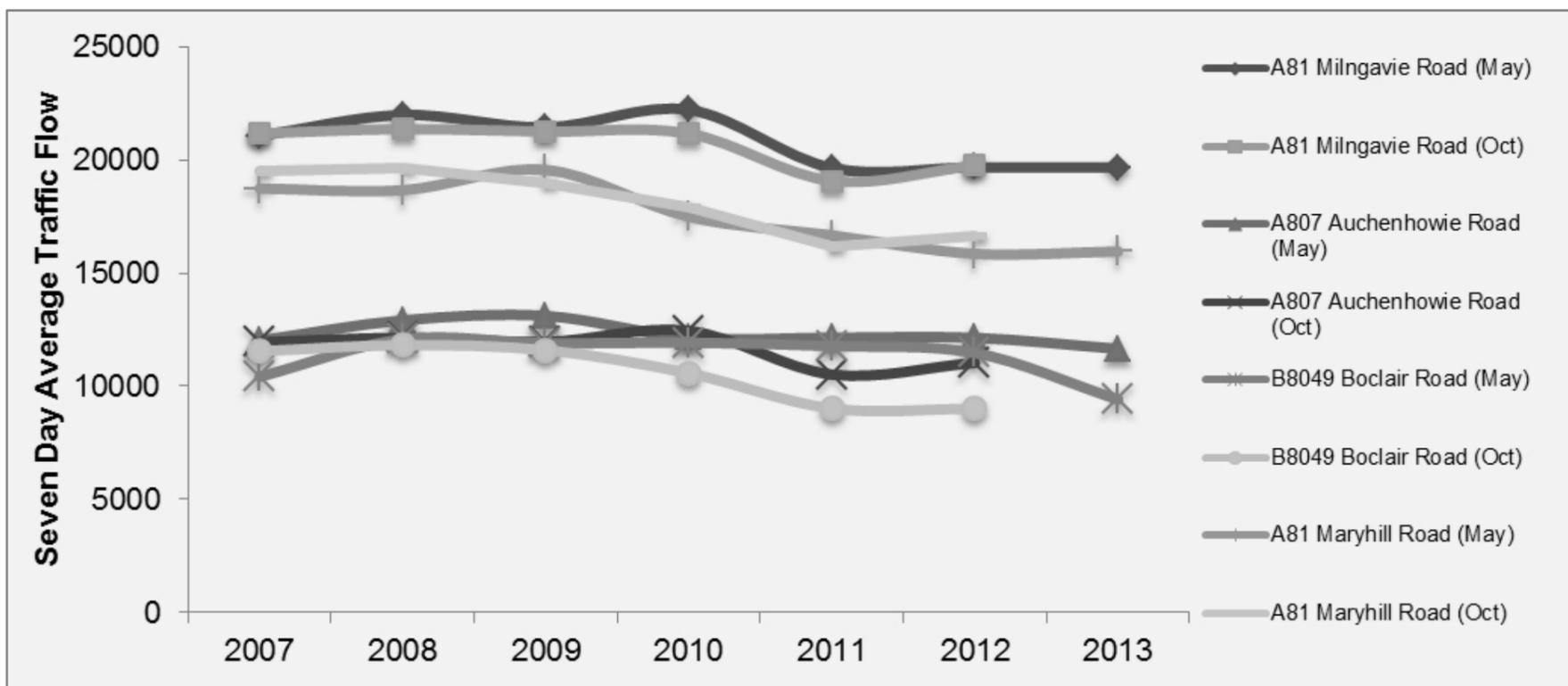


Figure 3.14 Traffic Volume Trends 2007 - 2013

Notwithstanding the above, it is understood from the project brief that the A81 has a number of bottlenecks which restrict vehicular flow and increases delay for private vehicles, commercial vehicles and public transport services. The key areas of congestion on the A81 are:

- The junction with B8049 Boclair Road junction;
- The junction with A807 Auchenhowie Road;
- Burnbrae Roundabout; and
- Canniesburn Toll

In an effort to confirm this AECOM undertook a review of the Transport Assessment produced by WSP for the proposed Waitrose store in 2012. For the Transport Assessment a number of junctions were modelled to determine their level of saturation / congestion, the base / existing situation suggested the following:

- The A81 Milngavie Road / A807 Auchenhowie Road – The southern A81 arm was 78% saturated and the Auchenhowie Road arm was 79.4% saturated during the weekday evening peak;
- The Burnbrae Roundabout – Some arms were operating between 50-60% capacity, at 85% it is generally considered congested; and
- The A81 Milngavie Road / B8049 Boclair Road junction – During the evening peak the junction operated at over 50% capacity, again normally considered congested at 85%.

It should be noted supermarket peak periods are weekday evenings and Saturday afternoons, therefore weekday morning periods were not modelled.

Although not fully congested in the PM peak the Transport Assessment certainly indicates that the junctions are busy and in some cases close to being congested. The Waitrose Transport Assessment was not required to model the operations of the Canniesburn Toll junction. The Transport Assessment also identified the junctions between the A81 and the access to ASDA as being busy.

The Transport Assessment for the Kilmardinny development was also reviewed, the base situation was modelled using the microsimulation modelling software PARAMICS. The model graphically indicates that significant queuing occurs on the A81 between Hillfoot and Canniesburn Toll; this includes the Boclair Road and ASDA junctions. There are also delays experienced at the Burnbrae Roundabout and Auchenhowie Road junctions. It should be noted that the base model was developed in 2004, therefore may not be sufficiently relevant to current corridor conditions. However, it is understood via on-site observations and discussions with East Dunbartonshire Council that these junctions still experience significant queuing; therefore the model is considered reasonably representative of current capacity issues.

Capabilities on project:
Transportation

Change in Car Journey Times

The following Table 3.28 indicates the comparative journey times by car between the 2008 study and 2014. The surveys were undertaken between Canniesburn Toll and Station Road, Milngavie, in both directions.

Table 3.28 Comparison between Car Journey Times in 2008 - 2014

	2008			2014			Average Time Difference
	Start Time	Journey Time (mins)	Average Time	Start Time	Journey Time (mins)	Average Time	
Northbound	07:45:00	06:15	07:17	07:40	08:05	07:08	-0:09
	08:02:00	07:57		08:00	07:07		
	08:28:00	06:44		08:22	06:30		
	08:44:00	08:13	08:42	06:52	08:39		
	16:48:00	09:27	16:50	09:09			
	17:08:00	10:05	17:09	09:20			
	17:27:00	06:31	17:29	08:03			
			17:47	08:05			
Southbound	07:53:00	07:47	08:57	07:49	09:22	09:18	+0:21
	08:15:00	12:48		08:09	10:36		
	08:37:00	06:17		08:30	10:07		
				08:50	07:07	07:18	
	17:00:00	06:24	17:02	07:37			
	17:20:00	06:40	17:21	07:32			
			17:39	08:03			
			17:57	05:59			

As in 2008 the figures suggest that for the AM peak period, northbound journey times by car are generally quicker than southbound journeys and in the PM peak period southbound journeys are generally quicker. The likely cause of this is the tidal commuter flow to / from Glasgow. Generally, journey times in 2014 are similar to those reported in 2009, except for an increase in southbound journey times, particularly during the PM peak.

It should be noted that a comparison between bus journey times and car journey times was undertaken in 2008; however, due to service provision, routing and frequency it was not possible to undertake a directly comparable survey in 2014. The 2008 study compared the car journey times to the timetable of the First service number 10. Both modes commenced at Station Road, at the A81. The bus took 10 minutes, whilst the car took around 7-8 minutes (except one outlier of 13 minutes). However the service now passes through Kessington rather than continue towards Canniesburn Toll, like in 2008.

Notwithstanding the above, Canniesburn Toll and the first stop in Kessington (adjacent to the A81) are reasonably close, approximately 500m which would equate to 40 – 60 seconds. Therefore, it is estimated that the journey time by car would be 1 – 3 minutes quicker than the bus. Please note that the bus travels into Milngavie Station, via Woodburn Way and Main Street, rather than the A81 which may account for a proportion of the difference.

It should be noted that these surveys are intended to offer a snapshot view of the journey times along the A81. Behaviours witnessed during the surveys were highly variable and the survey results only offer an idea of the typical journey times.

Parking Enforcement

In April 2013 EDC adopted decriminalised parking enforcement from Police Scotland. This enables EDC to more effectively enforce various parking restrictions within their area. Potentially this may provide a road safety, accessibility, economic and traffic operation benefit. EDC is soon to be implementing a charging regime in the town centre car parks only, with the first two hours free.

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Road Safety

Accident data for the study area indicates that between 2009-14 there was one fatality and six serious injury accidents; the nature of these accidents include:

- Fatality** – Vehicle collision due to excessive speed, wet / damp road conditions and reckless driving;
- Serious** – Three collisions were as a result a poor turn or manoeuvre;
- Serious** – Two serious collisions involved pedal cyclists.

In total, 70 collisions resulted in an injury, four involved pedestrians, six involved pedal cycles and three involved a powered two wheel vehicle. Figure 3.15 plots the accident data and indicates there are certain accident clusters located at specific points along the A81 Corridor:

- Canniesburn Toll;
- Milngavie Road/Roman Drive junction;
- Milngavie Road/Roman Drive/Boclair Road junction; and
- Milngavie Road between Kilmardinny Avenue and Mosshead Road.

In general the collision levels of the route and the surrounding roads compare reasonably well with the data presented in the 2008 study. Between 2003-08, 94 collisions were recorded on the A81 and surrounding roads, including one fatality and ten serious injuries.

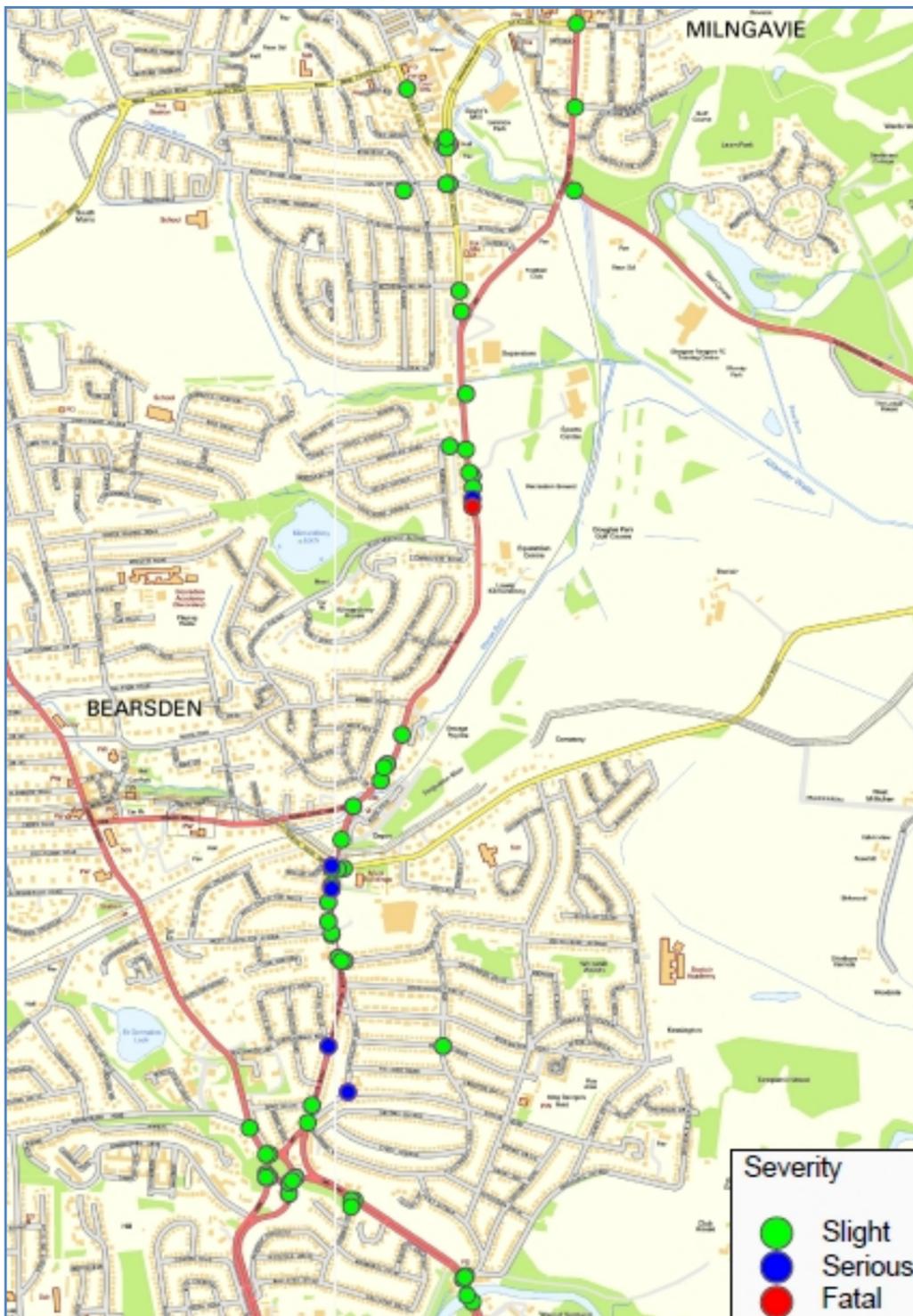


Figure 3.15 Accident Data Plot Source: Accident data provided by EDC

Capabilities on project:
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Summary of Transport

Walking/Cycling

- Walking facilities are provided through by way of roadside footways, typically on both sides of the carriageway.
- Road crossings facilitated by red crossing strips, dropped kerbs or signalised crossings, all signalised junctions have pedestrian facilities.
- Discontinuous cycle facilities are provided in the form of advisory cycle lanes on certain parts of the A81 and advanced stop lines at some junctions. The effectiveness of cycle lanes is reduced by various vehicles (e.g. cars, buses, refuse lorries) parking across them.
- At present the existing off road walking / cycling facilities primarily serve the leisure cyclist. The routes are convoluted, compared to on-road facilities which impacts on the ability to attract a significant number of commuters.
- EDC and partners are developing a segregated cycle route along the A81 between Milngavie and Bearsden at Kessington.

Bus

- Although local figures are unavailable, regionally the number of bus passenger journeys has fallen in recent years.
- The study area connected directly to key destinations by bus, including West of Scotland Science Park, Maryhill, Glasgow University and Glasgow City Centre.
- Low frequency service between the study area and eastern parts of East Dunbartonshire.
- The speed of services to Glasgow are generally slower through Maryhill than at another other point outside the city centre.
- The average interchange time between bus and rail modes (Bearsden to Glasgow) in the AM peak period is 9 minutes (ranging from 4 to 15 minutes). In the inter peak period this rises to 13 minutes (ranging from 3 to 23 minutes). Travel in the opposite direction (Glasgow to Bearsden) in the PM peak period experiences an average interchange time of 10 minutes (ranging from 2 to 17 minutes).

Rail

- There are four rail stations within the study area: Milngavie, Hillfoot, Bearsden and Westerton.
- The study area is connected by direct rail services to Partick, Glasgow, Edinburgh and Lanarkshire.
- The frequency of rail services is 4ph (Mon-Sat 0700-1800) and 2ph (Mon-Sat 1800-2200; Sun) and journey times to Glasgow City Centre range from 15-25 minutes depending on boarding station.
- Patronage at all four study area stations has increased significantly in recent years – some peak hour services are approaching capacity in terms of seats utilised.

Road

- In 2013, the average daily traffic recorded was 19,661 vehicles on the A81 Milngavie Road.
- In recent years traffic levels on the A81 and other key roads in the study area have either plateaued or decreased
- Analysis of development Transport Assessment suggests the key areas of congestion are on the approaches to the A81 Milngavie Road / B8049 Boclair Road junction, A81 Glasgow Road / A807 Auchenhowie Road junction, Burnbrae Roundabout and Canniesburn Toll.
- Collision levels appear to be falling when compared to previous analysis in the 2008 study

3.5 Travel Patterns and Choices

Overall

Table 3.14 shows the total number of residents making journeys to work fell overall and quite substantially in the study area (10.9%) and East Dunbartonshire (11.2%). There was a rise in trips in Glasgow (1.8%); however this rise was not at the same rate as population growth (2.7%).

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There are three explanations for why this pattern change might have happened:

- A decrease in the total number of people employed in the study area and in East Dunbartonshire and an increase in Glasgow,
- A rise in people working from home. Between 2001 and 2011 the share of those in work, working from home in the study area rose from 5.5% to 10%, according to Census data.
- A decrease in the number of school-age children in the study area and East Dunbartonshire (there is a decrease of 793, 5-15 year olds between 2001 and 2011 in the study area, a 13% decrease from 2001). The proportion of the population over 65 has increase by 4%, according to census data.

Active Travel

As shown in Figure 3.16 below and Table 3.29, the numbers of people walking and cycling as their main mode of transport to work has fallen by 10% between the 2001 and 2011 census periods. Active travel mode share has remained generally the same, although walking is the predominant form of active travel.

Public Transport

Figure 3.16 and Tables 3.29 and 3.30 illustrate that despite a fall in trips overall the number of residents travelling to work by rail in the study area and East Dunbartonshire has grown, with its absolute growth being 15.6% corresponding to approximately 437 extra journeys to work by train from the study area and 683 from all of East Dunbartonshire. Private vehicle ownership levels grew in the study area, however its share as a Travel to Work mode fell.

Bus trips for journeys to work have fallen considerably over the 2001-11 period by nearly 30% in the study area (Table 3.17) and a 2.2% loss in mode share to work (Figure 3.16). A similar pattern has been seen in East Dunbartonshire (21% drop in numbers and 1.5% drop in share) and a slightly less striking shrinkage has been seen in Glasgow (12.2% drop in numbers and 3.4% drop in share).

The tables show that rail journeys (including Glasgow Subway journeys) have bucked the trend in terms of overall falling numbers of trips. Whilst bus mode share has fallen (-2.02%) the increase of rail (+3.09%) mode share has driven an overall modal shift towards public transport of 1%.

Table 3.29 Total Numbers Travel to Work/Study (All modes except 'Other' and Work from Home)

Area of Residence	2001	2011	Change	% Change
Study Area	25,942	23,119	-2,823	-10.9
East Dunbartonshire	68,892	61,207	-7,685	-11.2
Glasgow	315,994	321,739	5,745	1.8

Source: 2001 Data SCROL (Scottish Census Results Online), 2011 data Scotlands Census 2011.

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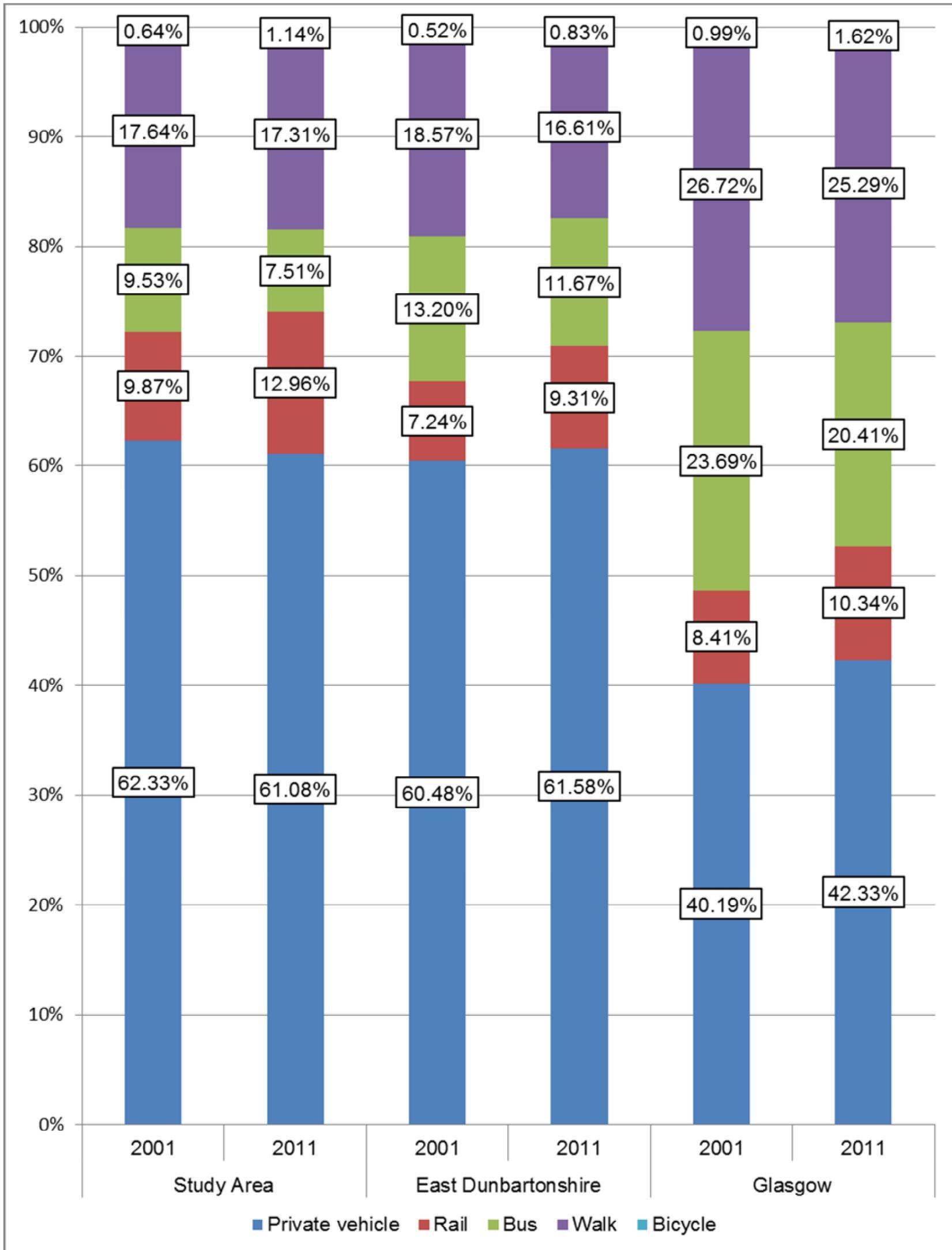


Figure 3.16 Travel to Work Modal Splits (2001 & 2011)

Source: SCROL (Scottish Census Results Online) (2001), Scotland's Census (2011).

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Table 3.30 Numbers Travel to Work by Mode

		Study Area	East Dunbartonshire	Glasgow
Bus	2001	2,471	9,092	74,847
	2011	1,736	7,145	65,681
	Change	-735	-1,947	-9,166
	%	-29.7	-21.4	-12.2
Rail	2001	2,560	4,986	26,586
	2011	2,997	5,699	33,282
	Change	437	713	6,696
	%	17.1	14.3	25.2
Private Vehicle	2001	16,169	41,664	126,996
	2011	14,121	37,691	136,194
	Change	-2,048	-3,973	9,198
	%	-12.7	-9.5	7.2
Walking & Cycling	2001	4,742	13,150	87,565
	2011	4,265	10,672	86,582
	Change	-477	-2,478	-983
	%	-10.1	-18.8	-1.1

Source: SCROL (2001), Scotland's Census (2011).

Capabilities on project:
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Journeys to School – Hands Up Survey

Sustrans in partnership with local authorities and funded by Transport Scotland undertaken the “Hands Up” survey across all schools in Scotland. This annual survey is designed to ascertain the main mode of travel to school for pupils. Although a snapshot this survey can indicate the travel habits of children across the country, the database can be filtered down to local authority level. An analysis of the Hands Up survey database has been undertaken for both primary and secondary school pupils in East Dunbartonshire between 2009 and 2013.

Figure 3.17 illustrates the survey result for primary school pupils in East Dunbartonshire. In recent years there has been a fall in the percentage of pupils walking to school; there was an increasing in cycling to school but that has begun to fall back to 2009 levels. Children being driven to school have remained reasonably constant, with the exception of 2011 where it spiked up.

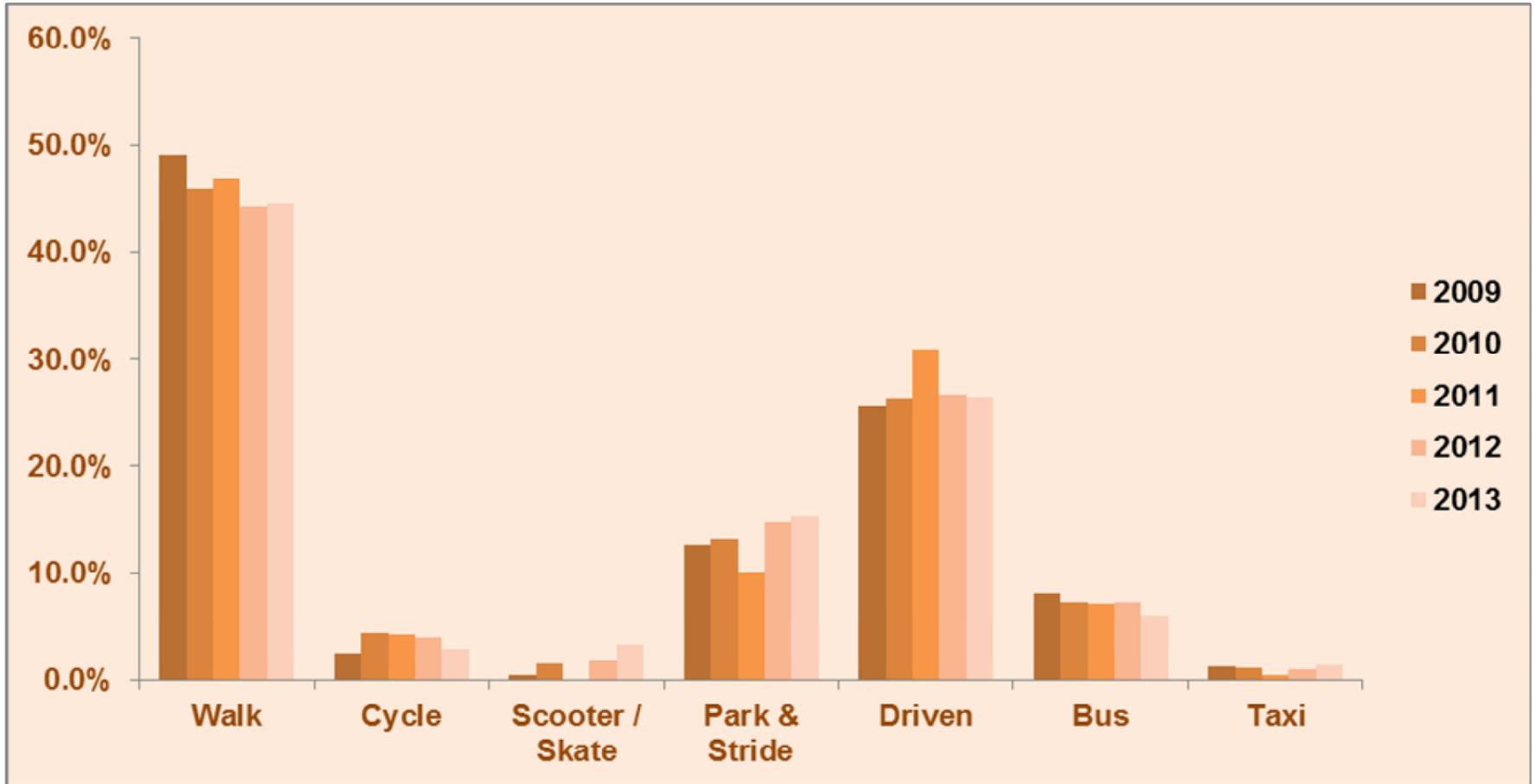


Figure 3.17 East Dunbartonshire Hands Up Survey Results for Primary School Pupils (2009 & 2011)

Figure 3.18 illustrates the survey result for secondary school pupils in East Dunbartonshire. Walking is the predominant mode of travel however cycling is almost non-existent. The percentage of secondary pupils being driven to school was increasing, peaking in 2011 and falling again. This may be associated with the economic climate and more parents being at home to drive their children to school. The proportion of secondary pupils using the bus to get to school is generally falling.

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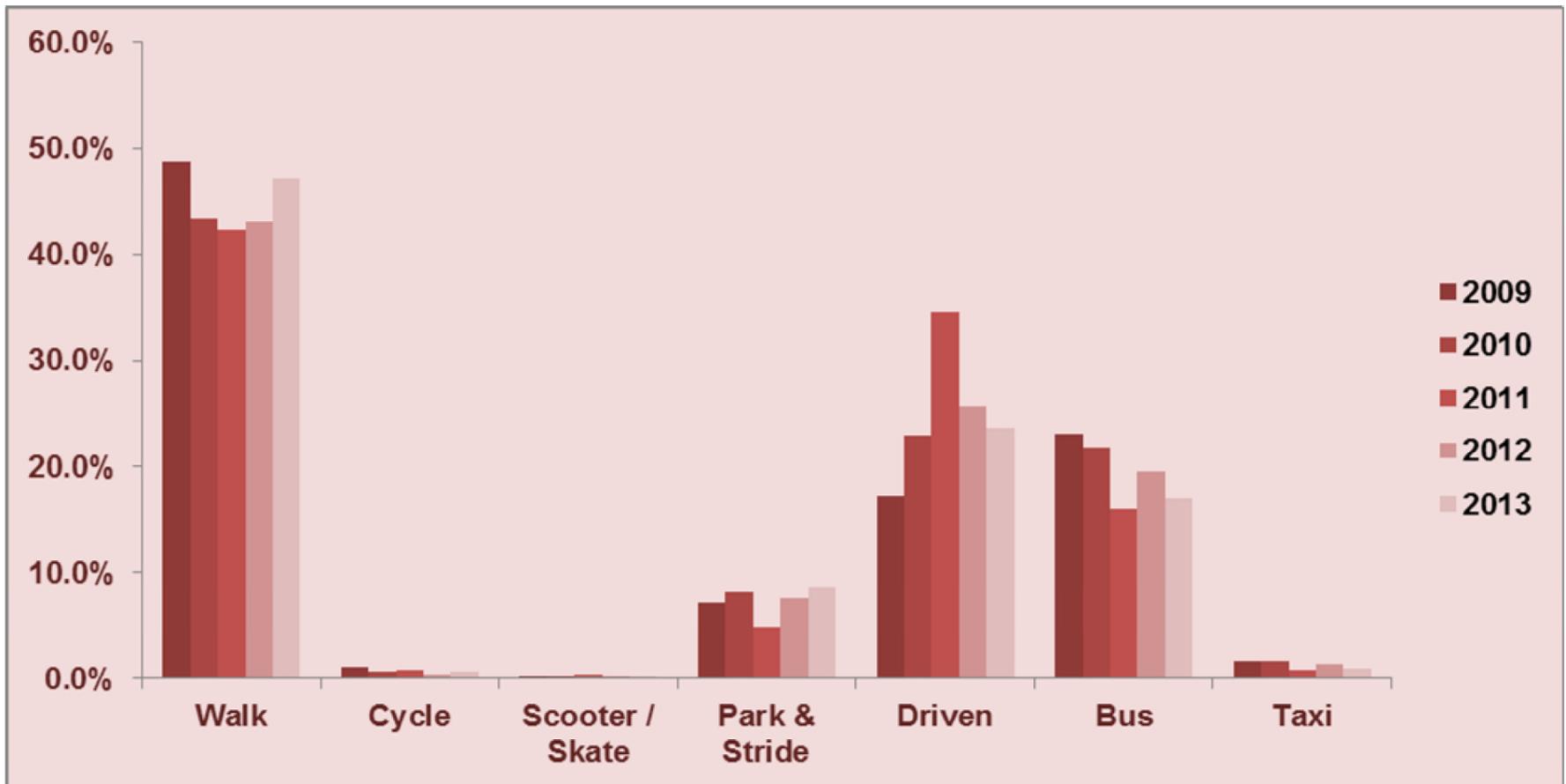


Figure 3.18 East Dunbartonshire Hands Up Survey Results for Secondary School Pupils

Origin – Destination for Employment both Residential and Daytime Population

An examination of Census Origin – Destination data has been undertaken to understand where and by what means people either working within or residing in travel to work. The data available through the Census website has not be disaggregated to ward or town level, the lowest level of data is a local authority level. Table 3.31 summarises the working location of the working residential population of East Dunbartonshire. Over 75% of the working population of East Dunbartonshire work outside the Council Area and two thirds of which work within the City of Glasgow. Roughly a quarter of the working population are employed within East Dunbartonshire.

Table 3.31 Work location for residents of East Dunbartonshire

Area	Glasgow City	Dunbartonshire East	North Lanarkshire	Renfrewshire	Dunbartonshire West	South Lanarkshire	Edinburgh	Stirling	Falkirk
Percentage of Working Population	52.6%	24.8%	6.2%	3.6%	3.3%	2.4%	1.4%	1.3%	1.1%

Table 3.32 summarises the locations where the working population of East Dunbartonshire reside. It shows that almost half of all employees working within East Dunbartonshire live in the area. The bulk of workers in East Dunbartonshire who live outside the area live in either Glasgow or North Lanarkshire.

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Table 3.32 Home Location of Employees Working in East Dunbartonshire

Area	East Dunbartonshire	Glasgow City	North Lanarkshire	West Dunbartonshire	South Lanarkshire	Renfrewshire	Stirling	Falkirk	East Renfrewshire
Percentage of Working Population	49.5%	21.4%	12.0%	3.9%	3.3%	2.2%	1.9%	1.5%	1.2%

The two key working locations for East Dunbartonshire residents are Glasgow City Centre and the wider Glasgow City area itself. A review of the method of travel to work to these locations has been undertaken. As illustrated in Table 3.33 below, 60% of East Dunbartonshire residents working in Glasgow travel by car. Rail is the most commonly used public transport mode with a share of 17.5%. Similarly of those residents also working in the Council Area most travel by car, the second most prominent mode is walking.

Table 3.33 Method of Travel to Work for Residents of East Dunbartonshire (working both in East Dunbartonshire and Glasgow)

Journey	Mode of Travel									
	Subway	Train	Bus	Taxi	M/C	Car (Driver)	Car (Passenger)	Cycle	On foot	Other
East Dunbartonshire (Internal)	0.0%	1.0%	7.7%	1.4%	0.2%	60.7%	7.5%	0.9%	20.5%	0.1%
East Dunbartonshire to Glasgow	0.2%	17.5%	14.2%	0.3%	0.3%	60.0%	5.4%	1.3%	0.8%	0.1%

As summarised in Table 3.34, most of the working population of East Dunbartonshire who reside in Glasgow travel by car. Commuting by bus to East Dunbartonshire is second most prominent mode.

Table 3.34 Method of Travel to Work for Residents of Glasgow working in East Dunbartonshire

Journey	Mode of Travel									
	Subway	Rail	Bus	Taxi	M/C	Car (Driver)	Car (Passenger)	Cycle	On foot	Other
Glasgow to East Dunbartonshire	0.2%	5.6%	17%	1%	0.2%	63.2%	7.2%	1.7%	4.0%	0.1%

Capabilities on project:
Transportation

3.5.1 Affordability of Transport

A review of costs of transport has been undertaken to understand costs trends and affordability of transport. The analysis includes the costs of;

- Train – Comparison of 2008 (as quoted in 2008 report) and 2014 fares
- Bus – Comparison of 2008 (as quoted in 2008 report) and 2014 fares
- Car Running Costs – Based on AA Motor Costs annual figures, include insurance, depreciation, fuel, maintenance, cost of purchase, etc.
- Fuel – To determine whether car running costs are directly related to fuel costs. Figures based on AA Motor Costs annual figures (national statistic),
- Salary – Comparison of Annual Survey of Hours and Earnings by the Office of National Statistics, for Bearsden
- A review of the consumer price index, general and for transport, was undertaken to understand the changes in transport costs compared to inflation (Local)

As shown in Figure 3.19, the relative cost of public transport in the corridor has risen approximately 30%, whilst the costs of the private car have generally increased at a slower rate. Furthermore, the cost of running a car between 2012-13 almost plateaued and in 2014 showed a significant decline. The rise in average salaries in the area has slowed in recent years and this is highly likely to be a result of the recent economic downturn.

When compared against the relative costs of driving, the consumer price index for transport and salary levels the costs of public transport is rising as shown in Figure 3.19.

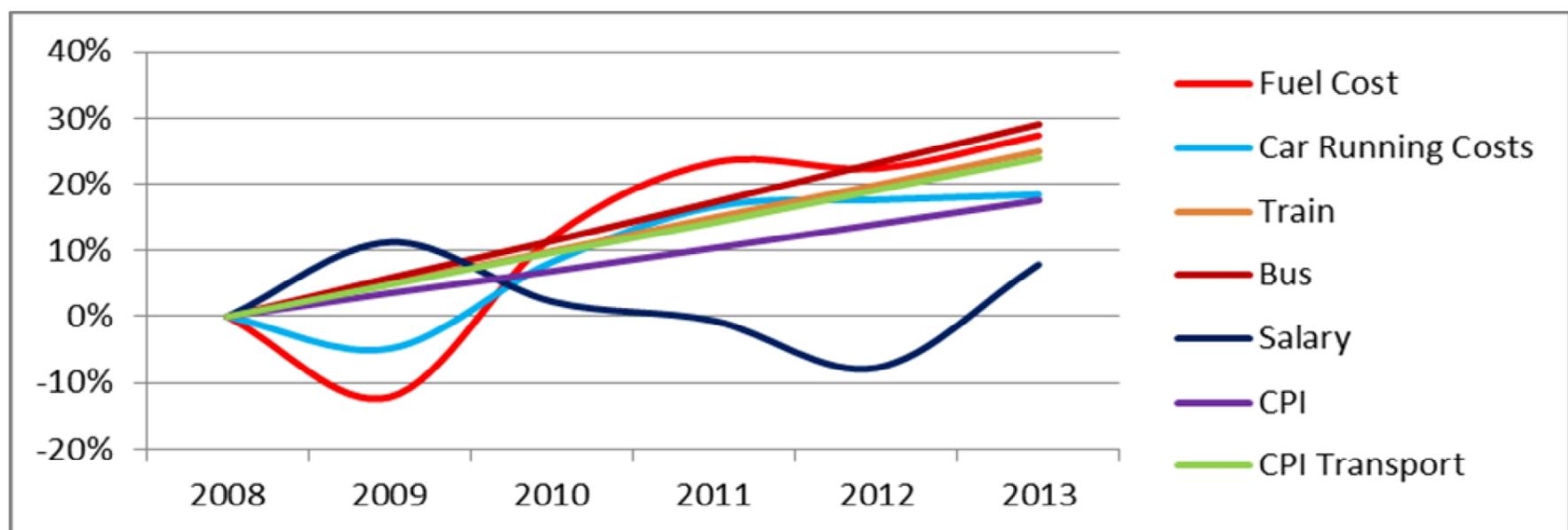


Figure 3.19 Costs of Travel per Mode % Increase Sources as stated above

Although as stated above the study area is generally affluent it is anticipated that the increasing costs of public transport may discourage people to transfer from the car to public transport.

3.6 Accessibility

Walking and Cycling

A review of the accessibility to town centres, rail stations and key services shows that most residential properties in the study area are considered to be within a 20minute walk of a town centre and rail station. Figure 3.20 shows walking isochrones from the town centre of Bearsden and Milngavie which identifies that the vast majority of the town is within a 10 – 20 minute walk of local services including schools, shops and transport links.

Capabilities on project:
Transportation

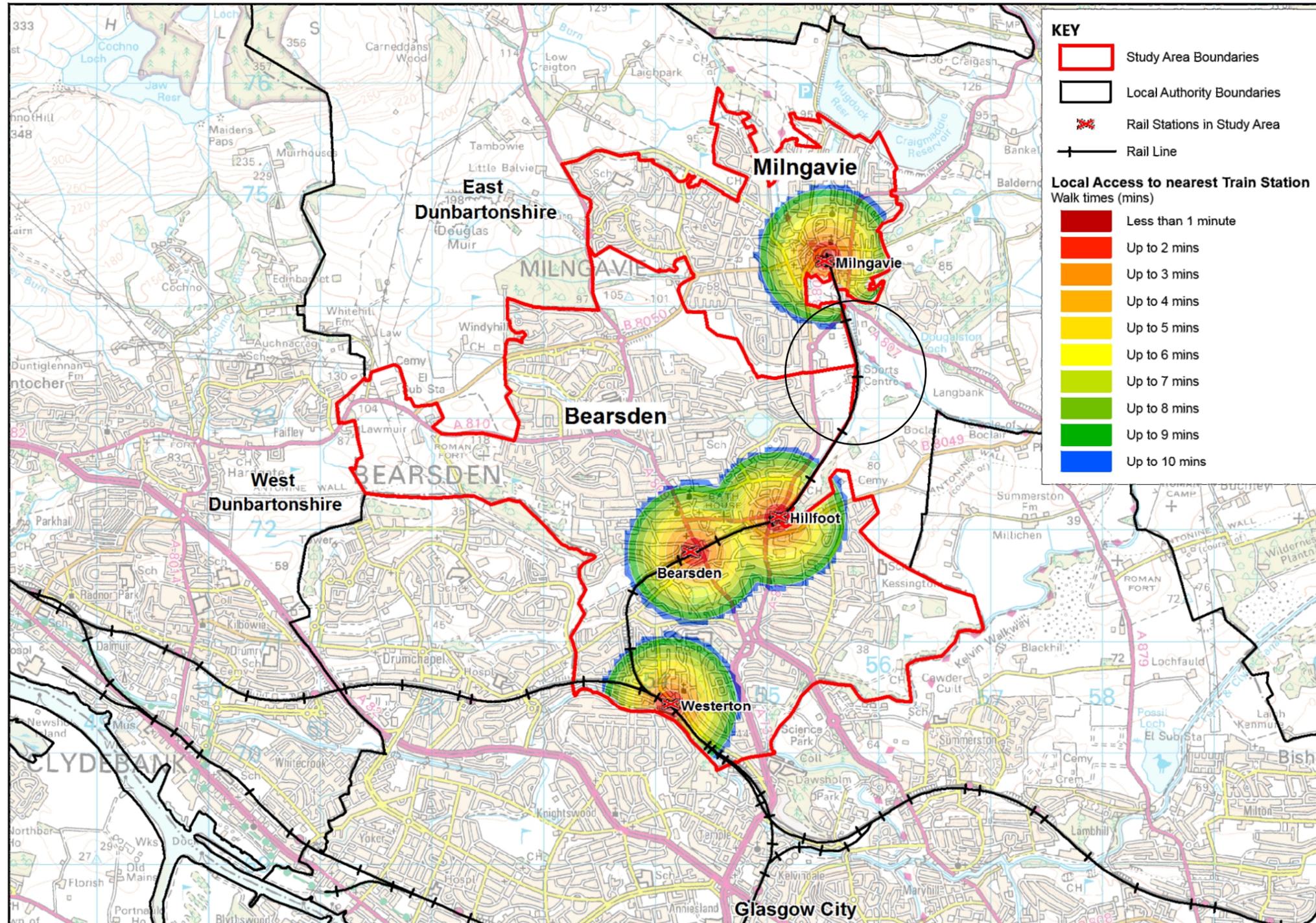


Figure 3.21 - Accessibility to the Nearest Train Station

Capabilities on project:
Transportation

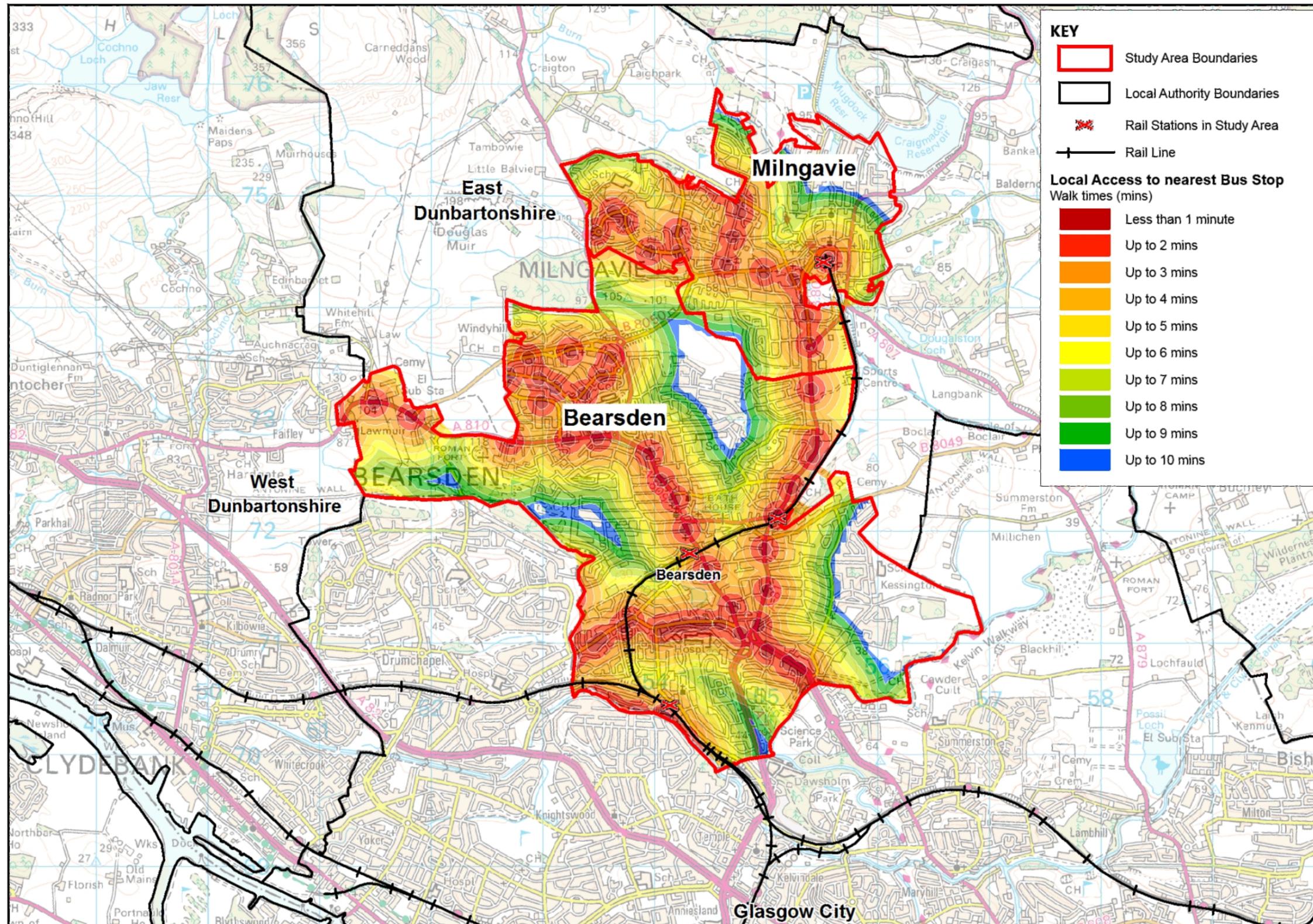


Figure 3.22 - Accessibility to the Bus Network

Please note that additional bus stops are known to be located within the Kessington area of Bearsden, however these records are not found within available datasets and are not taken into account.

Capabilities on project:
Transportation

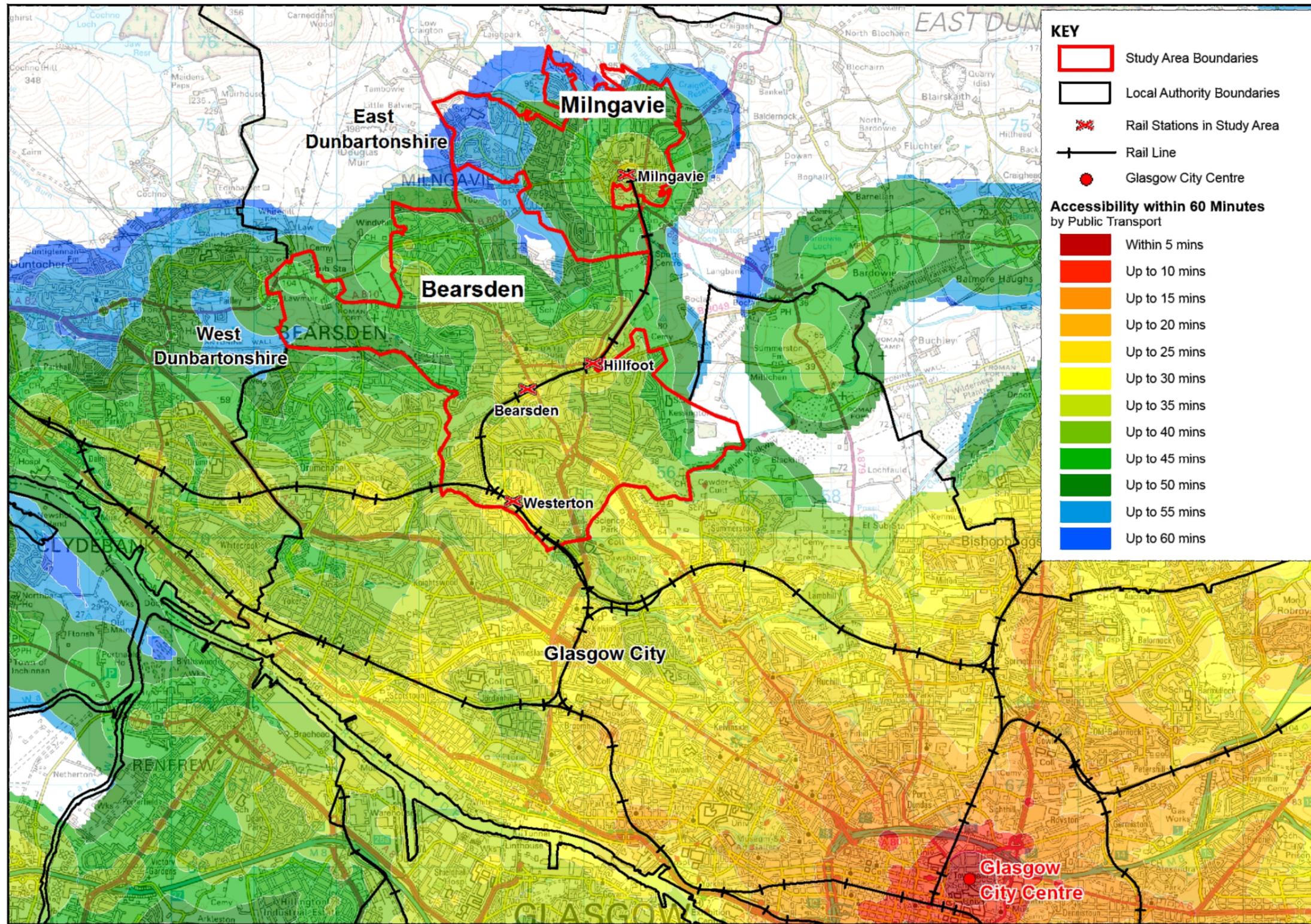


Figure 3.23 Travel time to Glasgow City Centre on all public transport

Please note that additional bus stops are known to be located within the Kessington area of Bearsden, however these records are not found within available datasets and are not taken into account.

Capabilities on project:
Transportation

Summary of Travel Patterns and Choices

Walking and Cycling

- Walking is the second most prominent mode of travel to work, whilst cycling has the lowest mode share
- The number of people walking to work has fallen between 2001 and 2011
- Most residences are within a 10 minute walk of either a bus stop or rail station
- The proportion of primary school pupils walking to school is falling across East Dunbartonshire, however overall walking is the predominant mode of travel to school for both primary and secondary pupils.

Bus

- Patronage data is not available for the local area but regional trends show that the number of bus passenger journeys is in decline.
- The proportion of bus modal share, for journeys to work, has fallen between 2001 and 2011
- The percentage of secondary pupils using the bus is generally falling
- General bus fare costs have increased by around 30%
- Bus is the most prominent mode, after the private car, for employees in East Dunbartonshire who reside in Glasgow or East Dunbartonshire

Rail

- Rail has the third most prominent mode share for journeys to work, after private car and walking
- Of public transport modes rail has the highest proportion of commuters to Glasgow for work
- General rail fare costs have increased by around 30%
- The proportion of rail modal share has risen between 2001 and 2011

Road

- Private car transport is has significantly higher proportion of modal share for journeys to work than any other mode
- The proportion of car modal share has fallen between 2001 and 2011
- General private vehicle running costs have risen at a significantly lower level than public transport modes
- A high percentage of residents travelling to East Dunbartonshire from Glasgow for work do so by car.

Affordability

- The relative cost of public transport has increased approximately 30% whilst the cost of the car has risen at a slower rate in recent years.

Accessibility

- There are pockets within Bearsden and Milngavie whereby walking times to the nearest bus stop are in excess of 10 minutes.
- Many areas are not within a reasonable walking distance from a rail station.
- Most residential areas in the study area are within a 10 minute walk of local and transport services
- Over half of the working population of East Dunbartonshire work within Glasgow, with approximately a quarter remaining in the Council Area
- Around 50% of people working within East Dunbartonshire also live within the Council Area, just over 20% reside in Glasgow

Capabilities on project:
Transportation

3.7 Environment

A review has been undertaken to understand any key environmental considerations which may affect transport in the study area and going forward constrain any proposed options. This section will review;

- Conservation Areas;
- Air Quality Management Areas; and
- Listed / Protected Buildings.

3.7.1 Conversation Areas

Conservation Areas are areas of distinctive character which have been considered to have a special merit because of their architectural, townscape and landscape qualities. A number of areas in the study area are designated as conservation areas, the key areas are summarised below.

Bearsden Old Town Conservation Area

This encapsulates a large area of central Bearsden; including a small section of the A81. The A81 runs through “Old Bearsden” Conservation Area, at Hillfoot. In addition the area encapsulates a significant length of Boclair Road and Bearsden Rail Station.

Westerton Conservation Area

This area is located on the road adjacent to Westerton Rail Station and covers a number of residential properties to the north of the station. The station itself is not within the boundary of the conservation area; however, it is in sight of protected properties therefore its influence must be considered.

Milngavie Town Centre, Tannoch and Milngavie Reservoir Conservation Areas

The A81 runs through Milngavie Town Centre, Tannoch and Milngavie Reservoir conservation areas, a significant area of Milngavie adjacent to the A81 is subject to conservation.

3.7.2 Air Quality Management Areas

EDC in its duties under the Environment Act 1995 have designated the A809 Drymen Road through Bearsden to Canniesburn Toll as an Air Quality Management Area. The air quality has been determined as sufficiently poor that the Council produced an action plan consisting of a series of measures aimed at reducing levels of pollutants in the area.

3.7.3 Listed Buildings

There are several listed buildings located directly on the A81 Corridor or within a short distance from the corridor (from PASTMAP – Scottish National and Regional Archaeological and Architectural Datasets).

Most significantly, the Antonine Wall World Heritage Site (WHS) runs west to east through the southern section of the study area, where the rampart and ditch are very well preserved at this point. A buffer zone is associated with this WHS which covers a large area to the east of the A81. This monument is of national importance as part of a major Roman frontier system, it is also the most substantial and important Roman monument in Scotland. The Antonine Wall runs across central Scotland, from Old Kilpatrick in the West to Bo’Ness in the East.

Category B listed (of regional importance) and are as follows:

- Railway Station Milngavie (B8030);
- Gavin’s Mill (Gavin’s Mill Road);
- Lower Kilmardinny House, (Milngavie Road); and
- 100 Milngavie Road, Bearsden Council Chambers, Boclair House (Milngavie Road).

The following buildings are listed as Category C (of local importance):

- St Pauls Church Milngavie (Glasgow Road);
- Glasgow Road Milepost (Glasgow Road);
- Milngavie Road, Milepost (Milngavie Road);
- Kilmardinny Avenue, Kilmardinny Lodge Including Boundary Walls and Piers (Kilmardinny Avenue);
- Carse View Drive 1 (Carse View Drive);
- Carse View Drive, 2 Overdale (Carse View Drive);

Capabilities on project:
Transportation

- Milngavie Road 156 Bournemouth (Milngavie Road);
- 36 and 38 Roman Road, Registrar's Office (Roman Road);
- McFarlane Road, Milepost (McFarlane Road);
- 25 McFarlane Road, The Waterboard House, including boundary wall, gatepiers and gates (McFarlane Road); and
- McFarlane Road Horse Trough (McFarlane Road).

Additionally Milngavie Town Centre to the north and west of the B8030 is a conservation area.

3.8 Summary

Through site visits, a review of available literature (including previous studies) and data analysis a series of problems have been identified relating to transport in the Milngavie and Bearsden areas of East Dunbartonshire. Whilst a level of traffic congestion is experienced along the A81 during the peak hours, it is important to fully understand the factors that lead to this and in doing so it is necessary to consider both the demand for transport and the supply of transport. Understanding the factors relating to transport demand and supply will be crucial when identifying options to improve transport along the A81 Corridor.

3.8.1 Causal Factors Relating to Transport Demand

Demand for travel is high along the corridor, which is a consequence of the socio-economic characteristics and economic development factors predominantly, for example:

- Incomes are higher than average;
- Large percentage of workforce employed in high skilled occupations, typically located in Glasgow City Centre;
- Very few areas of deprivation, according to SIMD analysis;
- Car ownership is high;
- The majority of journey to work trips from the study area are to Glasgow;
- Private car is the dominant mode for most trip purposes and destinations; and
- Development, particularly Kilmardinny and Waitrose will result in further demand for travel (by all modes) along the route, with a similar distribution of destinations to the incumbent population of the area.

Although the demand for travel is high, the level of that demand has fallen since 2008 and this can be attributed to a less economically active population and flexible / home working becoming more prevalent.

3.8.2 Causal Factors Relating to Transport Supply

Accessibility plots show good access to the transport system as most of the study area is within reasonable walking distance (less than 10 minutes) of either a bus stop or rail station. Rail parking is full and buses can be full to standing during peaks, however modal share for public transport (PT) is low, particularly for work journeys.

Walking

- After the private car, walking is the highest modal share for journeys to work;
- Wide footways provided throughout the corridor;
- Most residents in Bearsden and Milngavie are within a 10 minute walk of a public transport service;
- Numerous signalised crossing points are provided throughout the corridor, with more planned through developer contributions, although a large gap (+1km) exists between crossings at Hillfoot and Mosshead Road; and
- Core Path Plan now adopted by EDC.

Cycling

- Discontinuous cycle lanes are provided on route;
- The proportion of commuters cycling to work is decreasing, from what was already a very low level;
- High level of cycle investment committed for the A81, for example, the "Bearsway" segregated cycleway and transport hubs;
- Cycle stands provided at key locations, including at rail stations; and
- Obstructions in existing network (such as parking of vehicles).

Buses

- Most areas are within a 10 minute walk of a bus stop, but there are some areas, including Mosshead, that are not easily accessible to regular bus services;
- Operators have indicated a heavily peaked bus demand and this has been confirmed with buses full to standing during peak periods but less busy in the inter-peak;
- Journey times for buses do not compete favourably with rail to Glasgow City Centre;
- No priority for buses is provided along the route in the study area, although there is provision on sections of the A81 south of the Canniesburn Toll;

Capabilities on project:
Transportation

- Investment in improved bus infrastructure include improved bus stops and the implementation of transport hubs;
- There are no express (limited stop) services provided along the A81 for trips to Glasgow;
- The corridor has experienced a decrease in service provision;
- Mybus demand responsive services exist within the corridor;
- There is a marked decrease in frequency for bus modes in the evening (after the peak) and during the weekends; and
- Transport hubs have been developed which seek to facilitate access to the bus network.

Rail

- Capacity constraints on the line (single track running between Milngavie and Hillfoot) prevents an increase in frequency without significant investments in infrastructure;
- Most areas within Milngavie and Bearsden are greater than a 10 minute walk (800m) from a station; and
- Rail is the most popular PT mode for journey to work.
- There is a marked decrease in frequency for rail modes in the evening (after the peak) and Sundays.

Integration and Park and Ride

- An integrated transport hub at Hillfoot was constructed in financial year 2013/14, with enhanced walking, cycling and parking facilities adjacent to the rail station;
- The capacity of park and ride facilities (at Milngavie, Hillfoot and Bearsden) is not sufficient to cater for demand (134, 16 and 92 spaces respectively). Parking overflows into other local car parks and on-street (including into residential areas);
- Landspace around the existing rail stations is limited, therefore an increase in parking provision is difficult;
- Milngavie Station served by direct bus services which link the station with the rest of the Council area; and
- Bus services stop on the main street adjacent to the stations at Bearsden, Hillfoot and Westerton.

Road

- Traffic levels are generally falling along the corridor and on most key roads, this is by over 10% between 2005 - 2013;
- Localised congestion at the following locations:
 - A81/A807 Auchenhowie Road junction;
 - A81/B8030 Main Street junction;
 - A81/Boclair Road junction;
 - Canniesburn Toll; and
 - A81/ASDA junction.
- Decriminalised parking enforcement has been introduced in East Dunbartonshire. The Council are soon to be implementing a charging regime in the town centre car parks only, with the first two hours free;
- Collisions have reduced when compared with the previous study, including a fall in the number of serious collisions; and
- MOVA intelligent traffic control recently installed at A81/A807 Auchenhowie Road junction and SCOOT has been introduced between Kessington Road and Hillfoot at the southern end of the corridor.

3.8.3 Effects

Mode share for private motor vehicles tends to dominate over non-car modes, particularly for journeys to work, where the main destination is Glasgow City. However, shorter journeys, such as those between the two centres of Bearsden and Milngavie, also use the private car over public transport modes.

In terms of public transport, rail has the modal share for the journeys to work; however parking at stations is limited, with the car parks full before the end of the peak hours. Consequently, parking overflows into adjacent car parks and on-street.

The demand for travel by private vehicle results in locations on the A81 within the study area that are subject to delay due to the combination of a high demand for private vehicle trips coupled with constraints on the road network.

Capabilities on project:
Transportation

Key Issues and Constraints

Socio Economic and Development

- Car usage and ownership is high within the study area relative to the wider East Dunbartonshire and Glasgow area.
- The proposed Kilmardinny development will have a notable impact on the transport network.
- Population decline within the study area between 2001 to 2011 can be contrasted with the population growth in Glasgow;

Transport Supply

- At present the existing off road walking / cycling facilities primarily serve the leisure cyclist - some the routes are convoluted, compared to on-road facilities, which impacts on their ability to attract a significant number of commuters.
- The speed of bus services to Glasgow are generally slower through Maryhill compared with locations in the study area.
- Generally bus services to Glasgow City Centre are 20-25 minutes slower than rail.
- Low frequency service between the study area and eastern parts of East Dunbartonshire.
- Available capacity on trains between the study area and Glasgow has reduced since 2008.
- Transport Assessment evidence suggests the key areas of congestion are on the approaches to the A81 Milngavie Road / B8049 Boclair
- Road junction, A81 Glasgow Road / A807 Auchenhowie Road junction, Burnbrae Roundabout and Canniesburn Toll.
- Capacity constraints on the line (single track running between Milngavie and Hillfoot) prevents an increase in frequency and impacts resilience and journey time reliability.
- No priority for buses is provided along the route in the study area.

Travel Choice and Accessibility

- Cycling has the lowest mode share of journeys to work
- Regionally, the number of bus passenger journeys has fallen in recent years – the number of bus trips made for work trips from the study area decreased by 30% between 2001 and 2011 (2011 Census).
- Private car transport is has significantly higher proportion of modal share for journeys to work than any other mode
- General private vehicle running costs have risen at a significantly lower level than public transport modes
- There are pockets within Bearsden and Milngavie whereby walking times to the nearest bus stop are in excess of 10 minutes.
- Many areas are not within a reasonable walking distance from a rail station.
- Over half of the working population of East Dunbartonshire work within Glasgow, with only a quarter remaining in the Council Area

Capabilities on project:
Transportation

Key Opportunities

Socio Economic and Development

- Large percentage of workforce employed in high skilled occupations, many of which are located in Glasgow City Centre
- Developer Contributions and external funding secured for A81 transport improvements

Transport Supply

- SPT are progressing ambitions for region wide smart-ticketing / integrated ticketing and real time bus passenger information as bus stops
- EDC and partners are developing a segregated cycle routes along the A81 between Milngavie and Bearsden at Kessington
- Decriminalised parking enforcement has been introduced in East Dunbartonshire. The Council are soon to be implementing a charging regime in the town centre car parks only, with the first two hours free.
- SCOOT traffic control has been installed on the A81.
- Patronage at all four study area stations have increased in recent years.
- The study area is connected by direct rail services to Partick, Glasgow, Edinburgh and Lanarkshire.
- Parking is provided at all four stations in the study area, but there is little available capacity.
- Traffic levels are generally falling along the corridor and on most key roads.

Travel Trends and Accessibility

- Walking is the second most prominent mode of travel to work.
- Of all East Dunbartonshire employees residing in Glasgow or East Dunbartonshire, following the private car, the bus is the most prominent mode..
- Rail has the third largest mode share for journeys to work, after private car and walking.
- Most residential areas in the study area are within a 10 minute walk of local services and either a rail station or bus stop.
- Around 50% of people working within East Dunbartonshire also live within the Council Area, just over 20% reside in Glasgow

4 Stakeholder Consultation

Capabilities on project:
Transportation

4 Stakeholder Consultation

4.1 Introduction

The purpose of the Chapter is to summarise the consultations undertaken during the project. STAG states that:

“A successful participation and consultation process will contribute to a scheme or strategy being more likely to achieve its objectives and so will promote better value for money...”

Involving and engaging people can have a range of benefits including:

- *Building confidence in the study or process;*
- *Providing a better understanding of the problems, issues and opportunities;*
- *Helping to generate more innovative and appropriate solutions;*
- *Raising travel awareness and influencing travel behaviour;*
- *Making people feel part of the decision-making process; and*
- *Achieving widespread support for proposals.”*

The primary form of consultation conducted as part of this study was a stakeholder workshop event whereby members of local communities and organisations were invited to offer their opinions through facilitated discussion groups. Feedback received subsequent to the workshop event is documented in Appendix A.

4.1.1 Consultation Objectives

The consultation had two main objectives:

- Review the transport and socio-economic evidence base and clarify the transport problems, opportunities and constraints in the A81 corridor; and
- To seek the views of delegates on the validity of previously developed interventions in the current context and identify new interventions.

4.2 Stakeholder Workshop

A stakeholder workshop was held at EDC headquarters, Kirkintilloch on November 6th 2014. The following Table 4.1 indicates those stakeholders who were in attendance.

Table 4.1 External Stakeholder Pre-Appraisal Workshop Attendees

Name	Organisation
Lex MacDonald	Bearsden East Community Council
Jacqueline MacRae	Bearsden East Community Council
Lesley Coggins	Bearsden East Community Council
Martyn Reynolds	Milngavie Community Council
Nick Allan	Dunbartonshire Chamber of Commerce
Lesley Shaw	Milngavie Business Improvement District
David Radford	East Dunbartonshire CHP
Shona Rawlings	SUSTRANS (Currently seconded to SPT)
Mark Esdaile	Bearsden North Community Council
R Hooper	Mains Estate Residents Association
Neil Sturrock	SPT
Stevie Neilan	First Bus Glasgow

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Name	Organisation
Chris Hampson	First Bus Glasgow
Fiona Bartels	Freight Transport Association
Stuart Davies	SNH
Ken Sutherland	Railfuture Scotland
John MacKenzie	Glasgow City Council
Tom A'Hara	Cycling Scotland
Alan Slack	Bishopbriggs Community Council
Richard McKinlay	Go Bike! Strathclyde Cycle Campaign
David Torrance	Transport Scotland
Alex Moore	Police Scotland
Alan Reid	EDC - Roads and Neighbourhood Services
Kathleen McWhirter	EDC – Transport and Access
Eric Gotts	EDC – Councillor (Milngavie)
Vaughan Moody	EDC – Councillor (Bearsden South)
Alison Laurence	EDC – Land Planning Policy
Ewan Wilson	EDC – Land Planning Policy

The following stakeholders were also invited, but did not attend the workshop:

- Community Transport Glasgow (Isabel Stringer / Ann Porter);
- Transport Scotland (Rose Tweedale);
- SPT (Allan Comrie)
- EDC (Suzanne Bruce);
- Network Rail (Frazer Durie);
- Scottish Enterprise (Janice Kennedy);
- Visit Scotland (David Adams McGilp);
- Scottish Ambulance Service (Bernard Lavery);
- Historic Scotland (Urszula Szupczynska); and
- Glasgow and Clyde Valley Strategic Development Authority (Joseph Scott).

A summary of the workshop findings was issued to all attendees and non-attendees following each workshop and any further comments were requested. This process sought to make the consultation as inclusive as possible. Section 4.3 provides a summary of these findings and Appendix A includes a copy of the Consultation Report.

4.3 Stakeholder Workshop Findings

During the workshop, the attendees were split into three groups, each with a facilitator (an AECOM representative). These discussions with the stakeholders determined a range of facts and perceptions about transport and traffic issues in the study area as well as opinions about the relevance of options developed in the 2008 study. Attendees also discussed the Transport Planning Objectives developed in the 2008 study and their appropriateness today.

Capabilities on project:
Transportation

4.3.1 Problems and Issues along the A81 Corridor

The problems and issues identified by stakeholders can be split into four categories; active travel, public transport, private car and other barriers; the key concerns are summarised below.

Active Travel

- The lack of cycle storage facilities at key locations, like town centres and rail stations, was seen as a barrier to cycling by several attendees. The security of these facilities was also seen as a barrier.
- To encourage more people to start cycling and existing cyclists to do so more often, it was suggested that more cycle infrastructure needed to be built. With regards to cycle provisions, some attendees had a preference for the development of off-road facilities as it was felt roads were not built for dual purpose.
- The lack of or insufficient street lighting was reported as a barrier to walking and cycling, particularly during winter months, as it was noted that people feel unsafe.
- When discussing the walking and cycling network, it was felt there were several “missing links” within the corridor and connections to the surrounding area.
- Inclement weather was noted as a barrier to walking and cycling.

Public Transport

- All three groups highlighted that there was a lack of parking at train stations, which they considered to be a significant barrier to greater rail travel. For example, it was suggested that the car park at Milngavie Station was typically full by 8am. Furthermore, attendees noted the lack of parking resulted in a displace vehicles parking on residential streets surrounding the stations.
- The issue of resilience in the rail system was discussed and some felt the line should be double tracked.
- With regards to bus provision, generally it was felt the service coverage was lacking, the frequency of services poor and the journey time too long into Glasgow.
- In comparison with rail, bus services were considered to be less clean and less comfortable.
- Inadequate information about bus services was identified as a barrier to bus usage, particularly the lack of real time bus information along the corridor. In addition, as bus timetables can be subject to change this reduces the attractiveness of bus services which is exacerbated by poor dissemination of information.
- A need for improved integration of transport modes was noted by attendees. For example, the need for a ticket which is valid across different operators and modes (bus, train and subway once in Glasgow) was mentioned. There was widespread support for smartcard ticketing, similar to Transport for London’s Oystercard, to make integrated travel easier.
- It was recognised that the effectiveness of bus improvements / priority measures within EDC to overall public transport journey times were limited as the vast majority of delay and congestion occur downstream outside the Council area.

Private Car

- Lack of parking was identified as a problem which was particularly prevalent in Milngavie where it was said to impact on businesses.
- Concerns regarding the quality of road surfaces were raised.

Other

- The ageing population was noted as an issue to consider when determining transport improvements, particularly the reliance which elderly people can have on public transport.
- Poor connectivity with other areas within the Greater Glasgow conurbation was identified.

Capabilities on project:
Transportation

Stakeholder Findings and the Evidence Review

The stakeholder findings have generally supported the evidence in Chapter 3.

With regards to active travel, both the evidence review and stakeholder workshop stated there were missing links in the walking and cycling network. However, stakeholders did highlight a lack of cycle parking and need for cycle parking to be more secure.

The accessibility review found the majority of residents were within a 10 minute walk of a bus stop whilst considerably fewer areas were within reasonable distance of a train station. During the consultation process, the accessibility issues raised were focused on the connectivity between East Dunbartonshire and the Greater Glasgow conurbation, although some mentioned the distance to public transport services.

The evidence review found the demand for car parking at rail stations was greater than supply, and stakeholders stated Milngavie car park was often full by 8am. The integration of travel modes was discussed during the stakeholder workshop, particularly with regards to ticketing, and the evidence review found issues regarding the timing between bus and rail services potentially impacting on the ease of integration between these modes.

Although, the evidence review found public transport costs had increased more than private vehicle costs, stakeholders did not identify this as an issue, perhaps reflecting the typically higher incomes found in the study area. The socio-demographic findings in the evidence review noted the ageing population in the study area and this was also raised by stakeholders as an issue to consider when planning transport measures

4.3.2 Review of 2008 Options

Each of the three groups reviewed the 2008 options and considered their relevance today as well as suggesting improvements to these options and other schemes which would be worth considering today.

Increase Car Parking at Bearsden, Milngavie, Hillfoot and Westerton Rail Stations

- It was noted that the scope to expand park and ride provision at Milngavie and Hillfoot is limited by various local constraints. However, there was support for increasing parking provision at Bearsden, by decking the existing car park and at Westerton by constructing an additional facility opposite the existing car park or decking the existing.
- There was divided opinion regarding the aesthetics of multi-storey car parking; some found it visually intrusive whilst others did not think the visual impact was an issue.
- Attendees discussed the need for greater integration of rail and parking at stations, for example, one suggestion was for entry / exit from the station car park to be permitted using a rail ticket.
- It was recognised that increasing the number of car parking spaces could result in a significant increase in the number of vehicles using the same access point to the car park which could create difficulties. Furthermore, some attendees noted increased the availability of parking may encourage more people to drive to the station rather than walking, cycling or using the bus.

Parking Controls in Town Centres

- There was support for parking controls as this could stimulate the local economy and help businesses as more customers would be able to park and shop because cars would no longer be left parked all day.
- Attendees noted that decriminalised parking enforcement was introduced in East Dunbartonshire in April 2014, and that the Council are proposing to introduce a charging regime within town centre car parks. There was a concern that this could lead to displaced vehicles parking on side / residential streets.
- It was highlighted that the introduction of any parking charges should be consistent across EDC so particular towns do not lose business due to higher parking charges compared with neighbouring towns.

Rail Park and Ride at Allander

- Generally, there was support for the proposed rail station at Allander and some attendees felt this should not be dependent on the Kilmardinny development proposal.
- It was recognised that in order for a rail station at Allander to be effective, there was a need for reasonable parking provision to serve the existing demand for parking at other rail stations in the area.

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Quality Bus Corridor

- It was felt bus lanes were not necessary along the whole route and it would be more appropriate to include bus priority measures at pinch points and on the approach to junctions. Furthermore, it was felt that there were not sufficient numbers of bus services operating along the route to make bus lanes worthwhile.
- The effectiveness of bus journey time improvements in East Dunbartonshire were limited by congestion in Maryhill area of Glasgow, which most of the bus services from Milngavie and Bearsden pass through.
- A number of measures were suggested to improve the quality of bus services including; improvements to passenger waiting facilities, new / enhance lighting at bus stops, greater information provision (including real time passenger information), raised kerbs to assist boarding/alighting and moneyless ticketing system to speed up boarding.

Rail Improvements

- Smart ticketing was favoured by participants to encourage greater rail patronage, however, it was understood this would require co-operation from all rail and bus operators.
- Integration between rail, bus and parking at stations were supported as a means of offering greater flexibility to users.

Enhanced Walking and Cycling

- There was widespread support for measures which would increase the accessibility of the stations for pedestrians and cyclists. Furthermore, it was noted that improving access for pedestrians and cyclists would reduce demand for car parking and help to ease parking pressures at stations.
- It was emphasised that cycle storage facilities needed to be improved across the study area with more cycle storage provisions, covered cycle racks and ensuring cycle parking is secure.
- Attendees suggested walking and cycling routes should radiate outwards from town centres, train stations and bus stops, following desire lines, to improve access. Developing a high quality walking and cycling network could encourage more active travel journeys to be made with one suggestion that the Kilmardinny development should be connected with a walking and cycling route to Milngavie Station.
- Enhanced street lighting would improve cyclist safety - this included off-road / remote facilities where solar / low level light could be used.
- Incorporating cycling and bus travel was also mentioned with specific options including allowing bikes on local buses and bike racks at bus stops.
- The need for a new pedestrian crossing from Burnbrae Roundabout to Hillfoot, as suggested in 2008, was not considered necessary.

Bus Feeder Services

- There was support for bus feeder services to improve access to public transport for local residents and connect residential areas with stations but attendees highlighted concerns regarding the financial viability of these services.

Junction Improvements

- In principle, there was support for a gyratory system at the Roman Road/Roman Drive Junction but it was suggested that this was already being progressed by EDC.
- The development of a major supermarket at Burnbrae Roundabout was highlighted as a concern as it was felt this would require changing from the current layout to accommodate the increased demand.

Variable Message Signs

- On the whole, VMS measures were seen as positive as they would provide additional information. However, concerns were raised about the cost and that their application did not directly reduce levels of congestion. Furthermore, it was suggested that VMS signs could generate or encourage rat runs through residential areas.

Road Options to Enforce/Reduce Speeds

- Attendees discussed the perception of speed and that people often perceived speed to be faster than it actually is.
- Vehicle activated speed signs were generally supported as a means of ensuring drivers were driving at the appropriate speed.

Other Suggestions

- In general, it was felt that increasing access to sustainable modes needed to be considered in greater detail than it was in 2008.
- Greater integration of rail and bus services was highlighted as a method to encourage public transport use and discourage car use.
- Attendees regularly mentioned smartcards and felt they would encourage public transport use due to their flexibility.

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4.3.3 Transport Planning Objectives

Four transport planning objectives were set in the 2008 Study and these were reviewed during the consultation process. Attendees felt it was important to include an objective to achieve modal shift from car based to non-car based journeys because this would benefit everyone. Some attendees suggested the objective should split non-car modes into active travel and public transport. Although it was felt neither should be favoured, measures should complement each other to support uptake of both and the need for greater integration between modes was frequently mentioned. Some attendees felt there should be an objective which referred to an increase in active travel particularly. Attendees discussed current public transport provision and felt the provision needed to be improved so this was suggested as an alternative objective. Finally, it was considered that the objective referring to increased public transport accessibility to the Kilmardinny development was too site specific for the study.

4.4 Summary

The consultation process has enabled stakeholders to provide details of experiences associated with travelling through the study area, and has provided the opportunity to provide details of potential solutions.

The consultation with key stakeholders, including Councillors, members of the local community groups, public transport operators, and local service providers, has identified particular perceived and real problems relating to:

- Bus - a lack of coverage, need for greater service frequency and improvements to bus information provision.
- Parking - a lack of capacity at rail stations and subsequent spill-over onto local roads.
- Cycling - lack of cycle storage and need for more cycle infrastructure connecting cycle paths in the corridor and surrounding area.
- Integration – a lack of integration between sustainable travel modes was noted as a barrier to their use.

The 2008 options were discussed and stakeholder feedback has assisted in identifying a number of options worthy of further consideration that were not included within the 2008 study:

- The provision of electric vehicle / low emission parking spaces;
- Provision of real time bus information;
- Installation of bus priority at pinch points and the approach to junctions;
- Area wide smart ticketing measures;
- Improvements to bus stops and shelters;
- Express bus service from Milngavie to Glasgow;
- Bus detection within SCOOT;
- Improve integrated ticketing between bus /rail and rail / parking at stations;
- Development of local network of walking and cycling paths;
- Secure cycle storage facilities at stations and town centres; and
- Development of a high quality path connecting the Kilmardinny development and Milngavie Station.

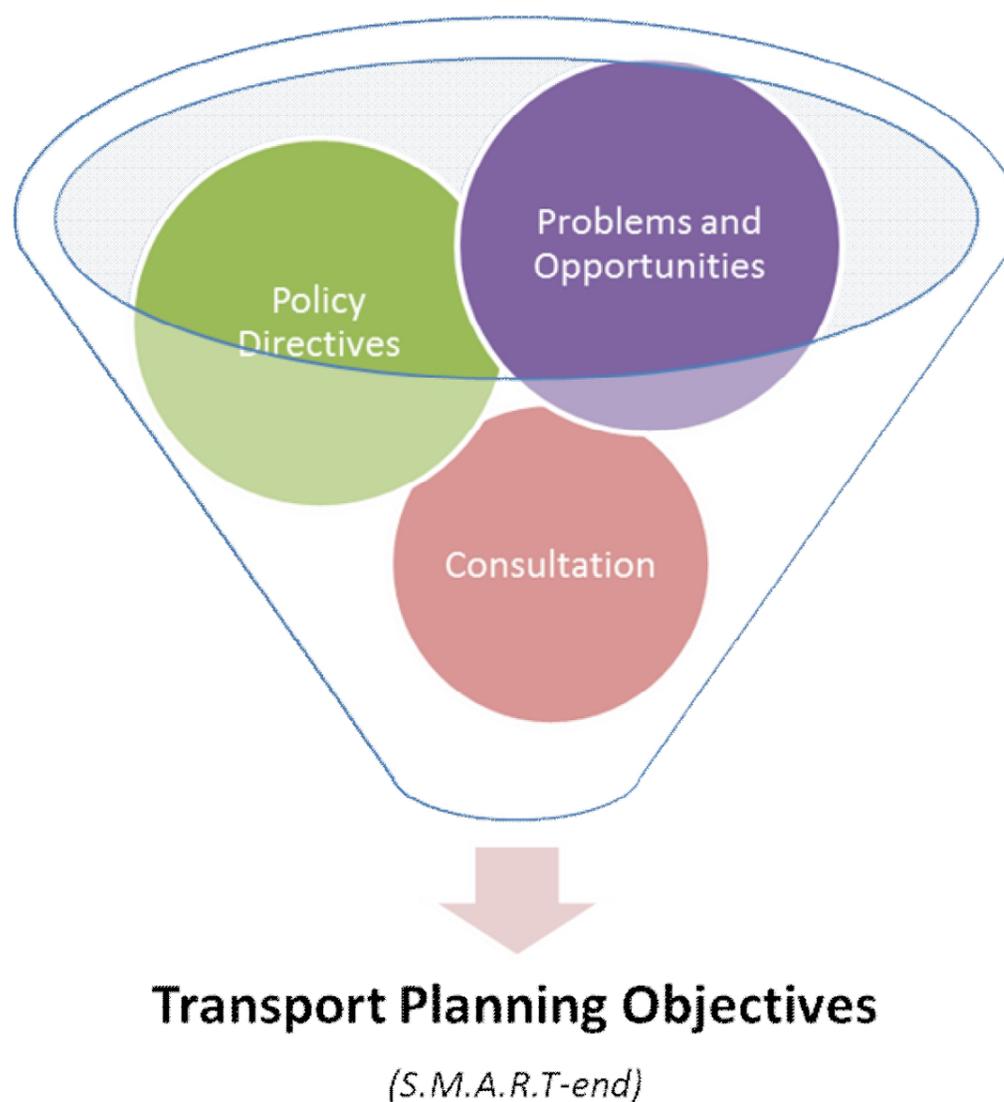
5 Transport Planning Objectives and Constraints

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5 Transport Planning Objectives and Constraints

5.1 Introduction

The development of Transport Planning Objectives (TPO's) is fundamental part of the STAG framework and sets the basis for the project delivery. The TPO's are primarily informed through a detailed analysis of problems and opportunities associated with the transportation situation on the A81. Whilst focused on the specific geography of the study area, the analysis also considers the wider transport network and economic area. The TPO's should also consider and embrace established national, regional and local policies and principles, as detailed in Chapter 2 of this report, as well as consider the views of stakeholders as detailed in Chapter 4 and any constraints.



It is also an important principle that TPO's are S.M.A.R.T (Specific, Measurable, Attainable, Relevant and Time Related);

- **Specific:** the geographic area to which the target should apply should be readily understood and be clearly defined. A plan is required to define the area of application. Also, the wording of the target should be clear as to what the subject of the target is, the base against which any change is being compared, and the units of change;
- **Measurable:** it is likely that changes in travel patterns will be the most readily available data source to use as a basis for any targets. A coherent monitoring strategy must be in place in order to measure progress with confidence in the results;
- **Attainable:** through wide stakeholder consultation, it is essential that an informed general consensus is reached on the desirability of meeting the stated targets and on their achievability and affordability;
- **Relevant:** the presentation of the target as a measure resulting from an analysis of travel problems, and local, regional and national transport objectives will assist in the development of relevant targets; and
- **Time related:** a logical time period for evaluation of the any measure is required.

5.2 Constraints

STAG defines "Constraints" as the bounds in which the study is being undertaken. STAG notes (paragraph 3.6.6) that;

"no proposal should be developed that is dependent upon a change to the constraints upon a study, unless the promoting organisation is in a position to change those constraints".

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The project is being promoted by EDC who are the local highway authority. They have powers to promote changes to the local road network, introduce Traffic Regulation Orders and purchase land through Compulsory Purchase Orders. As of April 2014 the Council has decriminalised parking enforcement powers. However, with respect to bus-based public transport, EDC can only seek to influence the provision of commercially operated public transport provision.

Quality Contracts (QCs) can provide a greater level of control in terms of specifying bus service provision, but there are currently no plans to introduce QC's in the area. It is, however, the case that any road improvements that have a positive impact on congestion will assist public transport services in the area. EDC does not have direct powers over rail services, but can similarly seek to influence facilities and provision.

In addition, Police Scotland has a remit for the enforcement of posted speed limits; movement traffic offences and the Strathclyde Safety Camera Partnership. Support from both of these organisations would be required from Police Scotland when implementing accident / speed reduction measures.

Delivery of transportation projects is reliant on funding, typical significant levels of funding. Although private sector investment is possible, typically through developer contributions, most transport projects are funded by one or a partnership of public agencies. Therefore funding is one of the most significant considerations and potential constraints. Funding available to promote change can be sourced from the following available bodies:

- SPT – through the role of the Regional Transport Partnership, SPT receive funds from the Scottish Government to improve transport across the SPT area.
- EDC – typically, local authorities are constrained in terms of the capital and revenue funding available. For the year 2011-12, as reported in Scottish Transport Statistics⁵, EDC had a net revenue expenditure of just over £8.7 million, comprising of £4.6 million on road maintenance, 1.9 million on Network and Traffic Management and £2.1 million on Public Transport.
- Scottish Government – the Major Public Transport Projects fund is to be used for strategically important schemes. This offers the prospect of funding for the most significant schemes – examples include support for Edinburgh Trams, and the rail links to both Edinburgh and Glasgow airports. The Rail Services in Scotland budget funds the delivery and enhancement of ScotRail franchise and the required rail infrastructure from Network Rail.
- Private Developers – contributions will be sought in order to off-set the transport impacts of their developments, and to secure an appropriate mode share to their development. These can be obtained through a Section 75 planning agreement. The magnitude of contribution relates to the scale of impact of the development.
- The Bus Investment Fund (BIF) operates as a challenge fund open to applications from public transport authorities working in partnership with operators, community transport, NHS, and other public or private sector partners.
- In addition, there are a number of other ad-hoc discrete competitive funding sources for particular scheme types.

As discussed above in Chapter 3 a major masterplan development, primarily residential, at Kilmardinny has been granted, at a review by a Scottish Government appointed reporter. These included details of contributions the developer must pay for transport interventions on the A81 – as such, no further contributions can be obtained from this development. Similarly the Waitrose supermarket has been granted with agreed conditions. It is considered unlikely that there is any forthcoming development in the area of sufficient size to provide significant contributions to A81 transport interventions.

5.3 Transport Planning Objectives

Based on the analysis detail in the previous Chapters the following TPOs have been developed:

- a) Promote modal shift to sustainable transport for trips (particularly commuting) from or to the study area.
- b) Improve access to the public transport network, particularly for the first and last miles of journeys.
- c) Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.
- d) Improve bus journey times and journey time reliability on the A81 corridor.
- e) Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.
- f) Delivery of a transport network that supports healthy lifestyles.
- g) Delivery of a transport network that enhances local air quality.
- h) Development of an integrated transport network, including co-ordination between modes and increased connectivity between active travel infrastructure and public transport.
- i) Provision of a transport network that improves safety and security across all modes of transport.

Table 5.1 details each of the above objectives against the SMART criteria.

⁵ Scottish Transport Statistics No 32, 2013 Edition

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Table 5.1 Consideration of SMART Planning Objectives

Planning Objective	Specific	Measurable	Attainable	Relevant	Time-Related
<i>A) Promote modal shift to sustainable transport for trips (particularly commuting) from or to the study area</i>	Objective relates to modal share and can be attributed to trips generated from specific geographical areas. The objective also places an emphasis on commuting trips.	The 2021 Census will provide a comparison on modal share to the 2011 Census.	Between 2001 and 2011, there was modal shift* and increase in rail patronage. Requires a joined-up and multi-agency approach, requiring support from transport providers and policy makers at all levels.	This objective accords to policy at all levels seeking a transfer from car trips to other modes. Modal shift will assist in the reduction of future traffic growth during peak times.	The objective should be related to a 10 year time period from 2014 to 2024.
<i>B) Improve access to the public transport network, particularly for the first and last miles of journeys</i>	Objective relates to public transport in the study area, particularly access to bus stops and rail stations.	The quality of access links and availability of parking (cycle / vehicle) can be measured.	Improving access to the public transport is achievable but requires an integrated approach and co-operation between operators, Network Rail and local authorities.	Achieving this objective will contribute to greater use of sustainable transport and improve social inclusion in the study area. In addition, one of the RTS objectives was 'Access for All'.	The objective should be related to a 10 year time period from 2014 to 2024.
<i>C) Provision of a transport network that supports enhanced access to employment, social and leisure opportunities</i>	Measure relates to connectivity with key employment and leisure opportunities. With regards to employment, the objective can consider the number of jobs within a given public transport journey time.	Distances and times to key destinations can be measured, using accession software.	Enhanced access is achievable but requires co-operation between operators and neighboring authorities.	Transport improvements should consider access to key sites to encourage modal shift to sustainable modes. Furthermore, 'accessibility' was an objective within the EDC LTS.	The objective should be related to a 10 year time period from 2014 to 2024.

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Planning Objective	Specific	Measurable	Attainable	Relevant	Time-Related
<i>D) Improve bus journey times and journey time reliability on the A81 Corridor</i>	Objective relates to one mode only along a defined road, the A81 Corridor between Milngavie and the Glasgow City Council boundary.	Bus journey times can be measured along the corridor.	Changes in bus journey times are achievable through bus priority schemes. Requires co-operation between operators and local authorities.	Bus journey time reliability has been identified as a factor influencing the demand for travel by public transport in the study area.	The objective should be related to a 10 year time period from 2014 to 2024.
<i>E) Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.</i>	Objective focuses on local development and economic growth within a defined area, the study area. It also considers the need for sustainable transport infrastructure to be implemented with new developments.	Mode share of trips to / from new developments.	Requires a joined-up and multi-agency approach, requiring support from transport providers and policy makers at all levels. With regards to new developments, negotiations with developers for funding are also required.	Transport sector should support sustainable economic growth and development in the local area. One objective within Scotland's Transport Future referred to the promotion of economic growth.	The objective should be related to a 10 year time period from 2014 to 2024.
<i>F) Delivery of a transport network that supports healthy lifestyles</i>	Specifically considers the health of those using the transport network. Requires a focus on active travel modes.	Walking and cycling counts can be taken to quantify uptake of active travel.	Improving the quality of active travel modes to encourage uptake is a challenge but achievable as there have are investment opportunities, for example, "Bearsway" cycleway.	Concern that without support from the transport sector, people's health will deteriorate.	The objective should be related to a 10 year time period from 2014 to 2024.

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Planning Objective	Specific	Measurable	Attainable	Relevant	Time-Related
<i>G) Delivery of a transport network that enhances local air quality</i>	Specifically considers the air quality along the A81 Corridor. Requires a focus on active travel modes.	Emissions can be measured along the corridor.	Improving the quality of active travel modes to encourage uptake is a challenge but achievable as there have are investment opportunities, for example, "Bearsway" cycleway.	Concern that without support from the transport sector, the local air quality will deteriorate. Protecting the environment and minimizing emissions was referred to in Scotland's Transport Future.	The objective should be related to a 10 year time period from 2014 to 2024.
<i>H) Development of an integrated transport network, including co-ordination between modes, including co-ordination between modes and increased connectivity between active travel infrastructure and public transport</i>	Objective relates to all modes of transport in the study area and specifically the integration between modes. It seeks to encourage the ability to travel using multi-modes and minimize issues regarding interchange, for example, fare penalties and timing when interchanging.	The ticket prices across modes and interchange times can be analysed for change.	Examples of integrated transport are seen throughout Scotland and show this is achievable in East Dunbartonshire. Changes to ticketing requires co-operation across Strathclyde.	Integrating transport modes is important when seeking to encourage greater use of sustainable travel modes.	The objective should be related to a 10 year time period from 2014 to 2024.
<i>I) Provision of a transport network that improves safety and security across all modes of transport</i>	Objective specifically considers safety and security. This includes users' perception of their safety and security.	Safety can be measured using KSI data along the Corridor. The uptake of walking and cycling can also be examined as an indicator of the perception of safety.	Improving safety and security is achievable and has been achieved in other locations around the UK.	Improving the safety and security for users is one way of encouraging more people to start travelling more sustainably.	The objective should be related to a 10 year time period from 2014 to 2024.

**It should be noted census data is subject to sampling and non-sampling errors.*

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5.4 Summary

This Chapter has developed a set of TPOs in response to the evidence review and consultation. Accompanying the planning objectives are details of study constraints. The following Chapter sets out the process of initial option development and sifting for the study.

6 Option Development and Sifting

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6 Option Development and Sifting

6.1 Introduction

This Chapter will discuss and define the options generated and considered for the appraisal process and will provide a summary of those options which will be taken forward to STAG Part 1 appraisal. The options were developed to provide a broad range of alternative ways to address the Transport Planning Objectives (TPOs).

6.2 2008 Options

Prior to developing a long list of options a review of the 2008 options has been undertaken to determine whether they should be considered for appraisal in 2014. Table 6.1 below summaries this review.

Table 6.1 Rationale for Inclusion or Exclusion of 2008 Options

Option	Components schemes	Inclusion in 2014	Rationale for Inclusion / Exclusion
Increase car parking at Bearsden, Milngavie, Hillfoot and Westerton rail stations	a) Partial decking of the Tesco car park, close to Milngavie station.	No	Project associated with third party development / planning application. This was unsuccessful and is unlikely to be re-submitted. It is considered unlikely that this option would be deliverable separately.
	b) Multi occupancy vehicle spaces in the existing station car park at Milngavie.	Yes	Parking capacity issues at stations.
	c) At Hillfoot station, utilise area of land to the north west of the station for parking (area currently occupied by advertising board).	Yes	Parking capacity issues at stations.
	d) Partial decking of the station car park at Bearsden	Yes	Parking capacity issues at stations.
	e) Provision of additional parking at Westerton.	Yes	Parking capacity issues at stations.

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Option	Components schemes	Inclusion in 2014	Rationale for Inclusion / Exclusion
Parking controls in town centres	<p>Implementation of MVA study recommendations, with focus on:</p> <p>a) Parking charges and waiting restrictions at Milngavie Town Centre to prevent rail users for using parking earmarked for town centre retail.</p> <p>b) Introduction of de-criminalised parking.</p> <p>c) Parking guidance system for Milngavie Town Centre</p>	No (include as do minimum)	EDC has delivered decriminalised parking across the area and are in the process of delivering a parking strategy. This study will consider this a committed / do minimum scheme.
Rail P&R at Kilmardinny	Provision of a rail halt and associated parking.	Yes	<p>Implementing a rail station has perhaps become harder due to current national policy position (SPP) regarding new rail stations. SPP as stated above, supports maximising use of existing facilities, rather than the creation of new infrastructure.</p> <p>In addition, there is no longer an opportunity to secure contributions from the Kilmardinny development.</p> <p>Notwithstanding this, the option has merit for further appraisal as it may help meet some of the TPOs.</p>
Quality Bus Corridor (QBC)	<p>a) Bus information and signalling technology on the A81.</p> <p>b) Burnbrae Roundabout to Boclair Road – southbound bus lane (24 hour).</p> <p>c) Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only).</p>	Yes	All QBC options are worth further consideration, although the ambitions for the Bearsway segregated cycle way may limit on-road bus priority.

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Option	Components schemes	Inclusion in 2014	Rationale for Inclusion / Exclusion
Rail improvements	a) Longer train (increase some 3 car units to 6 car).	No	Whilst some peak rail services at operating at or above seating capacity, crowding issues are not sufficient to warrant additional rolling stock in the short to medium term. This position should be reviewed if rail patronage levels continue to grow at the current rate.
	b) Improved integrated ticketing between bus and rail.	Yes	Interoperability of bus and rail tickets was identified as an issue at the stakeholder consultation.
Enhanced Walking and Cycling	a) Provide pedestrian facilities on desire lines (including link to rail stations).	Yes	Option could address a number of the TPOs, including access to the transport network (first and last miles). Could also assist in mitigating parking capacity issues at stations.
	b) New pedestrian crossing (Burnbrae Roundabout to Hillfoot)	No	Crossing to be delivered by Waitrose development.
	c) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station.	Yes	Option could address a number of the TPOs, including access to the transport network (first and last miles). Could also assist in mitigating parking capacity issues at stations.
	d) Completion of the cycle link between Mains estate and Allander Leisure Centre.	Yes	Option could address a number of the TPOs, including access to the transport network (first and last miles). Could also assist in mitigating parking capacity issues at stations.
	e) Review all existing cycle lanes to ensure compliance with 'Cycling by Design'.	No	The Bearsway will supersede existing cycle lanes and will be in compliance with "Cycling by Design"

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Option	Components schemes	Inclusion in 2014	Rationale for Inclusion / Exclusion
	f) Full implementation of East Dunbartonshire Cycling Strategy with respect to the study area – specific proposals have been identified for Bearsden and Milngavie.	No	EDC are currently developing their cycling action plan separately from this project.
Bus Feeder services	a) New shuttle bus connecting residential areas to stations.	Yes	The evidence review and consultation identified issues relating to accessing stations from neighbouring residential areas.
	b) Adapting existing bus routes to serve stations.	No	The evidence review and consultation identified issues relating to accessing stations from neighbouring residential areas.
	c) Super-Taxi service	No	Demand response services already exist.
Junction Improvements	a) TROs/buildouts where on-street parking is close to a junction to ensure good visibility splays.	No	EDC is taking forward their parking strategy which will identify areas where additional restrictions are required.
	b) Implementation of a gyratory at the A81/Roman Road / Roman Drive junction (incorporating ban of right turn from Boclair Road).	Yes	This junction is a significant bottleneck (see section 3.4.5 of the evidence review and key issues in section 3.8.3) - the scheme could potentially assist in addressing this.
Variable Message Signs	Electronic signs to warn drivers of any traffic issues on the route, or adjoining routes.	Yes	Would enhance information to travelling public and advise on alternative travel options.
Highway Options to enforce or reduce speeds.	a) Carriageway marking/localised narrowing.	Yes	Potential to narrow the A81 in places, which would reduce speed and improve perceived and actual safety.
	b) Vehicle activated speed warning signs.	Yes	The signs are proven to reduce the speed of traffic.

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6.3 Long List of Options

A long list of options was developed following an analysis of the problems concerning transport in the area, consultation results and the relevant local, regional and national policies. In no particular order of significance these are summarised in Table 6.2.

Table 6.2 Long List of Options

Scheme Type	Options
Increase Car Parking at Bearsden, Milngavie, Hillfoot and Westerton Rail Stations	<p>1) Multi occupancy vehicle spaces in the existing station car park at Milngavie</p> <p>2) At Hillfoot station, utilise area of land to the north west of the station for parking (area currently occupied by advertising board)</p> <p>3) Partial decking of the station car park at Bearsden</p> <p>4) Partial decking of station car park at Westerton</p> <p>5) Allocation of electric vehicle / low emission vehicle spaces at stations</p>
Parking Guidance in Milngavie	6) Parking guidance system for Milngavie Town Centre
Rail Park & Ride at Allander	<p>7) Provision of a rail station and associated parking (circa 150 spaces)</p> <p>8) Provision of a rail station with Park and Ride facility (circa 400 spaces)</p>
Quality Bus Corridor	<p>9) Burnbrae Roundabout to Boclair Road – southbound bus lane</p> <p>10) Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only)</p> <p>11) Provision of real time information at stops along the route</p> <p>12) Improvements to bus stops and shelters</p> <p>13) Bus priority installed on approaches to junctions / at pinch points</p> <p>14) Bus detection included within SCOOT</p> <p>15) Express bus service from Milngavie to Glasgow</p>
Ticketing Improvements	<p>16) Improved integrated ticketing between rail and bus services</p> <p>17) Area wide smartcard ticketing measures</p>
Enhanced Walking and Cycling	<p>18) Provide pedestrian facilities on desire lines (including link to rail stations)</p> <p>19) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station</p> <p>20) Completion of the cycle link between Mains Estate and Allander Leisure Centre</p> <p>21) Segregated cycle lane from Milngavie town centre/ to Glasgow border to</p>

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Scheme Type	Options
	<p>complete what has been achieved through Phase 1 and 2</p> <p>22) Secure cycle storage facilities built at rail stations and in town centres</p> <p>23) <i>Development of a local network of walking and cycling paths which converge on town centres and stations</i></p> <p>24) Development of a high quality path which links the Kilmardinny development and Milngavie station</p>
Bus Service Improvements	<p>25) <i>New shuttle bus connecting residential areas to stations</i></p> <p>26) Increase the frequency of bus services to rail stations</p>
Junction Improvements	<p>27) <i>Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road)</i></p>
Variable Message Signs	<p>28) <i>Electronic signs to warn drivers of any traffic issues on the route, or adjoining routes</i></p>
Road Options to enforce or reduce speeds and enhance the appeal of sustainable travel	<p>29) <i>Carriageway marking / localised narrowing</i></p> <p>30) <i>Vehicle activated speed warning signs</i></p> <p>31) Place making initiatives to enhance town centre environments</p>

Italics represent options derived from the 2008 study

6.4 Definition of the Do Minimum

Within STAG it is common to define a “Do-Minimum” situation which the options derived from this project are assessed and compared. This Do Minimum scenario in appraisal terms should include “transport improvement commitments that have policy and funding approval.

For this project the following transport interventions have been considered with the Do Minimum situation:

- Parking charges and waiting restrictions at Milngavie Town Centre to prevent rail users from using parking earmarked for town centre retail;

EDC adopted decriminalised parking enforcement in April 2014, and as part of the supporting parking strategy they propose to introduce a charging regime in the town centres across the Council Area. It is anticipated that the first two hours of parking will be free of charge, longer stay parking will incur charges. The scheme is intended to discourage long stay commuter parking and facilitate access to town centres for shoppers.

- Localised improvements associated with the Kilmardinny development, with developer contributions to support these improvements;

It is anticipated that the Kilmardinny development will provide developer contributions in the region of £650,000, which could be used towards meeting the estimated cost of 7 transportation projects under the title of A81 Route Corridor Strategy Works, which are;

- o an enhanced bus stop facility;
- o implementation of SCOOT along the A81;
- o utilisation of the area to the north west of Hillfoot Station for parking;

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- bus information and signalling;
- advanced signing for southbound traffic between Boclair Road and Canniesburn Toll;
- a 24 hour southbound bus lane on Burnbrae Roundabout to Boclair Road; and
- Implementation of a by-directional bus lane (peak hour only) between Boclair Road and Canniesburn Toll.

Whilst some of the above measures are likely to proceed as part of the development, the specific package of measures is still to be agreed – it can therefore not be assumed at this stage that all of the above will be taken forward and therefore included in the Do Minimum.

- Kessington Hub to promote interchange between walking, cycling and public transport travel and make Kessington more accessible for all users;

Located near the junction between the A81 and Kessington Road, Milngavie, the Kessington hub will provide enhanced bus, cycling and walking facilities, short stay parking and an improved public realm. The purpose of the project is to create an environment which encourages sustainable travel.

- Implementation of cycle corridor with Phase 1 from Burnbrae Roundabout to Hillfoot and Phase 2 from Hillfoot to Kessington

EDC and their partners are currently taking forward the development of a segregated two-way cycle scheme, called “the Bearsway”. The overall ambition is to link Milngavie, Bearsden and Glasgow (via existing off road routes) by an on-road segregated facility. Currently a section between Burnbrae Roundabout to Hillfoot is committed, however it is understood that the Council has ambitions to develop this further, as follows;

1. Burnbrae Roundabout to Hillfoot – to be delivered 2014/15
2. Hillfoot to Kessington – to be delivered 2015/16
3. Kessington to off road cycling facilities – tbc

Funding for Phase 1 has been secured and it is anticipated to be delivered spring 2015. AECOM has been advised by SPT that the full funding for package Phase 2 has not been fully committed. SPT as a significant funding partner of the project have awarded phase two with category two funding. Category 1 projects are considered committed schemes and category 2 projects do not have guaranteed funding. Phase 3 at present has no committed funding.

The ambitions of the Bearsway are to provide an attractive facility which would encourage non-cyclist or inexperienced cyclists to use.

- Bus Improvement Fund

In 2013, EDC were awarded funding through the Bus Improvement Fund (BIF) to improve bus infrastructure along the A81. The BIF was to fund the Kessington and Milngavie Travel Hubs and support the development of a Quality Bus Corridor (QBC), which may include;

- Dedicated bus lanes
- Bus priority at traffic signals
- Real time information at bus stops
- Ticketing at bus stops (future collaboration with SPT)
- Parking restrictions
- Enforcement of parking and bus lane restrictions
- Secure cycle storage at bus stops
- Improved pedestrian facilities
- Cycle lanes
- High quality surfacing

It is considered that full development of the Bearsway as a two-way segregated cycleway may restrict the schemes deliverable from the BIF. This is likely to impact on the opportunity for bus lanes, as it is currently understood the Bearsway occupies part of the existing carriageway, it is unlikely that the carriageway would have sufficient space to accommodate both a dedicated segregated cycleway and bus lanes without significant repercussions on traffic capacity and congestion.

In addition, the Do Minimum considers items which are within EDC’s general transport management and maintenance regime, which includes monitoring and maintenance of the Council’s core path network in line with the Core Path Plan and signing, lining and general maintenance of the road network.

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It is noted that there may be a compatibility issue with the BIF, Kilmardinny transport improvements and the Bearsway.

6.5 Appraisal of Options

Tables 6.3 and 6.4 provide an initial appraisal and rankings of the long list of options. A seven point scoring system has been used to denote whether a particular option contributes positively, neutrally or negatively towards each of the Planning Objectives. On this scale a 3 represents the strongest positive impact, 0 a neutral impact and -3 a strong negative impact. In addition the seven point scoring system has been used to appraise the deliverability of each option. For deliverability a score of 3 indicates that the option is deliverable, 0 neutral and -3 very difficult to deliver.

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Table 6.3 Option Scoring Table

Scheme Type	Option No.	Scheme	Objectives									Deliverability	Total
			Promote modal shift	Improve access to the PT network	Support enhanced access	Improve bus journey times and reliability	Support local development	Support healthy lifestyles	Enhance local air quality	Integrated transport network	Improve safety and security		
Increase Car Parking at Rail Stations	1	Multi occupancy vehicle spaces in the existing station car park at Milngavie	1	1	1	0	0	0	1	1	0	2	7
	2	At Hillfoot station, utilise area of land to the NW of the station for parking	1	2	2	0	0	-1	0	1	0	-2	3
	3	Partial decking of the station car park at Bearsden	1	2	2	0	0	-1	0	1	0	-1	4
	4	Partial decking of station car park at Westerton	1	2	2	0	0	-1	0	1	0	-1	4
	5	Allocation of spaces for electric / low emission vehicles at stations	0	0	0	0	0	1	1	0	0	2	4
Parking Guidance	6	Parking guidance system for Milngavie Town Centre	-1	0	1	0	1	0	1	0	0	0	2
Rail PnR at Allander	7	Provision of a rail station and associated parking (circa 150 spaces)	2	3	3	0	2	1	0	1	0	-2	10
	8	Provision of a rail station with Park and	2	3	3	0	2	0	0	1	0	-3	8

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Scheme Type	Option No.	Scheme	Objectives										Total
			Promote modal shift	Improve access to the PT network	Support enhanced access	Improve bus journey times and reliability	Support local development	Support healthy lifestyles	Enhance local air quality	Integrated transport network	Improve safety and security	Deliverability	
		Ride facility (circa 400 spaces)											
Quality Bus Corridor	9	Burnbrae Roundabout to Boclair Road – southbound bus lane	1	0	1	3	1	1	1	0	0	0	8
	10	Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only)	1	0	1	3	1	1	1	0	0	-1	7
	11	Provision of real time information at stops along the route	2	1	1	0	0	1	1	0	0	3	9
	12	Improvements to bus stops and shelters	1	1	1	0	0	1	1	2	1	3	11
	13	Bus priority installed on approaches to junctions / at pinch points	2	0	1	3	1	1	0	0	0	2	10
	14	Bus detection included within SCOOT	2	0	1	3	1	1	0	0	0	3	11
	15	Express bus service from Milngavie to Glasgow	2	0	1	2	0	1	1	0	0	-2	5
Ticket improve ments	16	Improved integrated ticketing between rail and bus services	2	0	1	0	1	1	0	3	0	-2	6

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Scheme Type	Option No.	Scheme	Objectives										Total
			Promote modal shift	Improve access to the PT network	Support enhanced access	Improve bus journey times and reliability	Support local development	Support healthy lifestyles	Enhance local air quality	Integrated transport network	Improve safety and security	Deliverability	
	17	Area wide smartcard ticketing measures	2	0	1	0	1	1	0	3	0	-2	6
Enhanced Walking and Cycling	18	Provide pedestrian facilities on desire lines (including link to rail stations)	1	2	1	0	1	2	2	2	2	0	13
	19	Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station	1	1	1	0	1	2	1	2	2	3	14
	20	Completion of the cycle link between Mains Estate and Allander Leisure Centre	1	0	1	0	1	3	1	1	2	1	11
	21	Segregated cycle lane from Milngavie town centre/ to Glasgow border to complete what has been achieved through Phase 1 and 2	1	0	1	0	0	3	1	1	2	-1	8
	22	Secure cycle storage facilities built at rail stations and in town centres	1	2	0	0	1	1	1	2	1	3	12
	23	Development of a local network of walking and cycling paths which converge on town centres and stations	2	1	1	0	1	3	2	2	2	0	14

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Scheme Type	Option No.	Scheme	Objectives										Total
			Promote modal shift	Improve access to the PT network	Support enhanced access	Improve bus journey times and reliability	Support local development	Support healthy lifestyles	Enhance local air quality	Integrated transport network	Improve safety and security	Deliverability	
	24	Development of a high quality path which links the Kilmardinny development and Milngavie station	0	1	1	0	1	3	2	2	2	0	12
Bus Service Improvements	25	New shuttle bus connecting residential areas to stations	2	3	2	0	0	0	1	2	0	-2	8
	26	Increase the frequency of bus services in the corridor	2	1	2	2	1	1	1	2	0	-1	11
Junction Improvements	27	Implementation of a gyratory at the A81/ Roman Rd / Roman Drive junction (inc. ban of right turn from Boclair Rd)	1	0	0	1	2	0	1	0	0	0	5
VMS	28	Electronic signs to warn drivers of any traffic issues	0	0	1	0	0	0	0	1	1	3	6
Road Options	29	Carriageway marking / localised narrowing	0	0	0	0	0	2	0	0	3	0	5
	30	Vehicle activated speed warning signs	0	0	0	0	0	2	0	0	2	0	4
	31	Place making initiatives to enhance town centre environments	0	0	0	0	2	2	0	0	1	2	7

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Table 6.4 Ranking against Planning Objectives

Option No.	Option	Total Score
19	Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station	14
23	Development of a local network of walking and cycling paths which converge on town centres and stations	14
18	Provide pedestrian facilities on desire lines (including link to rail stations)	13
22	Secure cycle storage facilities built at rail stations and in town centres	12
24	Development of a high quality path which links the Kilmardinny development and Milngavie station	12
20	Completion of the cycle link between Mains Estate and Allander Leisure Centre	11
14	Bus detection included within SCOOT	11
26	Increase the frequency of bus services in the corridor	11
7	Provision of a rail station and associated parking (circa 150 spaces)	10
12	Improvements to bus stops and shelters	10
13	Bus priority installed on approaches to junctions / at pinch points	10
11	Provision of real time information at stops along the route	9
8	Provision of a rail station with Park and Ride facility (circa 400 spaces)	8
9	Burnbrae Roundabout to Boclair Road – southbound bus lane	8
21	Segregated cycle lane from Milngavie town centre/ to Glasgow border to complete what has been achieved through Phase 1 and 2	8

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Option No.	Option	Total Score
25	New shuttle bus connecting residential areas to stations	8
1	Multi occupancy vehicle spaces in the existing station car park at Milngavie	7
10	Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only)	7
31	Place making initiatives to enhance town centre environments	7
16	Improved integrated ticketing between rail and bus services	6
17	Area wide smartcard ticketing measures	6
28	Electronic signs to warn drivers of any traffic issues	6
15	Express bus service from Milngavie to Glasgow	5
27	Implementation of a gyratory at the A81/ Roman Rd / Roman Drive junction (inc. ban of right turn from Boclair Rd)	5
29	Carriageway marking / localised narrowing	5
3	Partial decking of the station car park at Bearsden	4
4	Partial decking of station car park at Westerton	4
5	Allocation of spaces for electric / low emission vehicles at stations	4
30	Vehicle activated speed warning signs	4
2	At Hillfoot station, utilise area of land to the NW of the station for parking	3
6	Parking guidance system for Milngavie Town Centre	1

6.6 Initial Sift

Based on the assessment, it was considered that those options which scored four or less do not merit further consideration and, therefore, will not be taken forward into STAG Part 1. The scoring shows walking and cycling measures were ranked highest against the objectives with the top four options all related to walking and cycling.

6.6.1 Partial decking of station car park at Westerton and Bearsden (Options 3 and 4)

These schemes ranked low in the scoring threshold; primarily it is felt that the options generally do not significantly meet the TPOs. Furthermore, deliverability of the options is considered difficult noting the constrained space onsite, which would only

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provide approximately 80 additional spaces at each site. The sites are located within local conservation areas and close to residential areas with high amenity value, which may result in difficulties at a planning stage. The Bearsden site is adjacent to the Bearsden Air Quality Management Area; increased parking with increased local traffic may exacerbate existing air quality issues. Overall this option does not appear to offer sufficient benefit and is unlikely to be deliverable.

6.6.2 Parking guidance system for Milngavie Town Centre (Option 6)

This scheme ranked the lowest in the option scoring exercise as it was felt it made little contribution to achieving the objectives, particularly promoting modal shift to sustainable modes. By making parking easier in the town centre, this may encourage more people to travel by car rather than considering alternative modes of travel.

6.6.3 Vehicle activated speed warning signs (Option 30)

Although this scheme should improve the safety of road users, it was felt it would make little contribution to any of the other objectives and therefore scored poorly in the assessment.

6.6.4 Allocation of spaces for electric vehicle / low emission vehicle spaces at stations (Option 5)

This option is not considered suitable because it would have minimal impact on the study area as it only involves reallocating a few car parking spaces. Although the scheme is unlikely to have a detrimental impact on any of the objectives, it is expected to only contribute positively to three of the objectives. EDC and SPT may wish to progress this independently but it is not considered appropriate for this study.

6.6.5 At Hillfoot Station, utilise area of land to the north west of the station for parking (Option 2)

This option would increase car parking at Hillfoot station which would reduce the parking issues at the station and consequently the surrounding streets which parking overflows on to currently, thereby contributing to the objectives regarding accessibility. However, the feasibility of the scheme is severely restricted by a number of on-site constraints, which include:

- Limited land space; the area shown in Figure 6.1 could accommodate a limited number of spaces only;
- Access arrangements would be restricted to the northern extent of the site because the road rises towards the rail overbridge;
- The rail overbridge and road alignment would negatively impact on visibility splays at the access point; although, it is likely that visibility would be within acceptable standards. The access would, however, be within 20 metres of a pedestrian crossing, which is against design guidance⁶. Although this crossing could be moved it would be at the detriment of pedestrian movement and connectivity at the Hillfoot Travel Hub;
- The A81 junctions with a number of side road and accesses within the proximity of Hillfoot and the opening of an additional access would reduce the areas attractiveness as a transport interchange site;
- The access would be located opposite Roman Drive creating a crossroad / staggered junction. Roman Drive is a busy road and may become signalised as part of a local traffic management scheme. It is anticipated that a car park access would negatively impact traffic movements in the area.

Although consideration was given to other locations within proximity of the station, no alternative could be identified.

Noting the above, the likely costs, engineering and local challenges it is anticipated that this option would not be feasible and will not be considered further within this study.

⁶ 2.1.1.1 – LTN 2/95 The Design of Pedestrian Crossings, DFT

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Figure 6.1 Potential Area of Land for Additional Parking at Hillfoot Station

6.6.6 Multi-occupancy vehicle spaces in the existing station car park at Milngavie (Option 1)

Although this option scored reasonably against the objectives, issues regarding how multi-occupancy spaces could be enforced impact on the viability of this scheme. Furthermore, the scheme would provide only a few spaces which would limit the impact of the scheme on the study area. Informal multi-occupancy spaces can encourage car share and reduce the number of vehicles traveling to a site, however, this is generally in a small scale.

6.7 Options to be taken forward into STAG Part 1 Appraisal

The following options have been retained at this stage as they appear to offer potential in performing well to varying degrees against the objectives. Additionally, whilst there are some issues regarding the feasibility of individual schemes, none of the schemes could be eliminated on feasibility grounds at this stage.

6.7.1 Do Minimum

The Do Minimum, as described in section 6.3, includes parking charges and waiting restrictions, improvements associated with the Kilmardinny development, walking and cycling improvements, Kessington Hub and general maintenance of the road network. This Do Minimum will be taken forward for further appraisal at STAG Part 1, to provide a reference case, against which the following measures will be appraised.

6.7.2 Rail Park & Ride at Allander (long list Options 7 and 8)

The provision of a rail station with parking at Allander could prove to be a suitable location in the study area to ease the parking pressures at rail stations in the study area. It would also address an accessibility gap in terms of access to the rail network between Hillfoot and Milngavie stations (see Accession plot, Figure 2.1). Furthermore, this would provide improved sustainable travel links to the proposed Kilmardinny development. However, further consideration is required to fully explore the land-use integration at this site and potential for abstraction from existing Park & Ride facilities at Milngavie. At this stage, two options have been included regarding parking; one with around 150 spaces and another with 400 spaces. The proposed Kilmardinny development allocates 150 parking spaces so increasing this to 400 spaces would require alterations to this masterplan. Whilst a larger car park would have benefits in mitigating parking issues at rail stations across the corridor, it has the potential to encourage passengers currently walking or cycling to existing stations to travel by car to Allander station. This issue has been reflected in the Initial Assessment of the Long List of Options but, it will be necessary to undertake further analysis to determine which option is most appropriate for the study area.

6.7.3 Quality Bus Corridor (long list Options 9, 10, 11, 12, 13, 14 and 15)

The creation of a Quality Bus Corridor (QBC) involves a series of measures designed to improve bus journey time reliability and enhance passenger facilities. The corridor south of Canniesburn Toll is part of the Glasgow QBC network; therefore, proposals that link the A81 in the study area to this would increase the length of coverage to the whole route from Milngavie to Glasgow.

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The option may include the installation of bus lanes (long list Options 9 and 10) to allow buses to pass queuing traffic and improve journey times. It is noted during the consultation process there was greater support for bus priority at pinch points / approaches to junctions (long list Option 13) compared with whole route bus lanes. Bus priority would allow buses to avoid getting delayed at junctions and pinch points in the network, thus improving bus journey time reliability.

Other options that can be used in the creation of a QBC may include:

- Bus shelters and waiting areas upgrades (long list Option 12);
- Electronic message systems at bus stops to give real time information to passengers (long list Option 11);
- Express bus service from Milngavie to Glasgow (long list Option 15); and
- Bus detection included within SCOOT to minimise delay to buses (long list Option 14).

As there are a number of measures which could be incorporated within a QBC, further appraisal will seek to identify which initiatives will have the greatest impact in achieving the objectives set for the study area.

6.7.4 Ticket Improvements (long list Options 16 and 17)

The need for greater integration between modes was identified during the evidence review and was re-enforced at the consultation event. This option places particular emphasis on the integration of ticketing between rail and bus services. It is accepted the delivery of this scheme would need to be led by SPT in collaboration with neighbouring authorities and transport operators. As the scheme scored reasonably well and shows support for integration it was felt to be worthwhile considering further in the study.

6.7.5 Enhanced Walking and Cycling (long list Options 18, 19, 20, 21, 22, 23 and 24)

The Do Minimum scenario includes walking and cycling initiatives but there was strong support for further walking and cycling measures at the consultation event and a number of these options scored particularly highly against the objectives. With regards to cycling, these measures aim to encourage greater uptake of cycling and the CAPS 2013 vision for 10% of all journeys to be made by bike by 2020 in Scotland. Similarly, with regards to walking, the measures aim to support the National Walking Strategy published in 2014 by creating better quality walking environments.

A number of measures are proposed including:

- Pedestrian facilities along desire lines (long list Option 18);
- Expansion and completion of cycle links (long list Options 19 and 20);
- Segregated cycle lanes to help cyclists feel safer (long list Option 21);
- Secure cycle storage facilities at public transport stations and town centres (long list Option 22); and
- Development of a local network of walking and cycling paths around the study area which converge on town centres and public transport stations (long list Option 23 and 24).

During the consultation event, the need for more secure cycle parking was identified with one attendee referring to a recent newspaper article highlighting recent theft of cycles from Westerton. Therefore, provision of secure facilities at stations and town centres is expected to be welcomed. Delivering walking and cycling measures can encourage active travel as well as the uptake of public transport by improving access to stations and making the integration between modes easier.

6.7.6 Bus Service Improvements (long list Options 25 and 26)

The evidence review highlighted bus patronage has been declining whilst the consultation process identified a perception that bus services did not cover a sufficient geographical area. Option 26 seeks to increase the frequency of services along the corridor so that the bus is seen as a more viable alternative. Meanwhile, Option 25 aims to improve the integration between bus and rail services as well as ensuring greater access to the public transport network through a new shuttle bus service which connects residential areas with train stations. This would also ease the parking pressures at train stations. The service could potentially connect Milngavie, Hillfoot and Bearsden rail stations and provide some penetration to the following areas:

- Mains Estate;
- North of the B5080 Craigdhu Road;
- Triangle between the B5080 Baljaffray Road / A810 Duntocher Road / A809 Stockiemuir Road;
- West of the A809 Drymen Road; and
- West of the A81 Milngavie Road.

For the purposes of assessment, it is assumed that the service would operate Monday to Saturday, 06:00-21:00a at a 20 minute frequency on a circular route of approximately 12km. It is envisaged that the service would operate two-way. At the consultation

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event, attendees highlighted concerns regarding the feasibility of providing a service like this and doubted that it could be operated on a completely competitive model.

6.7.7 Junction Improvements (long list Option 27)

A number of the junctions along the route are subject to delay which could in part be addressed through interventions. The optimisation of the signals is already considered within the Do Minimum, however physical alterations could be used to ease the flow of traffic along the corridor further. This option suggests the implementation of a gyratory at the A81 / Roman Road / Roman Drive junction, incorporating a ban of the right turn from Boclair Road, to ease the congestion currently experienced, particularly during the AM and PM peak. Furthermore, the suggestion of bus priority at junctions and cycle measures will seek to improve the junctions for public transport users and cyclists to encourage greater uptake of these modes.

6.7.8 Variable Message Signs (long list Option 28)

VMS could be used to provide travel information to all users of the transport system, for example:

- The available travel choices;
- The availability of parking spaces at rail stations, in conjunction with information relating to car parking at locations within the town centre;
- Time of next train/bus;
- Current journey times by mode;
- Alternative route options;
- Forthcoming events; and
- Delays on the network – again all modes.

6.7.9 Road Options to Enforce / Reduce Speeds and Enhance Appeal of Sustainable Travel (long list Option 29, 30, 31)

A number of road options to enforce or reduce speeds as well as enhancing the appeal of sustainable travel were identified. Carriageway markings/localised narrowing seek to alter driver perception and influence their speeds. By reducing speeds the aim is to create a more appealing environment for walking and cycling. This could be achieved by altering the layout of cycle lanes to create narrowing running lanes and safer cycling facilities. Whilst enforcing and reducing the speed of vehicles is likely to encourage sustainable travel, the option recognises further action is needed to enhance the appeal of sustainable travel. Therefore, place making initiatives to enhance town centre environments are suggested and these include:

- Further roll-out of 20mph speed limit zones;
- Appropriate street furniture;
- Street lighting; and
- Provision of high quality walking and cycling facilities at and to new developments.

6.8 Summary

This Chapter has provided details of the option sifting and development process undertaken. It has highlighted the key stages involved in this process and has outlined the reasons for rejecting or retaining options.

7 STAG Part 1 Appraisal

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7 STAG Part 1 Appraisal

7.1 Introduction

The Chapter reports, in detail, on the STAG Part 1 Appraisal of the options developed in the preceding chapters. This Part 1 appraisal is primarily a qualitative appraisal of each option against the Transport Planning Objectives (TPO's) developed in Chapter 5 of this report and the STAG criteria (Accessibility and Social Inclusion, Economy, Environment, Integration and Safety).

In addition to the appraisal against TPO's and STAG criteria the STAG Part 1 Appraisal also includes an appraisal of:

- The deliverability of each option, which considers public acceptability, affordability and feasibility; and
- Each option against established national, regional and local policies.

In addition to the above, Appraisal Summary Tables (ASTs) should be provided. The ASTs details all the pertinent information which has informed the appraisal for each option. This includes option descriptions, details of each element of the appraisal process, relevant background information and the size / scale of benefits. The ASTs essentially summarise Chapters 3 – 7 of this report for each option, and are contained within Appendix C of this report

7.2 Options for Appraisal at STAG Part 1

The following options have been identified for appraisal at STAG Part 1, as discussed in the previous Chapters. It is important to note that the options have been numbered for reference purposes only and that all options are given equal consideration.

- *Option 1: Do Minimum*
- *Option 2: Rail Park & Ride at Allander*
- *Option 3: Quality Bus Corridor*
- *Option 4: Area Wide Smartcard Ticketing*
- *Option 5: Improve Integrated Ticketing*
- *Option 6: Enhanced Walking and Cycling Paths and Links*
- *Option 7: Secure Cycle Storage*
- *Option 8: Bus Service Improvements*
- *Option 9: Junction Improvements*
- *Option 10: Variable Message Signs*
- *Option 11: Road Options to Enforce / Reduce Speeds and Enhance Appeal of Sustainable Travel*

7.3 Planning Objectives

The following objectives have been developed for the STAG Part 1 appraisal, based on an analysis of the problems and opportunities and the aspiration of established local, regional and national policies:

- a) Promote modal shift to sustainable transport for trips (particularly commuting) from or to the study area;
- b) Improve access to the public transport network, particularly for the first and last miles of journeys;
- c) Provision of a transport network that supports enhanced access to employment, social and leisure opportunities;
- d) Improve bus journey times and journey time reliability on the A81 corridor;
- e) Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area;
- f) Delivery of a transport network that supports healthy lifestyles;
- g) Delivery of a transport network that enhances local air quality;
- h) Development of an integrated transport network, including co-ordination between modes and increased connectivity between active travel infrastructure and public transport; and
- i) Provision of a transport network that improves safety and security across all modes of transport.

7.4 Financial Appraisal

At this part of the appraisal process the scale of the financing burden on the promoting authority and other possible funding organisations should be considered. These costs should take cognisance of design, consultation, construction, operation and maintenance costs, land purchase costs and service diversions are omitted at this stage. Each options has been categorised as;

- Low – £1,000 - £500,000

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- Medium – £500,000 - £1,000,000;
- High - £1,000,000+

These values are very broad at this stage and will be refined throughout the STAG process. The cost implications are summarised in Table 7.1 below.

Table 7.1 Initial Cost Implications

Option		Brief Description	Cost Implications
1	Do Minimum	Ongoing maintenance, existing proposed works, and walking/cycling facilities	Committed
2	Rail Park & Ride at Allander	Rail Park & Ride facility at the site	High*
3	Quality Bus Corridor	Bus lanes, real time information, improvements to stops/shelters, bus priority at junctions and bus detection within SCOOT. QBC also includes an express bus service between Milngavie and Glasgow	Medium
4	Area Wide Smartcard Ticketing	Support for smartcard ticketing implementation across East Dunbartonshire and surrounding area	Medium - High
5	Improve Integrated Ticketing	Improve the integration of ticketing between bus operators and between bus and rail	Medium - High
6	Enhanced Walking and Cycling	Provide new, and improve existing, walking and cycling paths	Medium
7	Secure Cycle Storage	Provision of secure cycle storage facilities	Low
8	Bus Service Improvements	Enhanced links to rail stations from residential areas,	High*
9	Junction Improvements	Implementation of a gyratory	Medium
10	Variable Message Signs	Provision of VMS	Low - Medium
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	Traffic engineering to reduce speeds in the study area supported with place making initiatives to enhance appeal of sustainable travel	Low – Medium*

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*A number of the schemes in the table above would not have large capital costs but would require significant ongoing annual revenue support, for example, bus service improvements.

7.5 Performance Against Transport Planning Objectives

The following considers the performance of the proposed interventions against the planning objectives set out in detail with Tables 7.2 – 7.10.

Table 7.2 - Objective A - Promote Modal Shift to Sustainable Transport for Trips (Particularly Commuting) From or To the Study Area

Option		Contribution to Objective
2	Rail Park & Ride at Allander	<p>This option facilitates access by walking and cycling to a number of properties in Bearsden and Milngavie which are outside a 10minute walk of a rail station. It will also facilitate sustainable travel for the future Kilmardinny development, thus helping to mitigate the traffic impacts of that development.</p> <p>Similar to Option 1 the increase / creation of additional park and ride facilities could have a positive and / or negative impact on traffic levels.</p> <p>Given that this option serves a large wedge of the community which is remote from the rail network it is anticipated that this option will contribute positively to the objective. Although the inclusion of Park & Ride may reduce the benefits of this option locally as it will increase local traffic levels.</p>
3	Quality Bus Corridor (QBC)	<p>This option may enhance passenger facilities, information and marketing, and service provision all with the aim to make bus travel more attractive.</p> <p>The benefits of on-road bus priority facilities may provide some journey time benefit for services to Glasgow and would certainly improve journey times for more local journeys, particularly to locations within the study area and the West of Scotland Science Park, which is a Strategic Economic Investment Location. However, as the predominant movements are understood to be towards Glasgow, the effect on modal shift may be limited as the journey time by bus is relatively long compared to rail.</p> <p>Overall it is likely that QBC options will encourage mode shift, particularly for more local journeys. The ability to encourage modal shift to bus services to Glasgow will be limited by the comparative journey times.</p>
4	Area Wide Smartcard Ticketing	<p>These measures aim to improve public transport ticketing making it easier to travel by public transport and thus more attractive.</p>
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	<p>Encourages the use of active travel modes rather than travel by private car. This option would encourage active travel for local journeys to shops, place of work, rail / bus facilities, schools and other services.</p>

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Option		Contribution to Objective
		<p>Modal shift should be achieved across a wide spectrum of times and journey types. Most properties in Bearsden and Milngavie are within a 10 - 20min walk of their respective town centres.</p> <p>In order to maximise the benefits of the measures, marketing and promotion work would be required to raise awareness of the new infrastructure and promote behavioural change.</p>
7	Secure Cycle Storage	Encourages cycling rather than travel by private car to train stations and town centres.
8	Bus Service Improvements	Similar to Option 3 this option is to enhance service provision with the aim to make bus travel more attractive, thus reducing the need for car usage. The effect on commuting modal shift may be limited by the relatively long travel time compared to rail.
9	Junction Improvements	This is unlikely to have a significant impact on this TPO although there would be scope to improve transit through the junction for buses, cycles and pedestrians. However, improving traffic movements may only serve to encourage more car trips due to reduced journey times.
10	Variable Message Signs	Could encourage a modal shift by indicating the relative merits of public transport over private car use in terms of journey times or other measures and thus have a positive impact. Notwithstanding this, the extent of the impact is limited.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	These measures would have a positive impact in terms of making sustainable travel more appealing but this impact is expected to be smaller compared with other measures.

Table 7.3 - Objective B - Improve Access to the Public Transport Network, Particularly For the First and Last Miles

Option		Contribution to Objective
2	Rail Park & Ride at Allander	A new rail station at Allander would address the identified accessibility gap with regards to access to the rail network. Furthermore, providing parking at this station could reduce parking constraints at existing stations.
3	Quality Bus Corridor (QBC)	The QBC measures seek to improve the quality of existing bus provisions and would encourage more people to consider the bus a viable alternative. Very few of the specific scheme options would improve access to the public transport network with the exception of the provision of real time passenger information.

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4	Area Wide Smartcard Ticketing	Improving the integration of ticketing between public transport modes would make it easier to travel by bus and rail which may make people consider it as a viable alternative. However, it is anticipated that integrating ticketing would do little to improve access to the public transport network.
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	Enhancing walking and cycling routes to rail stations, town centre and key local trip attractors would contribute strongly to improving the first and last miles to the public transport network. This would encourage those living within walking and cycling vicinity of rail stations not to use their car to travel to the station.
7	Secure Cycle Storage	Ensuring secure cycle storage facilities are provided at rail and bus stations improves access to the public transport by bicycle.
8	Bus Service Improvements	Providing a new bus service which connects residential areas to rail stations and town centres would undoubtedly improve access to the public transport network by providing greater penetration of the bus network in the study area. Meanwhile, increasing the frequency of existing bus services would also contribute to this as the bus becomes a more practical alternative.
9	Junction Improvements	This should make it quicker for vehicles to travel through these particular sections of road but is unlikely to have a direct influence on access to the public transport network.
10	Variable Message Signs	These may direct traffic to public transport stations but is unlikely to have a direct influence on access to the public transport network
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	This enhances the appeal of sustainable travel will improve the experience of travelling to the public transport by active travel modes but they will not improve access to the network.

Table 7.4 - Objective C - Provision of a Transport Network That Supports Enhanced Access to Employment, Social and Leisure Opportunities

Option		Contribution to Objective
2	Rail Park & Ride at Allander	<p>This is expected to have the most significant impact on this objective through providing a new station at Allander which will provide access to and from the proposed Kilmardinny development.</p> <p>The evidence review highlighted the need for new developments to ensure they promote access to local amenities - this option alongside the Kilmardinny development would help to achieve this.</p> <p>This option would occupy a gap in service provision between Milngavie</p>

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		and Hillfoot which has resulted in a significant number of properties being remote from a rail service, see Figure 3.21 above. This will improve sustainable transport links from this area to employment, social and leisure facilities, particularly in Glasgow City Centre.
3	Quality Bus Corridor (QBC)	All QBC schemes would enhance access to employment and leisure opportunities, particularly within the local area, by improving the quality of the bus network. Bus lanes and bus priority initiatives ensure quicker and more reliable journey times whilst real time information of bus services allows people greater control of their journey; the quality of bus travel and access to opportunities would therefore be improved.
4	Area Wide Smartcard Ticketing	Improvements to ticketing would have a small positive impact on this objective by creating of a public transport network that was easier to use. In addition, the evidence review noted the commuter outflow from the study area to Glasgow so improving ticketing is one way of improving public transport access.
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	Improving active travel links in the study area would enhance access to local services and facilities without the use of the car. The links would connect into rail stations enabling convenient links beyond the immediate area. Furthermore, ensuring these links are connected, where relevant, to neighbouring authorities networks, particularly Glasgow City Council where there are large commuter out-flows to, would support enhanced access.
7	Secure Cycle Storage	Negligible impact on this objective.
8	Bus Service Improvements	Provision of new bus services and increasing the frequency of existing services will have a notable impact on this objective. These improvements would provide greater access, particularly for those without a car, to the public transport network and therefore access to employment and leisure opportunities.
9	Junction Improvements	Improving traffic flow at this junction is anticipated to have a minimal impact on this objective as it does not directly influence access to destinations.
10	Variable Message Signs	VMS signs could direct traffic to social and leisure events which would support enhanced access but this impact is expected to be minimal.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	Negligible impact on this objective.

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Table 7.5 - Objective D - Improve Bus Journey Times and Journey Time Reliability on the A81 Corridor

Option		Contribution to Objective
2	Rail Park & Ride at Allander	Negligible impact on this objective.
3	Quality Bus Corridor (QBC)	<p>The QBC will help to improve bus journey times and reliability through the implementation of bus lanes, bus priority at pinch points and bus detection within SCOOT which would ease bus passage on the corridor.</p> <p>Provision of an express bus service from Milngavie to Glasgow would provide a journey with a quicker journey time than the regular services.</p>
4	Area Wide Smartcard Ticketing	Negligible impact on this objective.
5	Improve Integrated Ticketing	Negligible impact on this objective.
6	Enhanced Walking and Cycling	Negligible impact on this objective.
7	Secure Cycle Storage	Negligible impact on this objective.
8	Bus Service Improvements	Increasing the frequency of existing bus services should improve bus journey times on the network as the waiting time between services is reduced.
9	Junction Improvements	This may have some impact if the scope includes improving transit for buses through the junction. However, the impact on bus journey times and reliability is not expected to be significant.
10	Variable Message Signs	Negligible impact on this objective.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	Negligible impact on this objective.

N.B. Whilst many of these objectives have been regarded as having a negligible impact on this objective, it is worth noting that options which encourage modal shift to sustainable modes may reduce levels of car-based congestion and therefore make a contribution (albeit to a small extent) to indirectly improving bus journey time reliability.

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Table 7.6 - Objective E - Development of A Transport Network That Facilitates / Complements Local Development, Contributing Towards the Sustainable Economic Growth of the Study Area

Option		Contribution to Objective
2	Rail Park & Ride at Allander	<p>This is expected to have a significant impact in terms of contributing towards sustainable economic growth by supporting rail travel to the Kilmardinny development.</p> <p>This option may encourage residents, particularly of the Kilmardinny development to travel outside the local area for leisure and shopping, rather than in the local area. Therefore the benefit to the local economy may be limited.</p>
3	Quality Bus Corridor (QBC)	Improving the quality of bus travel and facilities in the study area, particularly to town centres and key developments, supports local development and encourages bus travel within East Dunbartonshire.
4	Area Wide Smartcard Ticketing	Improving the integration of ticketing between public transports modes makes it easier to travel sustainably and encourages modal shift from the car to public transport.
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	<p>Enhancing active travel links throughout the corridor may encourage residents to access local services, particularly retail, rather than leaving the area by car to larger shopping areas.</p> <p>Milngavie is the starting point of the iconic and world famous West Highland Way (WHW). Enhancement of the active travel image of the area will support the economic benefit of the WHW.</p>
7	Secure Cycle Storage	Ensuring secure cycle storage is provided at rail stations and new developments helps to encourage greater uptake of sustainable travel, thus contributing to the objective.
8	Bus Service Improvements	This option would provide enhanced access to town centres, local services and key developments by bus. Facilitating and supporting sustainable travel to local development, businesses and services will support local economic growth.
9	Junction Improvements	Reduction of delay and congestion at key bottlenecks will improve journey times within the local area and the attractiveness Bearsden / Milngavie town centres. Furthermore it will facilitate more efficient deliveries and servicing of local commercial and retail businesses. Although the benefit of this may be reduced or removed if the option encourages increased levels of private car journeys.

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Option		Contribution to Objective
10	Variable Message Signs	Negligible impact on this objective.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	<p>Place making initiatives enhance the appeal of sustainable travel, and creates a 'sense of place' which encourages / supports local development and sustainable economic growth.</p> <p>Reduction of vehicular speeds may encourage commuting by cycle, walking and children to walk / cycle to school.</p>

Table 7.7 - Objective F - Delivery of a Transport Network That Supports Healthy Lifestyles

Option		Contribution to Objective
2	Rail Park & Ride at Allander	<p>Constructing the new rail station creates a new catchment area of residents within walking and cycling distance to the rail network, therefore, supporting healthy lifestyles.</p> <p>However, if the rail station is built with 400 spaces rather than 150 spaces, the impact on this objective is likely to be smaller as it may encourage those currently walking or cycling to an existing station to start driving.</p>
3	Quality Bus Corridor (QBC)	A QBC improves the quality of bus services and doing so may encourage more people to walk to a bus service if they consider it has become a suitable alternative for their journey. However, the significance of this against the objective is likely to be limited.
4	Area Wide Smartcard Ticketing	Integrating ticketing makes public transport services more attractive; this may encourage more people to walk or cycle to public transport services as these become a viable alternative for the journeys they make.
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	Both of these options are likely to have the greatest impact in supporting healthy lifestyles as they seek to improve active travel measures. Improving the quality of walking and cycling facilities is crucial when seeking to encourage uptake of these modes and healthy lifestyles.
7	Secure Cycle Storage	
8	Bus Service Improvements	Providing more bus services and increasing the frequency of bus services may encourage people to start travelling by bus for their journeys.
9	Junction Improvements	Negligible impact on this objective.

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Option		Contribution to Objective
10	Variable Message Signs	Negligible impact on this objective.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	<p>It is likely to support the success of the objective by creating a sense of place and improving the safety of walking and cycling as vehicle speeds are enforced / reduced.</p> <p>Reduction of vehicular speeds may encourage commuting by cycle, walking and children to walk / cycle to school</p>

Table 7.8 - Objective G - Delivery of a Transport Network That Enhances Local Air Quality

Option		Contribution to Objective
2	Rail Park & Ride at Allander	<p>This would have a moderately positive impact on the objective as it encourages modal shift from the car to rail.</p> <p>However, providing a car park for 150 spaces would have a greater impact on air quality compared with a car park for 400 spaces as it would discourage dependency on the car to travel to the station. Nonetheless, this assumes a rail station with 150 spaces attracts as much demand, and therefore modal shift, as a rail station with 400 spaces.</p>
3	Quality Bus Corridor	<p>Most options associated with a QBC will have a positive impact on air quality. Enhance bus provision would encourage modal shift, particularly the commuter flow to Glasgow, from the car to bus which would reduce private vehicle emissions. This may be tempered, providing bus priority may have a detrimental impact on general traffic flow, journey times and delay.</p>
4	Area Wide Smartcard Ticketing	<p>Integrating ticketing would have a small positive impact on this objective as it would make public transport travel more attractive and encourage modal shift from the car.</p>
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	<p>These options will have the greatest impact on this objective as they encourage the uptake of active travel modes which would directly reduce emissions compared with the private car or public transport.</p>
7	Secure Cycle Storage	
8	Bus Service Improvements	<p>This would have a positive impact on the objective as it encourages modal shift from the car to bus by providing a more frequent service.</p>

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Option		Contribution to Objective
9	Junction Improvements	Although this would avoid stationary queuing traffic, the benefit to local air quality is expected to be minimal.
10	Variable Message Signs	Negligible impact on this objective.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	Negligible impact on this objective.

N.B. Any measure which promotes sustainable travel and discourages car use is likely to have a positive influence on local air quality.

Table 7.9 - Objective H - Development of an Integrated Transport Network, Including Co-Ordination between Transport Modes

Option		Contribution to Objective
2	Rail Park & Ride at Allander	A new rail station with parking contributes to an integrated transport network by considering how people would access the rail station and ensuring the new station is well integrated with surrounding area.
3	Quality Bus Corridor	The provision of real time information at bus stops and shelters is the option within QBC measures which would have the greatest impact on this objective.
4	Area Wide Smartcard Ticketing	These refer to ticketing between modes and easing this aspect of integration. The need for multiple tickets was raised during the consultation process as a barrier to integrated travel and these options seek to address this barrier.
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	This would have notable impact on the integration between active travel and public transport modes, particularly the development of high quality paths which converge on key destinations.
7	Secure Cycle Storage	Providing secure cycle storage facilities at rail stations has a significant impact on the integration between cycling and rail travel.
8	Bus Service Improvements	This will also contribute to improved integration between modes as the interchange time is reduced which reduces the generalised journey time and makes sustainable travel more attractive.
9	Junction Improvements	Negligible impact on this objective.

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Option		Contribution to Objective
10	Variable Message Signs	VMS signs could advise road users of issues on the transport network and provide directions to rail stations. The signs could also inform road users about the departure time for the next train/bus.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	Negligible impact on this objective.

N.B. It is worth noting that the nature of integration requires coordination and cooperation to be successful, and this integration applies between the transport initiatives as well to be effective.

Table 7.10 - Objective I - Provision of a Transport Network That Improves Safety and Security across All Modes of Transport

Option		Contribution to Objective
2	Rail Park & Ride at Allander	Negligible impact on this objective.
3	Quality Bus Corridor	<p>This would improve passenger waiting facilities at stops along the route which should improve safety, for example, with the installation of better lighting. Certainly enhanced passenger facilities would improve the perception of safety at bus stops which would encourage use during the hours of darkness.</p> <p>In addition, improved high access kerbs improve safety for passengers boarding and alighting vehicles by allowing buses close access to the kerbside.</p>
4	Area Wide Smartcard Ticketing	Negligible impact on this objective.
5	Improve Integrated Ticketing	Negligible impact on this objective.
6	Enhanced Walking and Cycling	This specifically considers the walking and cycling paths and ensuring these of a high standard, for example, with adequate lighting, a suitable surface and segregated where applicable.
7	Secure Cycle Storage	The security of cycle parking at stations was raised during the consultation process and this option seeks to address this.
8	Bus Service Improvements	Negligible impact on this objective.
9	Junction Improvements	Negligible impact on this objective.

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10	Variable Message Signs	VMS signs could be used to inform road users of accidents and incidents on the network to avoid further accidents. In addition, VMS signs can provide weather updates and advise accordingly to minimise the likelihood of accidents on the network.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	This will improve safety for all road users because accidents should be reduced and if they do occur they will be less severe.

N.B. It could be argued that measures which encourage greater sustainable transport use may help others perceive these modes to be safer. For example, people may feel safer travelling by public transport if there are more people also travelling this way so they are not alone.

7.6 Deliverability

At this stage of the appraisal process, we have assessed the deliverability based on technical, operational and financial deliverability as well as public acceptability.

7.6.1 Technical

The following Tables 7.11 – 7.18 provides a breakdown of the likely technical feasibility of the options.

Table 7.11 Technical Deliverability Summary

Option		Commentary on Deliverability
2	Rail Park & Ride at Allander	This is discussed in greater detail within Appendix B of this report. In summary, it should be technically feasible to construct a rail park and ride facility at Allander. Land has been protected in the Councils Local Development Plan and the Kilmardinny masterplan for the development of a Rail station at Allander.
3	Quality Bus Corridor	The nature and scale of this option could vary however most QBC schemes are technically deliverable on the A81 and would not need any additional land.
4	Area Wide Smartcard Ticketing	This option would involve existing technologies
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	It is not envisaged that there would be any technical obstacles to this option. Although there may challenges associated with constrained land and maintenance.
7	Secure Cycle Storage	It is not envisaged that there would be any technical obstacles to this option.
8	Bus Service Improvements	It is not envisaged that there would be any technical obstacles to this

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Option		Commentary on Deliverability
		option.
9	Junction Improvements	<p>The most significant technical challenge with this option is designing an efficient scheme. This may require transport modelling to ensure any junction alterations improve traffic flow and minimise delay.</p> <p>In terms of the implementation of junction improvements it is anticipated that this would take place within the curtilage of the existing public road network.</p> <p>A specific constraint at Boclair Road is the presence of mature protected trees which effectively prevents any alterations being made to the road.</p>
10	Variable Message Signs	It is not envisaged that there would be any technical obstacles to this option as it utilises existing technologies which have been successfully implemented in other areas.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	It is not envisaged that there would be any technical obstacles to this option. Although there may challenges associated with constrained land and maintenance.

It should be noted that public utilities and services may require alteration, which is an unknown quantity at this stage. However, should those services include fibre optic cable the costs and technical difficulties can be significant.

7.6.2 Operational

Table 7.12 Operational Summary

Option		Contribution to Objective
2	Rail Park & Ride at Allander	<p>For a rail service to operate at Allander reliably, an adjustment of two to three minutes is needed to the times of trains from Milngavie towards Glasgow at Westerton. More detailed work, including in-depth discussions with Network Rail, are required to confirm the feasibility/acceptability of adjusting the timetable. If this cannot be achieved, the track would require doubling in order to maintain levels of reliability, which will clearly have significant cost implications. If the proposal is taken forward it would need to proceed through Network Rail's Governance for Railway Investment Projects (GRIP) process which would require a number of areas to be investigated further.</p> <p>A new rail station at Allander would need to be included on rail ticketing systems, rail maps, rail signalling systems, timetables, etc. which will incur a significant cost.</p> <p>There will be a continual maintenance cost to the Local Authority, rail operators and government.</p>

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Option		Contribution to Objective
		It is not envisaged that any parking controls will be required.
3	Quality Bus Corridor	<p>Quality partnerships currently operate within the Greater Glasgow area; this option would require the provision of improved bus infrastructure and require ongoing maintenance.</p> <p>Enforcement of bus lanes will be essential in order to successfully operate this option over its projected life. Maintenance of the bus priority measures will be a further key issue.</p>
4	Area Wide Smartcard Ticketing	This option would require a level of regular maintenance and management, perhaps a roads authority officer as a minimum but in reality an entire back office system would need to be in place for the operation of a system.
5	Improve Integrated Ticketing	Success of this option would require a broad marketing campaign to encourage, car drivers particularly, to switch to public transport with smartcard ticketing.
6	Enhanced Walking and Cycling	<p>The primary operational challenge is the maintenance regime requirements. In addition at points of conflict between different modes, i.e. at road junctions, prioritising walking and cycling may reduce network operation / efficiency.</p> <p>It is essential that facilities are kept in a good condition as broken footways, substandard lighting and potholes negatively affect the attractiveness of active travel links. It was reported at the consultation event that issues of poor road surfacing on the A81 is a barrier to cyclists.</p> <p>This option may also require enforcement of anti-social measures, particularly on remote foot / cycle paths. Anti-social behaviour is seen as a barrier to walking and cycling.</p>
7	Secure Cycle Storage	Occasional maintenance cost to ensure they remain fit for purpose and attractive.
8	Bus Service Improvements	<p>Patronage levels need to be developed and sustained along the routes, even outside the Council boundary (if applicable) to ensure this option commercially viable and enable successful operation over its projected life.</p> <p>Through the life of the option there will be maintenance costs both to infrastructure and bus fleet. If the bus service improvements are an entirely new route it may require the recruitment of staff.</p>
9	Junction Improvements	From an operational point of view any significant junction alteration will need to be assessed, probably with a transport model to ensure that it

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Option		Contribution to Objective
		improves traffic flow and the network operates as efficiently as possible.
10	Variable Message Signs	Maintenance regime would be required and officers in the roads authority will need to be trained to operate and manage the system.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	Ongoing maintenance of infrastructure. Enforcement of regulations may be required which puts a burden on the Police Service.

7.6.3 Financial

It is likely that all options will be funded through a combination of EDC and SPT investment, with the potential for Scottish Government, Transport Scotland, European Funding and Developer contributions.

It is likely that those options which involve public transport may also be funded by bus operators, Sustans, First ScotRail and/or SPT.

7.6.4 Public Acceptability

The results of the consultation suggest that local residents and organisations would be amenable to the above options as they aim to encourage a modal shift towards more sustainable modes, improve the public transport offer and reduce congestion along the corridor.

Table 7.13 Public Acceptability Summary

Option		Contribution to Objective
2	Rail Park & Ride at Allander	It is understood that public support for a rail facility at Allander is significant and was key outcome of the consultation exercise. It is likely that such a scheme would prove popular. However, at present the only neighbouring property is the Allander sports centre. It is likely that at the time of any construction of a rail facility the Kilmardinny development will be built out, at least in part. Although hypothetical at this stage, those residents may object to a rail facility near their house due to noise, light and traffic pollution. Notwithstanding this, it is anticipated that this would be a popular solution. A number of community councils and groups have voiced their support.
3	Quality Bus Corridor	The principle of a QBC is unlikely to neither draw negative criticism nor be vehemently supported. Bus usage is falling in the area and any improvements will be seen as a positive. However, if QBC options were to be at the detriment of general traffic movements then this may be unpopular as car ownership is very high.
4	Area Wide Smartcard Ticketing	Both these options appeared to have support at the stakeholder consultation event. It is anticipated that this option would be popular as

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Option		Contribution to Objective
5	Improve Integrated Ticketing	it will require minimal infrastructure and will improve public transport ease of use. This option may be more popular with people who use multiple services on a weekly basis. For those commuting into Glasgow it is unlikely that it will make much difference as the operators have multi journey tickets which offer similar benefits. SPT provide a ZoneCard which work across operators also.
6	Enhanced Walking and Cycling	<p>Generally this option will be supported although at local areas specific elements may draw opposition, for example loss of parking for a cycle lane. The public perception will vary on the extent and nature of the enhanced facilities.</p> <p>There is likely to be concern of increased cycling in areas of high pedestrian movements. Particularly in the Milngavie town centre pedestrianised area where conflict between pedestrians and cyclists has been a problem. Cyclists are required to dismount before entering the precinct. Therefore, segregation of pedestrians and cyclists may be required in certain area.</p>
7	Secure Cycle Storage	There is unlikely to be opposition to increased cycle parking, unless it causes significant increases in cyclist numbers thus conflict with pedestrians. The attractiveness and support of the facilities will be enhancing if the storage facilities are of high quality.
8	Bus Service Improvements	<p>In general terms stakeholders were concerned about bus service frequency reductions across the area and lack of penetration into housing estates. Therefore increased bus service frequency and improvements service routing /residential penetration would be welcomed.</p> <p>However, it should be noted that if the patronage levels / demand for these services were obvious and commercially viable then a service would be provided. Therefore, it has to be assumed at this stage that service improvement is not viable commercially. This option at present may only serve a smaller segment of the market and rely on public sector funding in an effort to generate an increased market to make it eventually viable.</p>
9	Junction Improvements	Car ownership is very high in the area and improvements to junction operation and traffic movements will be support by a large segment of the resident population.
10	Variable Message Signs	Public perception and acceptability will depend on its application. For example with advance warning of downstream delay is signalled and causes rat running through residential streets this will prove deeply unpopular.

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Option		Contribution to Objective
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	<p>Speed reduction techniques can be very divisive in a local community, and it is anticipated that the A81 will be no different. If physical traffic calming measures are employed they will be horizontal measures (i.e. build outs, chicanes) as vertical measures (i.e. speed bumps, rumble strips) are not suitable for this classification of road. Horizontal measures tend to be more publically acceptable.</p> <p>It is anticipated that most speed reduction / enforcement will polarise public opinion and would be subject to public consultation.</p>

7.7 Performance Against Government Objectives

This Section will summarise the appraisal of each of the options against the Government’s five key objectives for transport: Environment; Safety; Economy; Integration; and Accessibility and Social Inclusion. Table 7.2 summarises the appraisal of the options against the STAG objectives.

7.7.1 Environment

Environment comprises elements of the natural and built environment as well as people. The potential impacts of the various proposals is discussed below. The Environmental appraisal is considered in more detail at STAG Part 2.

Table 7.14 Environmental Summary

Option		Contribution to STAG Environment
2	Rail Park & Ride at Allander	<p>This involves the construction of a rail station with parking facilities and this will require the consumption of land; however the land identified has already been earmarked for development. The environmental impact will depend on the scale of facilities proposed, for example, whether the car park has 150 or 400 parking spaces.</p> <p>An independent environmental study has not been undertaken as part of this report; however, one was carried out as part of the Kilmardinny master plan. The study stated that the area surrounding the Craighdu Burn has been identified as a Nature Conservation site with the presence of badgers. Additionally, within the master plan environmental study it was acknowledged that the Allander Water contains migratory salmon as well as bats, otters, water voles and potential newts nesting habitats. It is assumed that a rail station at this location would have a negative impact on the surrounding environmental area. It is recommended that any subsequent study would require a full environmental study to be undertaken potentially including badger and bat surveys.</p> <p>A review of the Scottish Environmental Protection Agency (SEPA) flood risk maps which indicate that there is a high risk of river flooding from the Allander Water. A Flood Risk Assessment study would be required.</p> <p>The area designated for the station within the Kilmardinny master plan contains a large number of trees. In order to construct the station within this area there would be a requirement to remove several trees. The Bearsden Tree Preservation Order (TPO) covers part of the site to the</p>

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Option		Contribution to STAG Environment
		<p>south of the Craighdu Burn; however EDC has confirmed that no TPO exists for the specific proposed station location.</p> <p>The construction of the facility will have a negative impact on the local environment. The construction process is likely to generate traffic, noise and dust pollution.</p>
3	Quality Bus Corridor	Improving the quality of bus provisions seeks to encourage greater bus patronage. Furthermore, as this option does not seek to increase the number of bus services, the impact is expected to be positive as a result of the modal shift from the car to bus.
4	Area Wide Smartcard Ticketing	Improving the integration of ticketing seeks to encourage greater public transport use. Furthermore, as this option does not seek to increase the number of bus and rail services, the impact is expected to be positive as it encourages modal shift.
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	Improving the walking and cycling network and facilities are expected to have a minor positive impact as they encourage the uptake of active travel modes rather than motorised transport.
7	Secure Cycle Storage	
8	Bus Service Improvements	With greater bus provisions, there may be an increase in 'vibration' due to an increase in airborne resonance because of low frequency noise created by buses. Resonance causes badly fitted windows and loose ornaments to vibrate and this is often interpreted as building vibration by residents, and although annoying, will not cause damage to property.
9	Junction Improvements	Improving the junction would create smoother traffic flow and reduce queuing which could lead to the slight improvement of air quality in the area but this is expected to be negligible. The suggested improvement is not expected to impact on any other aspect of the environment.
10	Variable Message Signs	Increasing awareness of the relative benefits of other modes of travel may help to encourage a mode shift. Furthermore, smarter routing will cut down on vehicle mileage. This option is expected to have a minor positive impact on the environment.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	Measures associated with creating a better 'sense of place' should improve the environment and have a positive impact.

N.B. In general, by introducing measures to encourage modal shift, thereby reducing the number trips made by car within the study area, there is the potential for a reduction in ambient noise levels due to the decreased amount of traffic in some streets. Similarly there is the potential for an improvement in air quality. Provided that these measures significantly reduce the number of car trips a minor positive impact can be expected for noise and air quality. Those measures which seek to increase modal shift

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are unlikely to impact, either positively or negatively, on water quality, drainage and flood defence; geological features; biodiversity; visual amenity; agriculture and soils; cultural heritage and landscape.

7.7.2 Economy

The Economy objective encompasses an assessment examining how the proposal will affect traffic volumes, journey times, and the reliability of travel times. The assessment considers whether there will be gainer and losers, and if so what the impacts on users and operators of different transport modes in different areas would be. The Economy objective also considers how the proposal might help attract new jobs, help existing businesses and open up appropriate land for development is considered.

Table 7.15 Economic Summary

Option		Contribution to STAG Economy
2	Rail Park & Ride at Allander	<p>This would improve access to opportunities and therefore would have a positive economic impact. Furthermore, encouraging modal shift should help generate greater revenue for public transport operators.</p> <p>However this option may encourage shoppers to leave the area to purchase goods which they would have otherwise purchased in the local area. Therefore there could be slight economic disbenefits for the local economy.</p>
3	Quality Bus Corridor	<p>QBC measures encourage modal shift which should allow vehicle operating cost savings and generation of revenue for public transport operators, particularly when priority measures are put in place to ensure the bus is more competitive with private vehicles in terms of journey time.</p>
4	Area Wide Smartcard Ticketing	<p>These options would encourage modal shift and could generate revenue for public transport operators.</p>
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	<p>These options seek to encourage modal shift to active travel modes and therefore are expected to have a smaller impact compared with improvements to public transport on this aspect of STAG.</p> <p>The enhancement of the image of walking and cycling may help promote and encourage use of Milngavie town centre for people starting the West Highland Way. There may be an economic benefit of creating a bike friendly environment for cyclists.</p>
7	Secure Cycle Storage	
8	Bus Service Improvements	<p>Creating a more attractive bus network would encourage modal shift and therefore generate revenue for public transport operators.</p>
9	Junction Improvements	<p>This option is unlikely to have significant benefit to wider economic activity but this scheme would improve traffic flow at this point which should generate a travel time saving.</p>

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Option		Contribution to STAG Economy
10	Variable Message Signs	This option is unlikely to have significant benefit to wider economic activity but VMS signs could improve traffic flow in the area which would generate a travel time saving.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	Negligible impact on this STAG objective.

N.B. The majority of these options would contribute to managing congestion and therefore would have a positive impact on journey times and reliability of travel times. This will have a minor positive benefit on existing and potential businesses / developers in the study area.

7.7.3 Safety

The Safety element of STAG considers how the proposal will enhance safety for different types of transport users and if there are any impacts on personal safety / security.

Table 7.16 Safety Summary

Option		Contribution to STAG Safety
2	Rail Park & Ride at Allander	Negligible impact on this STAG objective.
3	Quality Bus Corridor	<p>This would improve passenger waiting facilities at stops along the route which should improve safety, for example, with the installation of better lighting. Certainly enhanced passenger facilities would improve the perception of safety at bus stops which would encourage use during the hours of darkness.</p> <p>In addition, improved high access kerbs improve safety for passengers boarding and alighting vehicles by allowing buses close access to the kerbside.</p>
4	Area Wide Smartcard Ticketing	Negligible impact on this STAG objective.
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	<p>This would improve the quality of walking and cycling paths on the network and therefore the safety of those using them.</p> <p>Remote footpaths, particularly those which are not overlooked, can attract anti-social issues which can have a negative impact on perceived and actual safety. Facilities alongside roads or fronted by properties have a higher sense of security.</p> <p>Street lighting levels must be kept to a good standard as poor lighting is seen as a barrier to active travel. Particularly during winter months when most journeys, even school journeys take place during hours of reduced</p>

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Option		Contribution to STAG Safety
		light. This issue was highlighted at the stakeholder consultation event. Active travel facilities must be well maintained; otherwise their use will be discouraged. This was highlighted at the stakeholder consultation exercise.
7	Secure Cycle Storage	A lack of secure cycle storage was an issue raised during the consultation process so providing secure cycle storage facilities would address this particular aspect of security. This was exemplified by a recent theft of bicycles from Westerton railway station.
8	Bus Service Improvements	Negligible impact on this STAG objective.
9	Junction Improvements	Reducing queuing traffic at this junction is likely to have minor benefit on safety due to the reduction of accidents associated with queuing traffic. Improvement of traffic flows may increase vehicular speeds on the A81, although this is thought to be negligible.
10	Variable Message Signs	This would have the potential for flexible messaging and could warn drivers of accidents or other risks/hazards and so improve levels of safety. It is expected that this option would have a minor positive impact. VMS, if incorrectly located could distract drivers; however the risk of this is considered negligible.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	This is specifically targeted at improving safety and is expected to have a moderate positive impact. This option may improve perceived risk on the A81, particularly for cyclists.

N.B. Those options which encourage modal shift will have a minor positive benefit on safety, as public transport is considered to be a safer mode of travel than private car.

7.7.4 Accessibility and Social Inclusion

Accessibility defines the ability of people and businesses to access goods, services, people and opportunities. The STAG Part 1 appraisal considers how the proposal affects accessibility for transport users and for others, including access to jobs, communities, shops, services and other facilities. It also considers how the proposal impacts in terms of tackling social exclusion.

Table 7.17 Accessibility and Social Inclusion Summary

Option		Contribution to STAG Accessibility and Social Inclusion
2	Rail Park & Ride at Allander	This option would address the accessibility gap to the train network that was identified in the evidence review. This option will also ensure that residents of the new Kilmardinny have accessibility beyond reliance on

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Option		Contribution to STAG Accessibility and Social Inclusion
		the private car.
3	Quality Bus Corridor	Improving bus services would offer people greater travel choices and therefore have a positive impact on social inclusion and accessibility.
4	Area Wide Smartcard Ticketing	Negligible impact on this STAG objective.
5	Improve Integrated Ticketing	
6	Enhanced Walking and Cycling	Improving walking and cycling facilities would offer people greater travel choices and therefore have a positive impact on social inclusion and accessibility.
7	Secure Cycle Storage	
8	Bus Service Improvements	It is anticipated that this option would have a considerable positive impact by providing a new bus service connecting residential areas to town centres, services and rail stations as well as increasing the frequency of existing services.
9	Junction Improvements	Care would have to be taken to ensure this option does not exacerbate social exclusion problems by giving a further advantage to private vehicles.
10	Variable Message Signs	The provision of more information to people on the transport network is expected to have a positive impact on accessibility.
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	Negligible impact on this STAG objective.

7.7.5 Integration

Integration is interpreted as having three distinct meanings for the purposes of appraisal:

- Transport integration;
- Transport land-use integration; and
- Policy integration.

The appraisal assesses how the proposal will promote or enhance transport integration and whether services will be able to function in a more complementary manner. The appraisal also considers how the proposal fits with wider Government policy including national transport targets. Integration between transport and the environment is dealt with under the Environment objective and integration with social inclusion is dealt with under the Accessibility and Social Inclusion objective.

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Table 7.18 Integration Summary

Option		Contribution to STAG Integration
2	Rail Park & Ride at Allander	<p>Transport Integration - This would improve the integration between the rail network and private car. Furthermore, the station could also be connected to walking, cycling and bus routes in the area.</p> <p>Land Use Integration – This option integrates a major residential development into the regional transport network providing sustainable access to employment, leisure, higher education and retail facilities, primarily in Glasgow.</p> <p>Policy Integration – This option integrates well with local policy directives and has potential to contribute towards the strategic priority of ‘encouraging more sustainable travel’ (as identified in the Regional Transport Strategy (2014-17)). Until recently this option was relatively coherent with national policy, however recent policies support maximising use of existing facilities, rather than the creation of new infrastructure, this is reinforced by new Scottish Planning Policy.</p>
3	Quality Bus Corridor	<p>Transport Integration - QBC measures may lead to improvements for bus users interchanging between services through the timetabling of services and improved information provision. This would improve integration with active travel and rail, in addition to improving sustainable access to the Kilmardinny development.</p> <p>Land Use Integration – Negligible impact on this STAG objective.</p> <p>Policy Integration - Would support both local and regional policy.</p>
4	Area Wide Smartcard Ticketing	<p>Transport Integration - Integrating ticketing between modes and across neighbouring authorities would have a significant impact on integration.</p>
5	Improve Integrated Ticketing	<p>Land Use Integration – Negligible impact on this STAG objective.</p> <p>Policy Integration – Negative impact on SPT regional ambitions as it would be complex to integrate an EDC and SPT system.</p>
6	Enhanced Walking and Cycling	<p>Transport Integration - Enhanced walking and cycling would facilitate good connections with other modes of transport.</p>
7	Secure Cycle Storage	<p>Land Use Integration – Enhance walking and cycling links would improve connectivity between residential properties with various facilities with Bearsden and Milngavie. It improves access to health, education, leisure and employment in the area.</p> <p>Policy Integration – Most national, regional and local policy documents relevant to economic development and transport support sustainable and active transport links. These two options are coherent with</p>

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Option		Contribution to STAG Integration
		established policy directives.
8	Bus Service Improvements	<p>Transport Integration - Improving the frequency of existing bus services and providing new services would have a notable impact on the integration of the bus network with other forms of transport.</p> <p>Land Use Integration – Enhancing bus services and providing new services would improve access to opportunities in the area.</p> <p>Policy Integration - Most national, regional and local policy documents support improvements to public transport services.</p>
9	Junction Improvements	<p>Transport Integration – Negligible impact on this STAG objective.</p> <p>Land Use Integration – Negligible impact on this STAG objective.</p> <p>Policy Integration - Negligible impact on this STAG objective.</p>
10	Variable Message Signs	<p>Transport Integration – Negligible impact on this STAG objective.</p> <p>Land Use Integration – Negligible impact on this STAG objective.</p> <p>Policy Integration - Negligible impact on this STAG objective.</p>
11	Road options to enforce or reduce speeds and enhance the appeal of sustainable travel	<p>Transport Integration – Negligible impact on this STAG objective.</p> <p>Land Use Integration – Negligible impact on this STAG objective.</p> <p>Policy Integration - Would support local and regional policy.</p>

N.B. All options which encourage modal shift from the car to sustainable modes of transport are in accordance with local and national policies. Furthermore, options encouraging modal shift and supporting sustainable transport will have a small positive impact on land use integration.

7.8 STAG Part 1 Option Sift

Following an appraisal of the options against all identified Transport Planning Objectives, STAG criteria and Government objectives, a sifting process has taken place whereby entire options, or certain components of options, have been excluded from further appraisal as part of the STAG process.

Options which have been excluded at this stage are:

- Option 4: Area Wide Smartcard Ticketing
- Option 5: Improve Integrated Ticketing
- Option 10: Variable Message Signs

The decision to exclude Option 4 and 5 from further assessment is due to the nature of the scheme and its deliverability. East Dunbartonshire and the A81 is a key part of a wider geographical and economic area, Glasgow and the Clyde Valley, Strathclyde Partnership for Transport (SPT) are the Regional Transport Partnership for the area. SPT has responsibility for regional transport policies, projects and investment. Most journeys which commence or terminate do so outside the council boundary therefore the ticket would need to be cross-boundary and operator. Whilst integrated ticketing would meet the many of the objectives of this

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study, it would difficult to deliver in isolation and should be progressed at the regional level. It is understood SPT are currently investigating these options across the greater Glasgow conurbation which would benefit the study area.

Option 10 has been sifted out as it did not significantly contribute positively to the Transport Planning Objectives established in Chapter 5. Although, this option could provide benefits it is felt this is a project which can be delivered by EDC and their partners through the normal expenditure without further assessment.

Components of options which have been excluded at this stage are:

- Component Option 15: Express bus service from Milngavie to Glasgow

Option 15 has been sifted out for a number of reasons as the benefits of an express service is limited by congestion downstream toward Glasgow City Centre. Most express services use the motorway network to bypass, at high speed congestion direct into the city centre. There is no convenient motorway / high classification road which an express service from Bearsden / Milngavie could use. Through consultation AECOM were informed that First Glasgow ran an express service from the area, which was withdrawn due to limited patronage.

In addition, to the above it is considered appropriate to remove the creation of a rail park and ride facility at Allander with a capacity of 400 spaces. This option is likely to encourage and generate vehicular trips at the detriment of modal shift, sustainable development and environmental ambitions both locally. Given that this facility would fill an accessibility gap (walking) in transport infrastructure provision of such a large car park is not considered to be appropriate as it could encourage existing rail users to drive rather than walk to the rail station. This view is reinforced by the views expressed by the Scottish Ministers appointed Reporter who reviewed the Kilmardinny application. She agreed in her report that 150 space parking facility is more appropriate.

Table 7.19 lists the options which are to be carried forward for STAG Part 2 appraisal.

Table 7.19 Packages to Take Forward to STAG Part 2

Package	Composition of Package
Package 1 – Do Minimum	Ongoing maintenance, existing proposed works, and walking/cycling facilities
Rail Park & Ride at Allander	7) Provision of a rail station and associated parking (circa 150 spaces)
Quality Bus Corridor	9) Burnbrae Roundabout to Boclair Road – southbound bus lane 10) Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only) 11) Provision of real time information at stops along the route 12) Improvements to bus stops and shelters 13) Bus priority installed on approaches to junctions / at pinch points 14) Bus detection included within SCOOT
Enhanced Walking and Cycling	18) Provide pedestrian facilities on desire lines (including link to rail stations) 19) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station 20) Completion of the cycle link between Mains Estate and Allander Leisure Centre 21) Segregated cycle lane from Milngavie town centre/ to Glasgow border to complete what has been achieved through Phase 1 and 2

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	<p>22) Secure cycle storage facilities built at rail stations and in town centres</p> <p>23) Development of a local network of walking and cycling paths which converge on town centres and stations</p> <p>24) Development of a high quality path which links the Kilmardinny development and Milngavie station</p>
Bus Service Improvements	<p>25) New shuttle bus connecting residential areas to stations</p> <p>26) Increase frequency of bus services in the corridor</p>
Junction Improvements	<p>27) Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road</p>
Road Options to Enforce / Reduce Speeds and Enhance Appeal of Sustainable Travel	<p>29) Carriageway marking / localised narrowing</p> <p>31) Place making initiatives to enhance town centre environments</p>

7.9 Summary

This Chapter has detailed the STAG Part 1 appraisal for the study. This has included consideration of the project-specific planning objectives and the performance of options with respect to these objectives. Consideration has also been given to the deliverability of the options, in terms of technical, operational and financial deliverability, together with public acceptability. In addition, the options have been broadly assessed in relation to the Government's key transport objectives (Environment; Safety; Economy; Integration; and Accessibility and Social Inclusion).

8 STAG Part 2 Appraisal

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8 STAG Part 2 Appraisal

8.1 Introduction

The sections below present the outcomes from the STAG Part 2 appraisal and focus in turn on each of the objectives of Environment, Safety, Economy, Integration and, Accessibility and Social Inclusion. Consideration is also given to Cost to Government, Deliverability and Public Acceptability. AST2s for the scenarios appraised are contained within Appendix D.

It should be noted during this appraisal process that each option would be subject to a detailed design process, appropriate consultation and follow industry standards, guidance and best practice.

8.2 Options

As outlined earlier within the report, following the STAG Part 1 appraisal and discussions with the client group, four packages of measures have been selected for appraisal at STAG Part 2:

Package 1 (Do Minimum)

- Parking charges and waiting restrictions at Milngavie Town Centre to prevent rail users from using parking earmarked for town centre retail;
- Localised improvements associated with the Kilmardinny development, with developer contributions to support these improvements;
- Kessington Hub to promote interchange between walking, cycling and public transport travel and make Kessington more accessible for all users;
- Implementation of cycle corridor with Phase 1 from Burnbrae Roundabout to Hillfoot and Phase 2 from Hillfoot to Kessington;
- Bus Improvement Fund projects;
- Monitoring and maintenance of the Council's core path network in line with the Core Path Plan; and
- Signing, lining and general maintenance of the road network, consistent with the future maintenance schedule.

Table 8.1 - Package 2 (Active Travel Modes)

Option	Component schemes
Enhanced Walking and Cycling	18) Provide pedestrian facilities on desire lines (including link to rail stations) 19) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station 20) Completion of the cycle link between Mains Estate and Allander Leisure Centre 21) Segregated cycle lane from Milngavie town centre/ to Glasgow border to complete what has been achieved through Phase 1 and 2 22) Secure cycle storage facilities built at rail stations and in town centres 23) Development of a local network of walking and cycling paths which converge on town centres and stations 24) Development of a high quality path which links the Kilmardinny development and Milngavie station

It should be noted the following options have been combined due to their similarity in nature and scope;

- Option 18 (Provide pedestrian facilities on desire lines (including link to rail stations)); and
- Option 23 (Development of a local network of walking and cycling paths which converge on town centres and stations).

Hereafter the combined option will be titled "Option 23 Development of a local network of walking and cycling paths which serve desire lines and converge on town centres, and stations."

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It is understood that EDC is investigating delivery of the Bearsway beyond Kessington to the boundary with Glasgow. Although funding has not been committed at this stage it is felt that this should be considered within the Do Minimum, rather than a separate option within this study. Therefore Option 21 will not be subject to further appraisal within this study.

Table 8.2 - Package 3 (Public Transport and Access)

Option	Component schemes
New Rail Station at Allander	7) Provision of a rail station and associated parking (circa 150 spaces)
Quality Bus Corridor	9) Burnbrae Roundabout to Boclair Road – southbound bus lane 10) Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only) 11) Provision of real time information at stops along the route 12) Improvements to bus stops and shelters 13) Bus priority installed on approaches to junctions / at pinch points 14) Bus detection included within SCOOT
Bus Service Improvements	25) New shuttle bus connecting residential areas to stations 26) Increase frequency of bus services in the corridor

For the purposes of appraisal and as not to limit options for bus priority the following options have been combined due to their similarity in nature and scope;

- 9) Burnbrae Roundabout to Boclair Road – southbound bus lane
- 10) Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only)
- 13) Bus priority installed on approaches to junctions / at pinch points

Hereafter the combined option will be titled “Option 10 Bus priority / congestion bypasses at key points on the network”.

Table 8.3 - Package 4 (Road)

Option	Component schemes
Junction Improvements	27) Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road)
Road Options to Enforce / Reduce Speeds and Enhance Appeal of Sustainable Travel	29) Carriageway marking / localised narrowing 31) Place making initiatives to enhance town centre environments

Package 5 (Integrated Active Travel, Public Transport and Road Modes)

Package 5 is a combination of the measures contained within both Packages 2, 3 and 4.

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8.3 Refined Options

Noting the above changes the refined list of options to be taken forward in STAG 2 are list below in Table 8.4.

Table 8.4 Refined Options for Appraisal in STAG 2

Package	Option	Component schemes
2	Enhanced Walking and Cycling	<p>19) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station</p> <p>20) Completion of the cycle link between Mains Estate and Allander Leisure Centre</p> <p>22) Secure cycle storage facilities built at rail stations and in town centres</p> <p>23) Development of a local network of walking and cycling paths which serve desire lines and converge on town centres, and stations</p> <p>24) Development of a high quality path which links the Kilmardinny development and Milngavie station</p>
3	New Rail Station at Allander	7) Provision of a rail station and associated parking (circa 150 spaces)
	Quality Bus Corridor	<p>10) Bus priority / congestion bypasses at key points on the network</p> <p>11) Provision of real time information at stops along the route</p> <p>12) Improvements to bus stops and shelters</p> <p>14) Bus detection included within SCOOT</p>
	Bus Service Improvements	<p>25) New shuttle bus connecting residential areas to stations</p> <p>26) Increase frequency of bus services in the corridor</p>
4	Junction Improvements	27) Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road)
	Road Options to Enforce / Reduce Speeds and Enhance Appeal of Sustainable Travel	<p>29) Carriageway marking / localised narrowing</p> <p>31) Place making initiatives to enhance town centre environments</p>

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8.4 Environment

Environment comprises elements of the natural and built environment as well as people. In the following sections, the packages are assessed according to the impacts they might have on noise and vibration pollution, air quality, water quality, flooding and drainage, geology, biodiversity, agriculture and soils, visual amenity and cultural heritage.

8.4.1 Noise and Vibration

Road traffic noise is one of the most extensive sources of environmental noise pollution. Exposure to high levels of noise and vibration can have an adverse impact on both human health and on the perceived quality of life. The magnitude of effect will vary amongst individuals; however, for the purpose of the STAG assessment the potential effects of noise and vibration are considered on a community basis.

It should be noted, that this assessment has been informed by a desk study only and that no site surveys measuring existing ambient noise, noise contour modelling or vibration modelling has been undertaken.

A number of factors can influence the level of noise and vibration generated by traffic. These include:

- Traffic volumes;
- Percentage of HGVs within the total traffic volume;
- Speed of traffic;
- Road surface material;
- Distance between noise / vibration source and receptor;
- Ground cover between noise/ vibration source and receptor; and
- Screening of intervening land between the source and the receiver.

Temporary and Permanent Effects: Noise and Vibration

Package 1: Do Minimum

The Do Minimum includes a number of measures to promote modal shift, including walking and cycling improvements, travel plans and implementation of other measures included within the East Dunbartonshire Access Strategy. A reduction in traffic levels may result from these measures leading to a reduction in ambient noise. A negligible impact is predicted within the study area assuming the successful implementation of the package.

Package 2: Active Travel Modes

It is unlikely that the active travel options would have any significant impact, positive or negative, on noise and vibration. Measures to encourage modal shift from the private car to active modes may result in a marginal reduction in noise and vibration, however this is considered negligible. The construction of options 20, 23 and 24 will require some heavy engineering therefore there may be a minor negative impact temporarily.

Package 3: Public Transport and Access

The Quality Bus Corridor and public transport improvement elements associated with this package are unlikely to have any negative or positive impacts on noise and vibration. An increase in the number and frequency of bus services (through the provision of bus feeder services) may cause an increase in vibration, but this may be counterbalanced by a modal shift away from car use. Low frequency noises created by buses cause airborne resonance which may in turn cause badly fitted windows and loose ornaments to vibrate. This is often interpreted by residents as vibration; however, although it is annoying it will not cause damage to property.

There may be some negative impacts resulting from increased noise and vibration associated with the new rail station at Allander. There will be short-term impacts arising from the construction of the facility. However, these impacts can be sufficiently mitigated such that the impact is of minor significance. In the long-term it is unlikely that the facility would have a positive impact on noise as it would have to significantly reduce traffic flow through the study area. A 25% decrease in traffic flow would reduce the resultant noise level by 1dB (A), which is unlikely to be perceptible; a 3dB(A) change is often needed to be perceptible to the human ear.

Overall the impact of this option on noise and vibration is considered to be minor negative.

Package 4: Road

Options to reduce traffic speed would have any significant impact, positive or negative, on noise and vibration. Measures to reduce traffic speed may result in a marginal reduction in noise and vibration, whereas junction improvements may result in minor increases in noise and vibration. Locally the gyratory option may have a negative effect on noise and vibration, particularly on

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Roman Drive and Roman Road where traffic levels will increase, include HGV levels. Overall this option is considered to have a negligible to minor negative impact on noise and vibration.

Package 5: Integrated Road and Public Transport/Sustainable Modes

Package 5 would comprise the measures from both Packages 2, 3 and 4. In the short-term there will be impacts arising from the construction of the individual measures; however in the long-term it is unlikely that the package would have any perceptible impact, positive or negative, on noise or vibration, although there may be isolated and very localised negative impacts.

Mitigation: Noise and Vibration

Temporary and permanent mitigation measures are common to Packages 2, 3 and 4. In order to avoid repetition these are described together below. Temporary mitigation to be employed during the construction of measures contained with Packages 2, 3, 4 and 5 includes:

- The use of fencing or other appropriate noise barriers around construction sites;
- Housing of continuous running plant in acoustic enclosures;
- Adherence to the codes of practice for construction working given in British Standard BS 5228:1992;
- In particularly sensitive locations, the use of electrical items of plant as opposed to diesel plant; and
- Ensuring working hours are in line with the normal working day e.g. 0800 hours to 1730 hours.

Permanent mitigation should include:

- Where appropriate, the use of acoustic noise barriers; and
- Where appropriate, noise insulation for receptors that may experience a major negative impact as a result of ongoing noise.

Construction noise varies considerably during any building project. Occupants of properties within 50m to 100m of such works can be disturbed. The character of construction noise varies during the project depending on the activities being undertaken. These activities can produce high levels of noise and vibration but would be of limited duration. Vibration is predicted to occur within 10m of works during construction and could result in adverse impacts for short periods, meaning that vibration may be perceptible but there would be no effect on the structure of properties.

There are several ways in which nuisance from construction noise can be minimised. This can take the form of reduction at source, control of noise spread and, in areas of very high noise levels, insulation at receptors. It should be a requirement of any construction contract for the contractors to comply with recommendations in order to achieve specific noise limit criteria for each site. A code of construction practice or environmental management plan would be prepared by the contractor and this would include provisions at locations where noise is likely to be a problem.

In general, good public relations and extensive consultation between the contractor and the local authority would be necessary to help to minimise the impact of construction work.

Summary: Noise and Vibration

Table 8.5 contains a summary of the overall temporary and permanent effects relating to noise and vibration assuming the implementation of effective mitigation measures. However, in the absence of dispersion modelling, etc., it should be highlighted that these findings are based on professional experience and judgement.

Table 8.5 Summary of Assessment (Noise and Vibration)

Option	Overall Temporary Effects	Overall Permanent Effects
Package 1	Negligible	Negligible
Package 2	Negligible	Negligible
Package 3	Negligible to minor negative	Negligible to minor negative
Package 4	Negligible	Negligible
Package 5	Negligible to minor negative	Negligible to minor negative

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8.4.2 Air Quality

The development of transport schemes can impact on air quality both locally and globally.

At a global level, transport schemes can cause an increase or decrease in the release of carbon dioxide, singled out as the most important transport-induced greenhouse gas having a direct impact on global warming. In STAG Part 2 appraisals, CO₂ is taken as a proxy for global air quality.

At a local level there are a number of transport-induced pollutants that can cause problems should they occur in high concentrations. These include carbon monoxide (CO), volatile organic compounds (VOCs), nitrogen dioxide (NO₂) and particulate matter (PM₁₀), all of which can potentially negatively impact on human health, flora and fauna. NO₂ and PM₁₀ are taken as a proxy for local air quality.

It should be noted that no monitoring or modelling of air quality has been carried out as part of this assessment.

The principal impacts of transport schemes on air quality result from the extent to which they affect road traffic, either increasing or decreasing traffic levels. Transport schemes, through physical development and initiatives to promote and improve public transport, can influence the volume of road traffic and hence impact on air quality. The main ways in which transport can affect air quality are through:

- **Reduction of traffic congestion** - Improvements to junctions, changes to traffic light sequences and car sharing lanes can aid the facilitation of smoother traffic flows, thus reducing 'stop/start' driving procedures which create more harmful emissions.
- **Provision of additional road capacity** - Construction of new roads and additional lanes can ease congestion, however may also generate increased traffic levels.
- **Promotion of modal shift** - Improvements to public transport such as modern buses, bus lanes and the provision of more efficient public transport services can encourage modal shift by reducing private car use and attracting people onto public transport.

Package 1: Do Minimum

In the Do Minimum case, danger to pedestrians, cyclists and other drivers is mitigated through removal of indiscriminate parking through better enforcement and the implementation of a segregated cycle route alongside the A81. Notwithstanding this, the A81 around the Boclair Road and ASDA junctions are very busy and constrained careful design of the segregated cycleway is therefore required to ensure it does not increase risks to motorists and cyclists.

Package 2: Active Travel Modes

In general terms, the ambition of this package is to promote walking and cycling as a mode through enhanced infrastructure, which includes reducing / managing conflict and facilitating safe and convenient movement. The impact of each option on accidents and risk has been considered below;

- **Active Travel Options**
 - Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station (Option 19)
 - Completion of the cycle link between Mains Estate and Allander Leisure Centre (Option 20)
 - Secure cycle storage facilities built at rail stations and in town centres (Option 22)
 - Development of a local network of walking and cycling paths which serve desire lines and converge on town centres and stations (Option 23)
 - Development of a high quality path which links the Kilmardinny development and Milngavie station (Option 24)

Air quality is likely to improve presuming that the number of journeys made by vehicles reduces, or there is a promotion of other sustainable modes of transport as a result of greater accessibility.

Package 3: Public Transport and Access Modes

- **Provision of a rail station and associated parking (circa 150 spaces)** - It is anticipated that modal shift from private vehicle use to more sustainable transport generated by the scheme will improve air quality by cutting vehicle emissions overall. At the local level this could attract additional trips resulting increase air pollution. The A81 / access road junction will serve new Kilmardinny development trips, Allander leisure centre trips and the additional car parking. This is potentially a significant amount of traffic loading for one junction which may result in queuing during peak periods, resulting in reduced air quality. This can be mitigated against by altering the junction to provide sufficient capacity to meet demand, or provide addition access

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points to the Kilmardinny development, thus spreading the traffic loading across several junctions. Overall this option is considered to have negligible impact on air quality. During construction this option will have detrimental impact on air quality, however this will be temporary.

- **Bus Options**

- Bus priority / congestion bypasses at key points on the network
- Provision of real time information at stops along the route
- Improvements to bus stops and shelters
- Bus detection included within SCOOT
- New shuttle bus connecting residential areas to stations
- Increase frequency of bus services in the corridor

Should a modal shift be realised, the reduction of vehicles using the route and the use of more sustainable transport will cut emissions and improve air quality. This will also be aided by the other interventions to improve traffic movement (such as SCOOT, bus stop and shelter improvements and junction improvements). The magnitude of improvement is dependent upon the scale of modal shift achieved and impacts on general traffic flow and congestion.

The development of a shuttle service to stations from residential areas will potentially improve air quality should it promote modal shift from private vehicle use. This may also be the case for sub-option to increase frequency of services along the A81. However, should a modal shift not be achieved, increasing the volume of traffic along this route may result in greater emissions within the Bearsden AQMA.

Package 4: Roads

The impact of each option on air quality has been considered below;

- **Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road (discussed below))**

This option is design to minimise delay at the A81 Milngavie Road / Boclair Road junction which is a significant bottleneck. The option will ban some right turning movements at the junction as these cause delay and the position of vehicles waiting to turn can prevent other traffic from passing. Therefore in principle this option should minimise this issue. It is unclear at this stage which movements will be banned, as this would need to be developed by undertaking a detailed traffic modelling exercise. Notwithstanding this there may be some benefits to local air quality should this Option ease movement through this junction and prevent congestion. These effects are not likely to be significant.

There is concern that this option may transfer air quality issues onto the other roads in the gyratory systems, Roman Drive and Roman Road. The creation of a gyratory will result in more traffic using Roman Drive and Roman Road, potentially reducing the air quality on those roads. At the existing priority junction between Roman Drive and Roman Road, even if upgraded to signal controlled or mini roundabout, it is highly likely that this junction will generate queuing on all arms. This will undoubtedly have a negative impact on the local air. It should be noted that this junction is approximately 520m east of the Bearsden Air Quality Management Zone.

Further to this the queuing capacity on Roman Road is approximately 210m which would permit a maximum queue length of approximately 35 vehicles before crossing into the upstream A81 / Boclair Road junction. Detailed traffic modelling should be undertaken to assess the various benefits and disbenefits of a gyratory system.

A temporary reduction in air quality may be experienced post implementation whilst local traffic gets used to new lane designations. Some delay may be generated causing limited air quality issues although this can be mitigated with good advanced signing, lining and promotion of the scheme.

At this stage the impacts that this option will have on air quality is considered to be negligible to negative. The impacts of construction on air quality will depend on the extent of heavy engineering, however it is considered negligible at this stage.

- **Other Roads Options**

- Carriageway marking / localised narrowing
- Place making initiatives to enhance town centre environments

Successful placemaking initiatives may result in increased visitor numbers within town centre areas. Increased visitors may increase vehicle emissions within these town centre areas should access be taken by private vehicles. Impacts on air quality are

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likely to be negligible. These measures are fairly localised and require minimal hard engineering - air quality impacts during implementation are considered negligible.

Package 5: Combined Active Travel, Public Transport and Road

Package 5 comprises a combination of the active travel, public transport and access, and road (Packages 2, 3 and 4).

As discussed above, the key impacts on air quality are likely to arise from the implementation of a gyratory system at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road).

Overall Package 5 is likely to result in a negligible impact on air quality.

Summary: Air Quality

Mitigation proposals for air quality mainly relate to construction issues and there are a number of measures that could be employed to lessen the potential impacts of any dust and particulate matter (PM10) generated during construction activities, should these situations arise.

All potential dust-generating activities and locations should be identified prior to commencement of work. Dust should be controlled at source by the use of appropriate plant handling techniques, good maintenance and housekeeping.

The most significant permanent impacts on air quality are likely to result from construction the formation of a gyratory system on (Milngavie Road/Roman Road/Roman Drive). The air quality issues may arise from increasing vehicular travelling distance and queuing. The following measures could assist in the reduction of local impacts:

- A detailed traffic modelling exercise should be undertaken to understand the effects of a gyratory system and develop the most efficient scheme; and
- Install good quality advanced signage to enable drivers to decide which lane is appropriate thus minimising the effects caused by lane changing on delay and subsequently air quality.

Table 8.6 below summarises the overall temporary and permanent impacts of each of the packages, assuming the implementation of effective mitigation. However, in the absence of dispersion modelling etc. These findings are based on professional experience and judgement.

Table 8.6 Summary of Assessment (Air Quality)

Option	Overall Temporary Effects	Overall Permanent Effects
Package 1	Negligible	Negligible
Package 2	Minor Negative	Minor Positive
Package 3	Negligible	Negligible
Package 4	Minor Negative	Minor Negative
Package 5	Negligible	Negligible

8.4.3 Water Quality, Flooding and Drainage

This section of the STAG Part 2 appraisal considers the potential effects of the packages on the water environment. For the purpose of this study, the water environment includes water quality, drainage and flooding.

The assessment of impacts on the water environment is concerned with the effects of the packages on the quality and hydrology of surface and ground waters.

Effects on the water environment could result from contaminants entering watercourses or groundwater. No physical effects on watercourses are predicted as no "in river" works are required and no development within the floodplain is likely.

It should be noted that no water quality monitoring was undertaken as part of this assessment.

Capabilities on project:
Transportation

Key Issues: Water Quality, Flooding, and Drainage

Water Framework Directive

The Water Framework Directive was transposed into Scottish law by the Water Environment and Water Services Act (Scotland) 2003 (WEWS) and Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR).

The overall objective of the Water Framework Directive (WFD) is the “protection of the water environment” which is transposed into s.1(2) a) of the WEWS Act as meaning “preventing further deterioration of, and protecting and enhancing, the ‘status’ of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on those aquatic ecosystems”. The WFD goes on to define ‘Surface water status’ as the general expression of the status of a body of surface water, determined by the poorer of its ecological status and its chemical status, Article 2(17).

The Controlled Activities Regulations (CAR) have also resulted from the implementation of the WFD. CAR covers engineering works in or adjacent to waterbodies and aims to control the impacts of development on the water environment. There are three levels of CAR: General Binding Rules (GBRs), Registration and Licence. The control and authorisation conditions applied under these levels will be dependent on the risks a particular development poses to the water environment.

Temporary Effects and Permanent Effects

Construction and operation activities are potentially broadly similar for each package therefore the majority of effects, whether temporary (construction) or permanent (operation), are likely to be common to each Package.

Package 1: Do Minimum

Within the study area, the Do Minimum is unlikely to have significant impacts on the water environment. The schemes promoted include very little in the way of physical development. It has been assumed that the committed schemes incorporate adequate mitigation measures to reduce negative impacts and enhance positive effects.

Package 2: Active Travel Modes

It is unlikely that improved walking and cycling networks would improve or deteriorate the water environment. It should be noted that the path from Kilmardinny to Milngavie Rail Station (Option 24) will pass through a flood risk area, as identified by in the EDC Local Plan 2.

Package 3: Public Transport and Access Modes

Allander Water may be subject to increased levels of pollutants from fuels and oils leaked from vehicles in use of the parking facilities at the proposed Allander Rail Station option which may become entrained in surface water runoff. The areas adjacent to Allander Water and Manse Burn are also at high risk to flooding and should be avoided as locational options for the additional car parking. During construction the Allander station and associated parking the potential exists for pollutants and sediments to enter surface waters and reduce water quality of the Allander Water and Craigdhu Burn and tributaries. The temporary and permanent effect of this option is likely to be negligible to minor negative.

It is unlikely that the development of any of the interventions included within Quality Bus Corridor or improved bus services would result in any impacts (negative or positive) on the water environment.

Permanent impacts relate to the control of surface water run-off and the potential for localised flooding. With the implementation of adequate mitigation, the temporary and permanent effects of the Package are likely to be negligible to minor negative.

Package 4: Road

It is unlikely that the water environment will be significantly impacted as a result of the series of roads options. Some improvements may be made should there be any placemaking schemes include activities such as river clean-ups and riparian zone enhancements within urban areas.

Package 5 - Combined Active Travel, Public Transport and Road

Package 5 would comprise the measures from both Packages 2, 3 and 5. In the short-term there may be impacts arising from the construction of the individual measures, particularly in terms of the proposed new rail station at Allander which may impact on the water quality of the Allander Water and Craigdhu Burn and tributaries. The temporary and permanent effects of the package are likely to be negligible to minor negative.

Capabilities on project:
Transportation

Mitigation: Water Quality, Flooding, and Drainage

With regards to the protection of the water environment, mitigation is generic to all three 'Do Something' packages and results from legislation and best practice. To avoid repetition, temporary mitigation to be employed during the construction phase, and permanent mitigation for all options, is described below:

Temporary mitigation should include:

- Construction activities would be undertaken in accordance with all relevant legislation, including Water Environment and Water Services Act (Scotland) 2003 (WEWS), Controlled Activities Regulations (CAR) and SEPA Pollution Prevention Guidelines (PPG);
- A rigorous Code of Construction Practice (CoCP), including provisions to ensure the protection of ground and surface water, would be produced with submission of an environmental method statement to SEPA;
- Temporary site drainage and / or treatment procedures based on Sustainable Urban Drainage Systems (SUDS) would be put in place to manage surface water run-off and accidental spills of fuel, etc., during construction;
- Identification of potential risks from possible contaminated land that could be disturbed by the proposed development; and
- Temporary and permanent works would be designed to minimise disruption to watercourses and loss of flood plains.

Permanent mitigation should include:

- An appropriately designed drainage system that would collect and treat surface run-off from, for example, the junction improvements, new station with parking at Allander, and any other transport infrastructure improvements;
- The discharge of polluted surface water runoff into receiving watercourses could be mitigated by minimising the number of discharge points along the scheme length and using existing surface water drainage where possible;
- Adequate pollution control would be incorporated into the drainage system of all new and upgraded road linkages in order to prevent deterioration of the quality of the water environment and would include the installation of oil / petrol interceptors where necessary; and
- The drainage system would be designed such that the development does not affect the hydraulic capacity of a watercourse and reduces the risk of flooding.

Summary: Water Quality, Drainage, and Flooding

The overall temporary and permanent effects of the Packages can be effectively mitigated by adherence to legislation and the adoption of best practice such as SUDS and SEPA PPGs such that impacts are neutral.

Table 8.7, below, summarises the findings of the assessment.

Table 8.7 Summary of Assessment (Water Quality, Drainage and Flooding)

Option	Overall Temporary Effects	Overall Permanent Effects
Package 1	Negligible	Negligible
Package 2	Negligible	Negligible
Package 3	Negligible to Minor Negative	Negligible to Minor Negative
Package 4	Negligible	Negligible
Package 5	Negligible	Negligible

8.4.4 Geology

Transport schemes could impact on geology in a number of ways including:

- Through damage to geologically valuable sites such as geological Sites of Special Scientific Interest (SSSIs) or Regionally Important Geological Sites (RIGS);
- Overloading of geological strata; and
- Damage to important mineral reserves that could be worked in the future.

Capabilities on project:
Transportation

Baseline geological information was obtained by means of a desk study review of currently available information. This included a review of published British Geological Survey (BGS) maps.

The Manse Burn SSSI is located to the west of the study area and is internationally important for its Carboniferous age fossils. The rock sequence at Manse Burn comprises the 'Top Hosie Limestone' and the overlying fossiliferous shales. The Manse Burn SSSI is of major international importance, for both the exceptional preservation of sharks and also for the bony fish species occurring there. Due cognisance of this site would be required both during construction and operation of any schemes in this area.

Issues relating to contaminated land are addressed in the Water, Drainage and Flood Defence and Agriculture and Soils sections.

During construction of the new rail station at Allander, which will use new land/currently disused land, there will be the requirement to dispose of material from the site as required by the detailed design. It is possible that some of this waste material would come from areas that are potentially contaminated.

In general, waste material is likely to comprise Inert and Non-Hazardous waste, although there is the possibility of encountering material that could be classed as Hazardous Waste, for example drums of chemicals or paint. Appropriate handling and disposal of this waste would be required. Measures will be put in place to ensure that as much of the excavated material as possible generated through construction is re-used on other areas of development, where possible.

In addition, construction activities themselves would generate waste. Most of this would be Inert Waste, however Hazardous Waste including waste oils, solvents, etc., may also be generated. These wastes would have to be disposed of in accordance with the appropriate Waste Regulations and Duty of Care in order to avoid impacts on the environment. As part of the Environmental Management Plan for construction sites, waste minimisation measures would be put in place. The impact from waste management issues is therefore assessed as neutral to minor negative.

A range of contaminants has the potential to enter groundwater during the construction and operational phases in the form of run-off or accidental spillage. As the construction is not expected to include deep excavations, there is not predicted to be any significant impact on the local regime of groundwater flows and levels, and again a neutral to minor negative impact is assessed.

There are no other geological SSSIs or non-statutory RIGS within the study area that may be affected by the Options. There are also no areas identified as being of importance for mineral deposits or areas previous used for extraction purposes. The solid geology that underlies the entire study area is the Clackmannan Group (an upper limestone formation). Superficial deposits within the study area include till, alluvium and small areas of peat.

As there are no sensitive geological receptors within the study area, any impacts on geological resources are not likely to be significant. Where geology (solid and superficial) will be affected is during the construction of the new rail station option at Allander where excavation, extraction of material for development and/or to develop foundations for the structures. These effects will be permanent, but will not be significant.

The impact on geology from the development of the remaining Options would be Negligible.

8.4.5 Biodiversity

This assessment considers the effects of the packages on the local biodiversity within the study area and its surrounding area. A review of designated sites and satellite images was carried out to determine key ecological issues.

Key Issues Biodiversity

There are no statutory designated sites within or surrounding the proposed study area. However there is potential habitat for European protected species.

Mature trees within the study area and the surrounding areas offer potential roost habitat for bats. In addition bats may use the study area for commuting and foraging purposes. All British species of bats are protected by the Conservation (Natural Habitats, &c.) Regulations 1994 as amended and are therefore regarded as a key issue in this study.

Breeding birds are protected under the Wildlife and Countryside Act (1981) as amended. During a site visit it was noted that the study area contained a typical assemblage of birds including magpie, blackbird and chaffinch and it was clear from the site visit (and review of aerial photographs) that this site is not an isolated green space in this urban environment. Therefore breeding birds are not considered as a key issue.

Capabilities on project:
Transportation

Temporary Effects and Permanent Effects: Biodiversity

Package 2: Active Travel Modes

The promotion of a modal shift to active travel is likely to improve the biodiversity of the study area through the improvement of air quality. The extent and magnitude of these effects would be greater should the intervention relate to an area-wide initiative, as opposed to the others which are location specific measures.

- **Active Travel Options**

- Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station (Option 19)
- Completion of the cycle link between Mains Estate and Allander Leisure Centre (Option 20)
- Secure cycle storage facilities built at rail stations and in town centres (Option 22)
- Development of a local network of walking and cycling paths which serve desire lines and converge on town centres and stations (Option 23)
- Development of a high quality path which links the Kilmardinny development and Milngavie station (Option 24)

Option 23 potentially covers a wide area, therefore it may be more likely to have an impact on biodiversity, although careful design and investigation will minimise this. Option 24 may have a impact on biodiversity as it will be constructed within undeveloped green land, which may mean the limited loss of trees and / or foliage and potentially impact on the habitats of protected species. It should be noted that lighting of the path, which is desirable for security purposes, may further disturb the surrounding habitat areas not required for the footprint of the development.

Overall, package 2 is not anticipated to have a negative impact on biodiversity.

Package 3: Public Transport and Access Modes

- **Provision of a rail station and associated parking (circa 150 spaces)** - The development of a rail station and associated parking will take place on green field land, which is likely to be a potential habitat for European species, particularly adjacent to the existing railway line. The supporting documentation for the Kilmardinny application stated that the area surrounding the Craighdu Burn has been identified as a Nature Conservation site with the presence of badgers. Additionally, within the master plan environmental study it was acknowledged that the Allander Water contains migratory salmon as well as bats, otters, water voles and potential newts nesting habitats. These areas are adjacent to the proposed station site. Therefore, it is recommended that any subsequent study would require a full environmental study to be undertaken potentially including badger and bat surveys. The railway line offers an important wildlife corridor within a relatively urban area. It should be noted that lighting of the development may further disturb the surrounding habitat areas not required for the footprint of the development.
- **Bus Options**
 - Bus priority / congestion bypasses at key points on the network
 - Provision of real time information at stops along the route
 - Improvements to bus stops and shelters
 - Bus detection included within SCOOT
 - New shuttle bus connecting residential areas to stations
 - Increase frequency of bus services in the corridor

It is not anticipated that the bus options associated with this package will have any effect on biodiversity as it is located within the existing road environment.

Overall this package of options is considered to have a negative impact on biodiversity.

Package 4: Road

The impact of each option on biodiversity has been considered below;

Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road

Impacts on biodiversity within the surrounding area are dependent on whether additional land is required to accommodate the gyratory's footprint. Should traffic flow through the junction improve, some benefits to air quality may be achieved, benefitting the biodiversity of the surrounding area. Presuming that there is no land take required, impacts on biodiversity may be positive, but are unlikely to be significant. It should be noted that no widening of Boclair Road will be required for this option, meaning that no trees will need to be removed.

Capabilities on project:
Transportation

Other Roads Options

- Carriageway marking / localised narrowing
- Place making initiatives to enhance town centre environments

The potential to improve biodiversity within town centre areas exists within this option, should placemaking initiatives include schemes that aim to improve habitat area, or increase areas of potential habitat value within the town centre areas.

Overall this package is anticipated to have a negligible to minor positive impact on biodiversity.

Package 5 – Combined Active Travel, Public Transport and Road

As highlighted above, the potential exists for temporary and permanent negligible to minor negative impacts on species and habitats, associated with the proposed rail station at Allander. There could also be negative impacts associated with the development of a foot / cycle path between Kilmardinny and Milngavie Town Centre and Rail Station.

Quality bus measures and public transport improvements are unlikely to result in significant impacts on biodiversity as they will be located in an urban area with low ecological value.

Furthermore, the road measures are unlikely to have significant impacts on biodiversity, as they will be implemented primarily within the existing road boundary, and within an urban area with low ecological value.

The overall impact is expected to be minor negative.

Mitigation: Biodiversity

Removal of trees, and hedges should be avoided if possible during the breeding bird season (March-September inclusive) and only undertaken after they have been checked for nesting birds. This should be carried out by a qualified and experienced Ecologist. A tree and bat survey should be carried out by a licensed bat worker before the removal of any mature trees. If bats are found a licence should be obtained from the Scottish Government before any works can commence. Lit areas can act as barriers to commuting bats. This would especially be the case for linearly lit features, therefore appropriate lighting should be installed during the construction and operational phase of the proposed transport schemes, for example along new walking and cycling routes or at the new rail station.

During construction of the new rail station at Allander, measures would need be put in place to avoid any construction pollutants or sedimentation entering the Allander Water and Craighdu Burn and tributaries.

Wherever wildlife habitats remain alongside working areas, provision would be made to prevent encroachment onto valuable ecological areas that are not essentially required for construction. This would include the provision of secure fencing where appropriate. Strategic planting at the proposed junction improvements could increase biodiversity.

Summary: Biodiversity

Table 8.8 below summarises the findings for each package and assumes the implementation of the mitigation measures provided.

Table 8.8 Summary of Assessment (Biodiversity)

Option	Overall Temporary Effects	Overall Permanent Effects
Package 1	Negligible	Negligible
Package 2	Negligible to Minor Negative	Minor Negative
Package 3	Negligible to Minor Negative	Minor Negative - Negative
Package 4	Negligible	Negligible
Package 5	Minor Negative	Negative

Capabilities on project:
Transportation

8.4.6 Agriculture and Soils

This assessment considers the effect of the Do Minimum package and the 'Do Something' packages on agricultural land, soil and contaminated land. Baseline information was obtained by means of a desk study review of designated areas and aerial photography.

Key Issues: Agriculture and Soils

This component of the STAG appraisal covers the loss or severance of agricultural land and the potential for soil contamination, including the identification of existing contaminated land areas.

Agricultural Land Quality - Agricultural land is classified using the Land Capability Classification for Agriculture (LCA) produced by the Macaulay Land Use Research Institute (MLURI). This classification integrates soils data with both climate and topographical knowledge to assign land into classes for their suitability for various agricultural crops and management practices. There are seven classes, some of which are subdivided. Classes 1, 2 and 3 are regarded as the best and most versatile and are collectively termed 'prime quality land'.

Severance or Loss of Agricultural Land - Farms differ in size, layout and type of business, therefore the loss or severance of part of a farm by new transport infrastructure may affect their viability to varying degrees. To assess any severance and loss of agricultural land, consultation with the Scottish Government Environment and Rural Affairs Department (SEERAD) should be carried out to enable an assessment of the impact on the viability of the individual farms. As it is known that there is no agricultural land in the immediate vicinity of the proposed infrastructure associated with the packages in this appraisal (albeit it is recognised that agricultural land is located to the east of the study area), this consultation was not deemed necessary at this stage.

Designated Agricultural Areas - Agricultural land generally is not formally protected under a specific designation; however it is included within other national or local designations. These include: Environmentally Sensitive Areas (ESAs), a national designation, which are areas of special landscape, wildlife or historic interest which can be protected or enhanced by supporting specific agricultural practices. These areas are not necessarily areas of particularly good quality agricultural land. Greenbelt and Countryside Areas are local policy areas that relate to open land in the rural areas which may be either cultivated or uncultivated.

Soils - The loss of valuable agricultural soil during construction can occur even if it is kept stored and reinstated; as it is liable to degradation in quality. It is also typical for soils to take a number of years to restore their structure after being reinstated. However appropriate storage methods and the establishment of suitable crops and additional drainage once reinstated can help the process.

Contaminated Land - Although contaminated land is primarily an engineering consideration for any development, the construction process in particular can provide new pathways for contaminants and therefore introduce new, or exacerbate existing, environmental and human health risks.

It should be noted that in its present state the significant areas of land within Kilmardinny development area of Bearsden / Milngavie are agricultural / farmland. However, as the application of the masterplan has been granted it has been agreed that this land will be developed for residential properties. Therefore, for the purposes of this study the area will not be regarded as agricultural.

Temporary Effects and Permanent Effects: Agriculture and Soils

Package 1: Do Minimum

The Do Minimum would not result in a significant impact on agriculture or soils as there would be no significant land take associated within the immediate study area. As a result it has been assumed that temporary and permanent impacts of the Do Minimum are negligible.

Package 2: Active Travel Modes

It is unlikely that improving the walking and cycling network within the study area would result in any impacts (negative or positive) on soil or agriculture.

Capabilities on project:
Transportation

Package 3: Public Transport and Access Modes

Generally the options associated with this package are not considered to have an impact on soils and agriculture, with the exception of the rail station at Allander. The station will require soil to be excavated to undertake earthworks and establish foundations for the development. Construction activities also present the risk of ground contamination from the presence of plant on site. Permanent land take will be required in order to accommodate the footprint of the development, reducing land available for its previous use (i.e. open ground, agriculture etc).

Package 4: Road

Due to the urban nature of the proposals, none of the elements of this package are likely to affect agricultural land/soils during construction and operational phases.

As the proposed package involves the improvement of existing junctions and road surface works, it is highly unlikely that there will be any issues regarding contamination.

This package would not cause a significant negative impact on agriculture as there would be no agricultural land-take associated with this package. With the mitigation measures taken into consideration, the package is assessed as having a negligible to minor negative impact.

Package 5 – Combined Active Travel, Public Transport and Road

As noted above, due to the urban nature of the proposals, none of the elements of this package are likely to affect agricultural land / soils during construction and operation. It is likely that the level of contamination present will not be significant because the areas involved are not extensive and the uses themselves are not likely to generate large quantities of contaminated material. With the information available, and assuming that the mitigation measures are taken into consideration, this Package is assessed as having a negligible to minor negative impact.

Mitigation: Agriculture and Soils

Mitigation in terms of contaminated land would prevent and/or contain spills so that land associated with each of the packages is not contaminated by operational activities. Design of infrastructure would take into account potentially contaminated land so that structures would be protected from aggressive ground conditions and/or gas protection measures put in place to prevent ingress / migration of landfill gas if present. Monitoring and or venting of gas may be required.

Summary: Agriculture and Soils

Table 8.9 below summarises the findings for each package and assumes the implementation of the mitigation measures provided.

Table 8.9 Summary of Assessment (Agriculture and Soils)

Option	Overall Temporary Effects	Overall Permanent Effects
Package 1	Negligible	Negligible
Package 2	Negligible	Negligible
Package 3	Negligible to Minor Negative	Negligible to Minor Negative
Package 4	Negligible	Negligible
Package 5	Negligible to Minor Negative	Negligible to Minor Negative

Capabilities on project:
Transportation

8.4.7 Visual Amenity

Transport schemes can have a significant impact on town/landscape character. In turn, this can result in negative impacts on visual amenity where receptors' views are affected by the introduction of new infrastructure. Intrusive development associated with transport schemes can affect the quality of an existing panorama; however conversely, proposals that result in the reduction of traffic levels could have a positive impact on visual amenity.

Landscape and visual impacts are closely related issues with considerable overlap between the two assessments. Visual amenity is defined as the pleasantness of the view or outlook of an identified receptor or group of receptors. The visual impact assessment determines the degree of anticipated change to visual amenity, considering buildings, areas of public open space, roads and footpaths that would occur as a result of the proposed scheme. The buildings, open spaces, roads and footpaths that would yield views of the proposed measures are collectively referred to as 'receptors'.

Key Issues: Visual Amenity

With regard to visual amenity there are a number of elements that should be considered, in particular:

- The proximity of the proposed schemes to visual receptors;
- The sensitivity of the receptors, i.e. receptors in residential areas (residents) will be more sensitive to those in commercial areas (visitors/workers); and
- The quality of the panorama into which the development is being introduced.

It should be noted that the study area has not been visited by a landscape architect.

Temporary Effects and Permanent Effects: Visual Amenity

Package 1: Do Minimum

Most measures included in the Do Minimum do not include interventions that will result in significant physical changes to the environment, and are therefore unlikely to result in any adverse impact on visual amenity. The Do Minimum" scenario also includes committed improvements to walking and cycling facilities and general network maintenance. Most of these measures are unlikely to result in significant effects on visual amenity. The Council has adopted parking enforcement powers and are soon to be introducing a charging regime. This is likely to reduce visual clutter of inappropriate parking. The segregated cycleway will be predominantly constructed within the existing carriageway boundary and will have no detriment on the existing visual amenity.

Package 2: Active Travel Modes

Proposals to develop a network of walking / cycling paths which converge into the town centre could have a minor impact on the visual amenity of the local area, particularly at locations where new paths are constructed through existing grass areas. However, the extent of this will be limited as it is envisaged that the facilities will be predominantly constructed within the existing road / footway environment. Furthermore, enhancements to walking / cycling and the public realm can improve the visual amenity if designed well. Overall it is felt that this option will have a negligible to minor negative impact on the visual amenity of the area.

The installation of secure cycle storage facilities could have minor impact on visual amenity, particularly at town centres or near the Category B listed Milngavie Rail Station building, as indicated by the image below. However, this can be mitigated by enclosing the storage facilities within a building or installing bespoke and aesthetically pleasing storage structures. Overall the impact on visual amenity is considered to be negligible.

Construction of most measures in this package would have a temporary negative impact on visual amenity, particularly the new large scale cycle / walking routes.

Overall, the visual amenity impacts of Package 2 are likely to be minor negative.

Package 3: Public Transport and Sustainable Modes

The potential temporary and permanent effects on visual amenity associated with quality bus measures and public transport measures are generally considered to be negligible, as the A81 is already a key carrier route for bus services.

The construction of a new rail station at Allander could result in temporary negative impacts on visual amenity. This may be reduced if construction works required to implement the facility could be planned to coincide with the overall development of the site. Similarly, the new rail station is likely to result in some negative permanent impacts, since the site would take in previously undeveloped land. However, through landscaping, the effects could be mitigated such that they are minor negative.

Overall, the visual amenity impacts of Package 3 are likely to be minor negative.

Capabilities on project:
Transportation

Package 4: Road

The package of road measures emphasises measures to promote network efficiency and road safety. No proposals to create significant any road space are included in the package, and the interventions are unlikely to significantly disrupt the character and quality of the panorama in the study area.

Short-term negative impacts on visual amenity will result during the construction works associated with the proposed junction improvements at the A81 Milngavie Road/Boclair Road. Further the likely requirement for signalised junctions at Roman Drive / Milngavie Road and Roman Road / Roman Drive will have a minor impact of visual amenity.

Overall the impacts of this package on visual amenity are likely to be negligible.

Package 5: Combined Active Travel, Public Transport and Road

Package 5 promotes a combination of the active travel, public transport and access, and road (Packages 2, 3 and 4).

As discussed above, the key impacts on visual amenity are likely to arise in connection with the following measures:

- Secure cycle storage facilities in town centres and rail stations (2);
- Development of a local network of walking and cycling paths (2); and
- The construction of a rail station at Allander with parking facilities (3).

Overall Package 5 is likely to result in a minor negative impact on visual amenity.

Mitigation: Visual Amenity

Mitigation applies equally to the options proposed in all three packages.

During construction of new transport infrastructure, fencing around the perimeter of construction sites can reduce the negative impacts on visual amenity by preventing views into working areas.

In the long-term, soft landscaping such as planting of trees, bushes and long grasses should be used to reduce the visual prominence of the parking facilities at the Allander rail station proposal. Planting of trees, particularly along the edge of the carriageway of the perimeter of the Park & Ride will obscure views of the facility and reduce the significance of visual impacts.

Summary: Visual Amenity

Taking into account the implementation of effective mitigation measures, the significance of potential negative impacts on visual amenity can be reduced.

Package 2 generally comprises measures within the existing road environment which are considered to have a negligible affect although new facilities and cycle storage may have a minor impact. Package 4 contains measures within the existing carriageway which will have a negligible impact.

Implementation of the measures, particularly new construction of options in packages 2, 3 and 5 will have a temporary impact on visual amenity.

The implementation of effective mitigation measures such as screen planting on the fringes of the carriageway could reduce impacts on visual amenity by wholly or partially screening views.

Table 8.10 Summary of Assessment (Visual Amenity)

Option	Overall Temporary Effects	Overall Permanent Effects
Package 1	Negligible	Negligible
Package 2	Minor Negative	Minor Negative
Package 3	Minor Negative	Minor Negative
Package 4	Negligible	Negligible
Package 5	Minor Negative	Minor Negative

Capabilities on project:
Transportation

8.4.8 Cultural Heritage

Cultural heritage encompasses elements of the built environment such as historic buildings and monuments and known/unknown archaeology. Transport schemes can result in direct and indirect impacts on cultural heritage interests including physical impacts to buildings or archaeological sites or impacts on the setting of historic buildings or monuments.

This assessment has been informed by a desk study only. The presence of cultural heritage designations including listed buildings, scheduled ancient monuments and conservation areas has been confirmed by a review of Historic Scotland data and the East Dunbartonshire Local Plan.

In general, the number of sites considered under the appraisal of Cultural Heritage impacts is limited. However there are a number of listed buildings in the area. Category B listed buildings are of regional historic importance and category C buildings are of local importance. Potential impacts on the following buildings in this category will be considered:

The most important of these are Category B listed (of regional importance) and are as follows:

- Railway Station Milngavie (B8030);
- Gavin's Mill (Gavin's Mill Road);
- Lower Kilmardinny House, (Milngavie Road); and
- 100 Milngavie Road, Bearsden Council Chambers, Boclair House (Milngavie Road).

The following buildings are listed as Category C (of local importance):

- St Pauls Church Milngavie (Glasgow Road);
- Glasgow Road Milepost (Glasgow Road);
- Milngavie Road, Milepost (Milngavie Road);
- Kilmardinny Avenue, Kilmardinny Lodge Including Boundary Walls and Piers (Kilmardinny Avenue);
- Carse View Drive 1 (Carse View Drive);
- Carse View Drive, 2 Overdale (Carse View Drive);
- Milngavie Road 156 Bournemouth (Milngavie Road);
- 36 and 38 Roman Road, Registrar's Office (Roman Road);
- McFarlane Road, Milepost (McFarlane Road);
- 25 McFarlane Road, The Waterboard House, including boundary wall, gatepiers and gates (McFarlane Road); and
- McFarlane Road Horse Trough (McFarlane Road).

Key Issues: Cultural Heritage

The key considerations with respect to the options included within each package are:

- Physical impacts on buildings or on sites of archaeological interest or potential;
- Increased visual intrusion;
- Increases in noise, vibration, disturbance;
- Severance from other linked features;
- Changes in original landscapes and settings;
- Loss of amenity; and
- Changes in conservation factors e.g. dewatering.

Temporary and Permanent Impacts: Cultural Heritage

Package 1: Do Minimum

Most measures included in the Do Minimum do not include interventions that will result in significant physical changes to the environment, and are therefore unlikely to result in any impacts on setting or loss of unknown archaeology. Measures to promote sustainable travel, including Travel Plans and improvements to local walking and cycling infrastructure could prevent unnecessary car use and so assist in reducing vibration damage to historic buildings and monuments.

Package 2: Active Travel Modes

Proposals to develop a network of walking / cycling paths which converge into the town centre could have a minor impact on the visual amenity of the Category B listed Milngavie Railway Station building and Gavin's Mill. However, this would be located within the existing built / road environment of Milngavie. Any adverse impacts of the proposal on cultural heritage are likely to be negligible. Additional street furniture such as benches, signage, lighting, etc. could impact on the setting around these buildings. However, this impact is likely to be negligible to minor negative.

Capabilities on project:
Transportation

It is envisaged that the cycle storage facilities will be installed within the town centres and at rail stations. A large amount of cycling parking can have a negative impact on the visual amenity of the built environment by adding clutter. Of particular note is the inclusion of these facilities within the Milngavie town centre pedestrianised area and nearby the Category B listed Milngavie Railway Station building. However, bespoke / aesthetically enhanced storage facilities can be implemented to minimise visual intrusion the input is therefore considered to be minimal.

The development of the new rail station at Allander is unlikely to impact on historic buildings or monuments. However, there could be impacts on unknown buried archaeology, as excavations made during construction could damage unknown archaeological resources.

In the long-term, most measures proposed in the package are likely to remove traffic from the A81 corridor and are likely to reduce the levels of pollution and vibration near listed buildings along the corridor.

Overall, the impacts on Cultural Heritage incurred as a result of the implementation of Package 2 is likely to be negligible to minor negative.

Package 3: Public Transport and Access

The development of the new rail station and car parking at Allander is unlikely to impact on historic buildings or monuments. However, there could be impacts on unknown buried archaeology, as excavations made during construction could damage unknown archaeological resources.

Quality bus measures and public transport improvements could have a minor impact on listed buildings. If these options result in increases in bus services that pass or stop outside listed buildings, vibration and emissions caused by buses could cause some damage to historic buildings. Additional street furniture such as bus stops, lighting, etc., could impact on the setting around these buildings. However, this impact is likely to be negligible to minor negative.

In the long-term, most measures proposed in the package are likely to remove traffic from the A81 corridor and are likely to reduce the levels of pollution and vibration near listed buildings along the corridor.

Overall, the impacts on Cultural Heritage incurred as a result of the implementation of Package 3 are likely to be negligible to minor negative.

Package 4: Road

Package 4 promotes a combination of the roads interventions aimed at facilitating traffic movement, reducing vehicular speed and improving public amenity.

The development of a gyratory system at the junction of the A81 and Boclair Road may have an impact; two listed buildings are located near the Boclair Road junction:

- Bearsden Council Chambers at 100 Milngavie Road (Category B); and
- The Registrar's Office, 36 and 38 Roman Road (Category C).

Construction works may generate vibrations which could negatively affect the structure of these buildings. In the longer-term, smoother traffic flow through the junction may reduce the potential effects of vibration from stationary vehicles at the junction; however, this is likely to be a negligible effect.

Some adverse impacts on setting may result from changes in the layout of the junction. However, appropriate design of the improvements is likely to reduce these impacts to be negligible.

All proposed works are on developed land and it is therefore unlikely that they would result in potential loss of unknown archaeology.

Along the A81 the proposal to reduce speed with localised measures may improve public amenity and reduce vibration and noise from high vehicle speeds.

Overall, Package 4 is likely to result in negligible to minor negative impacts on Cultural Heritage.

Package 5: Combined Active Travel, Public Transport and Road

Package 5 promotes a combination of the active travel, public transport and access, and road (Packages 2, 3 and 4).

The impacts on Cultural Heritage of the measures promoted by Packages 2, 3 and 4 have been discussed in the preceding sections. Issues discussed in both these sections will need to be considered to appraise the potential impacts of the Integrated Package.

Capabilities on project:
Transportation

Key impacts identified under Package 3 relate to the new rail station proposal at Allander. The implementation of a new rail station with parking at Allander requires construction on previously undeveloped land, and damage to unknown archaeological resources could ensue. However, there is no evidence to suggest that there is a high probability of archaeological finds in this area.

As discussed previously under Package 4, noise and vibration generated during construction works at the Boclair Road junction could damage nearby historic buildings. However, these impacts are expected to be negligible or, at most, minor negative in magnitude.

Increased levels of noise and vibrations are likely to result from higher levels of bus traffic as a result of the implementation of quality bus measures. However, the A81 is already an important bus route and the impact generated by any additional bus traffic is likely to be limited. Interventions that are likely to remove traffic from the A81 corridor are likely to reduce levels of pollution and vibration near a number of listed buildings along the corridor in the long-term.

Visual impacts on historic heritage could result from the junction improvements and additional street furniture provided as part of the bus measures. However, these impacts can be managed by taking account of any nearby sensitive sites at the design stage.

Overall Package 5 is likely to result in a negligible to minor negative impact on cultural heritage.

Mitigation: Cultural Heritage

Street furniture such as bus stops should be designed such that they integrate with the existing heritage character and do not impact on the setting of listed buildings.

Prior to the construction of the new rail station at Allander an archaeological survey should be undertaken to determine the potential presence of unknown archaeology.

Cultural Heritage Summary

Table 8.11 below summarises the overall significance of potential temporary and permanent impacts of the packages, taking into account the implementation of the effective mitigation measures.

Table 8.11 Summary of Assessment (Cultural Heritage)

Option	Overall Temporary Effects	Overall Permanent Effects
Package 1	Negligible	Negligible
Package 2	Negligible to Minor Negative	Negligible to Minor Negative
Package 3	Negligible to Minor Negative	Negligible to Minor Negative
Package 4	Negligible to Minor Negative	Negligible to Minor Negative
Package 5	Negligible to Minor Negative	Negligible to Minor Negative

8.5 Safety

The following sections discuss the impacts of the proposals on the two safety sub-objectives; Accidents and Security.

8.5.1 Accidents

In this section each package of options will be reviewed to ascertain whether or not it will have a material and measurable impact on accidents and their severity on the transport network. This will consider accidents across all modes, with the exception of rail-based options as the STAG guidance identifies the effects on accidents are negligible.

Package 1: Do Minimum

In the Do Minimum case, danger to pedestrians, cyclists and other drivers is mitigated through removal of indiscriminate parking through better enforcement and the implementation of a segregated cycle route alongside the A81. Notwithstanding this the A81 around the Boclair Road and ASDA junctions are very busy and constrained, careful design of the segregated cycleway is

Capabilities on project:
Transportation

therefore required to ensure it does not increase risks to motorists and cyclists. Danger to road users is mitigated by general maintenance, signing and lining.

Package 2: Active Travel Modes

In general terms, the package looks to promote walking and cycling as a mode through enhanced infrastructure, which includes reducing / managing conflict and facilitating safe and convenient movement. The impact of each option on accidents and risk has been considered below;

- **Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station (Option 19)** - The extension of the existing cycle route would not increase risks to cyclist and / or motorists, beyond existing levels. In addition, this option is aimed at encouraging increased cycling to / from Milngavie station, rather than travel by car. If this option does encourage significant modal shift then the number of road casualties may be reduced by removing cars from the road network. Furthermore, cyclists may be less inclined to leave the carriageway and cycle through the Milngavie pedestrianised town centre area, reducing conflict with pedestrians. However, this option would introduce an additional right turn to cyclists travelling north to the station, with could be mitigated by advanced stoplines or requiring cyclists to dismount and use the signalised crossing at Buchanan Street. Overall, the impact of this option on accidents is considered to be negligible.
- **Completion of the cycle link between Mains Estate and Allander Leisure Centre (Option 20)** - The likely route of this option would be a mixture of on-road and off-road sections, primarily on Hunter Road, Craighdu Road and South Mains Road, Milngavie. Sufficient land is available on Hunter Road and Craighdu Road to provide an off-road shared use facility. Although potential conflict with pedestrians may occur this is considered a low risk, as long as the footways were widened to accommodate cyclists. Cyclists would be required to cycle on-road along South Mains Road, which is a predominantly residential road (at a known rat run). This road is traffic calmed with vertical measures which reduces vehicle speeds. The route would link into the Bearsway cycleway at the junction of South Mains Road and B8030 Main Street. Road crossings can be either facilitated by existing formalised crossings (both signalised and non-signalised). Overall the increase / decrease accident risk is considered to be negligible.
- **Secure cycle storage facilities built at rail stations and in town centres (Option 22)** - The inclusion of cycle storage facilities will be centrally located in areas of high pedestrian movements as well as cyclists, potentially increasing conflict. This issue is most likely to occur in Milngavie town centres pedestrianised area where conflict between pedestrians and cyclists is a known issue. Cyclists are currently banned from riding their bike through the town centre. The issues can be mitigated by either restricting cycling to designated areas, strategically located storage facilities away from conflict areas and / or signage. The impact on perceived and actual accident risk is considered to be a minor negative.
- **Development of a local network of walking and cycling paths which serve desire lines and converge on town centres and, stations (Option 23)** - The aim of this option is to develop a network of paths which enable convenient, safe and where possible segregated from, and with limited conflict with the road network. It is considered that overall this option will provide an moderate improvement to road safety for both cyclists and motorists, although conflict between pedestrians and cyclists may reduce the overall safety benefit. The extent of the benefit will depend on the limitation of conflict and pinch points.
- **Development of a high quality path which links the Kilmardinny development and Milngavie station (Option 24)** - The development of a path from Kilmardinny will be primarily remote from the carriageway and through areas of low pedestrian movement. The path would need to cross the A81 crossing facilities are provided close by, but are significant detour from the desire line which is seen as a significant barrier to use. Therefore, a signalised crossing facility would need to be provided to facilitate safe crossing of the busy A81, which may have a detrimental effect on the operation of the A81 / Auchenhowie Road junction. Notwithstanding this the path development may reduce vehicles leaving the Kilmardinny development to access services and the rail station in Milngavie. Therefore there may be a benefit to accident risk at the Kilmardinny access junction, although the impact is likely to be small. Overall, with the provision a signalised crossing would not have a significant impact on accidents.

Package 3: Public Transport and Access Modes

- **Provision of a rail station and associated parking (circa 150 spaces)** - The provision of the new rail station facility at Allander will attract some new vehicular trips onto the local network. However, the station would reduce the impact of the Kilmardinny development on the road network. The overall impact is expected to reduce the number of vehicle kilometres on the overall road network. Furthermore it is understood that the access road from the A81 to the station is to be

Capabilities on project:
Transportation

upgraded to accommodate the trips generated by the new Kilmardinny residential developments. It is assumed that the access arrangements will facilitate efficient traffic flow from the development / rail station onto the A81. This will minimise safety issues concerning queuing vehicles and conflict. Therefore this option is considered to have a negligible to minor positive impact on safety.

- **Bus Options**

- Bus priority / congestion bypasses at key points on the network
- Provision of real time information at stops along the route
- Improvements to bus stops and shelters
- Bus detection included within SCOOT
- New shuttle bus connecting residential areas to stations
- Increase frequency of bus services in the corridor

This option could possibly reduce the number of road casualties by removing cars from the road network, but this effect will depend on the degree of modal shift generated from private modes.

Package 4: Road

The impact of each option on accidents has been considered below;

- Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road

The impact that the creation of a gyratory system at the A81/Roman Road/Roman Drive junction will have on accidents will depend on the scope of the scheme. For ease of reference each section of the system will be discussed separately

- **A81 / Boclair Road Junction** – In the existing situation vehicles waiting to turn right into and out of the A81 can block other traffic movements removal of this would provide a road safety benefit. However, enabling the gyratory will require lane designations to be altered, which may encourage increased lane changes, which may increase conflict and risk of accidents. This could be mitigated by the erection of advanced warning / directional signs. In general terms improved movement through the junction should improve accident risks, but may transfer issues onto nearby junctions, namely upstream junctions where traffic has to change lanes on approach to the junction.
- **Roman Drive and its junction with Roman Road** – Roman Drive is predominantly a residential road which also serves as a link between the A81 and the A809. The road has a number of driveway accesses to residential properties, some of which are in very close proximity to the Roman Drive / Roman Road priority junction. Currently the Roman Drive is the main arm of the junction at this stage it is unclear whether the junction will require to be upgraded to a mini-roundabout or signalised junction. The junction type will be derived from detailed traffic modelling exercises. However, it is likely that traffic levels will increase significantly and conflict with driveways will continue to exist. In addition, Roman Drive has two minor junctions between Roman Road and A81, conflict at which may be increased by the increased traffic of the gyratory. It should be noted that the junction between Roman Drive and Roman Avenue is very close to the Roman Drive / Roman Road priority junction, effectively creating a staggered crossroads.

The length of Roman Road between Roman Drive and A81 is approximately 210m, which is enough storage for approximately 35 cars (taking account of keep clear markings this may reduce to 33). If it remains the minor arm there is a chance that during busy periods traffic queuing on Roman Road may extend onto the A81 / Boclair Road junction. If this occurs it could result in an increased risk of accidents at the Boclair Road junction. Furthermore any issues affecting the Boclair Road junction could migrate to nearby junctions, particularly upstream on the A81.

Queuing on Roman Road is likely to block traffic emerging from Douglas Gardens. The presence of a keep clear mitigates this but will still result in right turning traffic emerging between queuing vehicles which reduces visibility and may increase accident risk.

Increased traffic levels on Roman Drive, particularly at Roman Road may require enhanced pedestrian crossing facilities to enable safe crossing.

- **Roman Drive and its junction with A81** –this junction is located near the brow of a hill (at the bridge south of Hillfoot Station). Traffic turning out of Roman Drive, onto the A81 will be increased significantly by the diverted traffic from the Boclair Road junction. At busy times the junction may queue back across minor junctions, including the Roman Drive / Roman Road priority junction. This would potentially create a road safety risk.

Capabilities on project:
Transportation

Due to high traffic flows on the A81, right turning traffic from Roman Drive may struggle to safely emerge onto the A81; therefore driver frustration may encourage unsafe manoeuvres. This issue may be alleviated by the installation of traffic signal control.

The scheme may alter driver behaviour and routing, either diverting traffic onto the A809 or through the Kessington residential area. This is likely to include traffic travelling from Roman Road to Glasgow and A81 (northbound) to Boclair Road. Increased traffic in residential areas may have a detrimental effect on perceived and actual road safety risks. It is known that recently a traffic calming scheme has been installed within the Kessington area in response to resident road safety concerns due to speed and rat running. Increased vehicular movements into the residential area may negatively affect accident risks at entry junctions, particularly at the priority junction between Boclair Road and Rannoch Drive.

Overall this option needs a detail traffic modelling exercise to fully assess its implications on traffic movements and driver behaviour, and in turn road safety. The scheme is likely to have a significant knock on-effect to a number of nearby junctions, which also need to be assessed. It is outside the scope of this study to undertake this modelling exercises; therefore our conclusions are limited to engineering judgement and understanding. At this stage there are a number of issues associated with this scheme which could negatively impact on accidents in the area. Without further investigation this scheme is anticipated to have a negative to significant negative impact on accident levels in the area.

Any gyratory scheme should be subjected to a Road Safety Audit.

- Other Roads Options
 - Carriageway marking / localised narrowing
 - Place making initiatives to enhance town centre environments

The remaining road based options are aimed at slowing traffic along the A81 through Milngavie and Bearsden. It is assumed that any measures will be designed to appropriate standards and guidance. Therefore, this option should provide a positive impact on accident risk in the area.

Package 5 – Combined Active Travel, Public Transport and Road

Package 5 promotes a combination of the active travel, public transport and access, and road (Packages 2, 3 and 4).

The impacts on accidents of the measures promoted by Packages 2, 3 and 4 have been discussed in the preceding sections. Issues discussed in both these sections will need to be considered to appraise the potential impacts of the Integrated Package.

Overall Package 5 is likely to result in a negative impact on accidents.

Summary

Table 8.12 below summarises the overall significance of potential temporary and permanent impacts of the packages, taking into account the implementation of the effective mitigation measures.

Table 8.12 Summary of Assessment (Accidents)

Option	Overall Temporary Effects	Overall Permanent Effects
Package 1	Negligible	Negligible
Package 2	Negligible	Negligible
Package 3	Negligible	Negligible
Package 4	Negligible to Negative	Negligible to Negative
Package 5	Minor Positive to Negative	Minor Positive to Negative

Capabilities on project:
Transportation

8.5.2 Security

It is considered that security is of particular relevance in relation to the development of public transport measures, including the promotion of walking and cycling, promotion of public transport, bus priority, and the new station. These facilities need to incorporate good design to mitigate feelings of insecurity.

Collaboration with private business and/or community groups can help to provide a 'human presence' within or around public transport facilities. Un-staffed stops should be constructed to take account of passenger safety and security. Elements incorporated into the design can include lighting, CCTV and open areas, where waiting passengers are visible from neighbouring roads or streets.

Station facilities should be designed in accordance with current good practice and standards to ensure that all aspects of passenger safety are allowed for wherever possible. Similarly, on-board public transport it is possible to design a safe and secure environment.

Feedback from stakeholder consultations indicated that security is a key factor in encouraging the use of public transport, and the requirement for a safe and secure environment both on-board public transport services, and within waiting and parking areas, particularly for those who may be travelling during quieter periods for example late in the evening, was noted.

In summary, it is considered that the personal security concerns of many individuals when using public transport, walking and cycling can be largely dealt with in the provision of mitigating facilities designed into the scheme development, such that all options would achieve a positive impact in this regard. Further details are set out within Table 8.13: it should be noted that not all mitigating facilities will be relevant to all options.

Table 8.13: Assessment of Security Sub-Criterion

Security Indicator	Relative Importance (High/Medium/Low)	Vulnerable Groups of Society Affected	Without Strategy (Poor/Moderate/High)	With Strategy (Poor/Moderate/High)
Site perimeters, entrances and exits	High	Children, elderly, women travelling alone.	Poor	Moderate / High: Clearly marked site perimeters/exits. Use of open fencing rather than solid walls.
Formal surveillance	High	Children, elderly, women travelling alone.	Poor	Moderate / High: Effective CCTV system in place. Design to encourage staff surveillance and group passengers.
Informal surveillance	High	Children, elderly, women travelling alone.	Poor	Moderate / High: Positive use of materials (fencing etc) and design to encourage open visibility from site surrounds. Encouragement or proximity of retailers or other activity.
Landscaping	High	Children, elderly, women travelling alone.	Poor	Moderate / High: Positive use of landscaping features (design, plants etc) to contribute to visibility and deter intruders.
Lighting and visibility	High	Children, elderly, women travelling alone.	Poor	Moderate / High: Good design to avoid recesses and facilitate camera/monitor view. Lighting to daylight standard in passenger areas when facility open. Attention to lighting on signing, information and help points.
Emergency call	High	Children, elderly, women travelling alone.	Poor	Moderate / High: Good provision of emergency phones, help points, public telephones and information on emergency help procedure.

Capabilities on project:
Transportation

Package 1: Do Minimum

In the Do Minimum case, issues relating to security are considered negligible although actual and perceived personal security may be improved by general maintenance of street lighting and vegetation to minimise dark areas.

Package 2: Active Travel Modes

In general terms the ambition of this package is to promote walking and cycling as a mode through enhanced infrastructure, which includes reducing / managing conflict and facilitating safe and convenient movement. The impact of each option on accidents and risk has been considered below;

- **Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station (Option 19)** - Cyclists currently have two routes between the end of the Woodburn Way cycle route and the rail station, either off road via footpaths and underpasses (which requires cyclists to dismount) or on road with general traffic which is the shorter route. The extension of the cycle route on Woodburn Way may encourage greater use of the on-road facility, reducing the number of cyclists using the underpasses. Underpasses generally present a perceived, and potentially actual security risk, removing the need to use these facilities will improve the sense of security. Notwithstanding this, the option is considered to have a negligible effect on security.
- **Completion of the cycle link between Mains Estate and Allander Leisure Centre (Option 20)** - This option is considered to have a negligible impact on security.
- **Secure cycle storage facilities built at rail stations and in town centres (Option 22)** - The installation of high quality secure cycle facilities in busy areas which are lit should enhance actual and perceived security risks.
- **Development of a local network of walking and cycling paths which serve desire lines and converge on town centres, and stations (Option 23)** - At this stage it is unclear what routes the network of paths will take, however it is likely that there will be a mixture of roadside foot/cycleways and remote foot/cycle paths. All roadside facilities have street lighting although their illumination can be limited by the canopies of trees; many streets are lined by trees. Therefore the impact on security is negligible, although increased levels of walking and cycling may increase the sense of security. Remote facilities may present perceived and actual personal security concerns, particularly any sections which are not overlooked by residential properties. Mitigation can be provided by installing CCTV systems, street lighting and maintaining vegetation.
- **Development of a high quality path which links the Kilmardinny development and Milngavie station (Option 24)** - This route would be predominantly remote from the carriageway with minimal surveillance from overlooking properties, therefore actual and perceived security risks associated with this option are considered significant. This can be mitigated against by the installation of good quality street lighting for the remote sections of the path. However, this option is considered to have a minor negative impact on security.

Package 3: Public Transport and Access Modes

- **Provision of a rail station and associated parking (circa 150 spaces)** - This facility is envisaged to have an "at grade" parking facility rather than a decked solution. Secluded / dark areas are negligible within these facilities, especially if good quality lighting is installed. The overall facility will be lit and will have CCTV surveillance as well as informal surveillance from residential properties and the Allander Sports Centre. Generally this facility is considered to have a negligible impact on security.

Bus Options

- Bus priority / congestion bypasses at key points on the network
- Provision of real time information at stops along the route
- Improvements to bus stops and shelters
- Bus detection included within SCOOT
- New shuttle bus connecting residential areas to stations
- Increase frequency of bus services in the corridor

These options are anticipated to have a minor positive impact on security: improve passenger waiting facilities at stops along the route which should improve safety, Certainly enhanced passenger facilities would improve the perception of safety at bus stops which would encourage use during the hours of darkness. In addition, improved high access kerbs improve safety for passengers boarding and alighting vehicles by allowing buses close access to the kerbside.

Capabilities on project:
Transportation

Package 4: Road

The remaining road based options are considered to have a negligible impact on personal security.

Package 5 – Combined Active Travel, Public Transport and Road

Package 5 promotes a combination of the active travel, public transport and access, and road (Packages 2, 3 and 4).

The impacts on security of the measures promoted by Packages 2, 3 and 4 have been discussed in the preceding sections. Issues discussed in both these sections will need to be considered to appraise the potential impacts of the Integrated Package.

Overall Package 5 is likely to result in a negligible to minor negligible on security.

Safety Summary

Table 8.14 below summarises the overall significance of potential temporary and permanent impacts of the packages, taking into account the implementation of the effective mitigation measures.

Table 8.14 Summary of Assessment (Security)

Option	Overall Temporary Effects	Overall Permanent Effects
Package 1	Negligible	Negligible
Package 2	Minor Negative	Minor Negative
Package 3	Negligible	Negligible
Package 4	Negligible	Negligible
Package 5	Negligible	Negligible

8.6 Economy

Analysis has been undertaken of the likely costs of each option contained within the packages and the journey time/journey time reliability improvements that may be achieved as a result of their implementation. The impact on the generalised cost of travel, taking account of service frequency for public transport services, and the overall quality of journeys has also been considered. A reduction in the generalised cost of travel is considered to have a positive impact on the economy owing to improved access for both labour and goods to workplaces and markets.

8.6.1 Methodology

Estimated costs and journey time effects attributable to individual options have been based upon a range of methods. Where applicable, estimates have been made using technical experience gained through the implementation of similar schemes in comparable contexts. For some schemes, costs have been based upon figures presented in previous studies and have been factored to 2014 prices. Certain costs have been indicated by the relevant authority promoting or funding the intervention. A note setting out the sources and assumptions that underpin the costs is provided in Appendix E.

Ultimately, within the scope, time and budgetary constraints of this study, it has not been possible to assess the specific journey time savings. Each option has been assessed using the seven point STAG scale. As such, the total costs attributable to each package will be subject to revision and therefore can only be considered to be best estimates based on available data.

It should be noted that the 2008 study did not include a full economic appraisal, modelling and cost benefit analysis. The scope of this project was limited to refreshing and updating the 2008 STAG study, with an equivalent level of appraisal and analysis.

It is recommended that EDC/SPT explores the possibility of undertaking a full cost benefit analysis for schemes that are to be taken forward. This will require significant data collection and model development work. A number of the schemes within this study may require significant levels of external funding – as such, these schemes will need to be supported and justified by a robust cost benefit analysis.

Capabilities on project:
Transportation

8.6.2 Costs and Journey Time Savings

For ease of analysis each package has been considered separately in Tables 8.15 to 8.19.

For appraisal purposes, all capital costs presented have been uplifted to take account of optimum bias at a rate of 44%.

Capabilities on project:
Transportation

Table 8.15 Package 1 (Do Minimum)

Option	Capital Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
Parking charges and waiting restrictions at Milngavie Town Centre	N/A	N/A (Area Wide)	Slight Positive	Slight Positive	Slight Positive	Slight Positive	This scheme is being delivered across the Council Area and costs are difficult to disaggregate to separate locations
Localised improvements associated with the Kilmardinny development	£655,000	£2,000c.	Slight Positive	Slight Positive	Slight Positive	Slight Positive	Committed spend from developer
Construction of Kessington Travel Hub	£800,000	£1,500c.	N/A	N/A	N/A	N/A	It is not envisaged that this scheme will include bus priority and as such journey time savings are unlikely.
Implementation of cycle corridor with Phase 1 from Burnbrae Roundabout to Hillfoot and Phase 2 from Hillfoot to Kessington		£10,000c.	Minor Negative	Minor Negative	Minor Negative	Minor Negative	This option will narrow existing carriageway space, thus reducing capacity and increasing journey times.
Travel Plans	N/A	£50,000c	N/A	N/A	N/A	N/A	Annual cost for a part time travel planning co-ordinator and budget for marketing etc.
TOTAL (exc annual travel plan costs)	£1,455,000	£63,500	Negligible	Negligible	Negligible	Negligible	

Capabilities on project:
Transportation

Funding from the Bus Improvement Fund was allocated in 2013, EDC were awarded over £700,000 for;

- Dedicated bus lanes
- Bus priority at traffic signals
- Real time information at bus stops
- Ticketing at bus stops (future collaboration with SPT)
- Parking restrictions
- Enforcement of parking and bus lane restrictions
- Secure cycle storage at bus stops
- Improved pedestrian facilities
- Cycle lanes
- High quality surfacing

Table 8.16 Package 2 (Active Travel Modes)

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station	£10,000	£1,000c.	Negligible	Negligible	Negligible	Negligible	The extension of the cycle route would follow an on-road alignment and is unlikely to have any significant impact on journey times.
Completion of the cycle link between Mains Estate and Allander Leisure Centre	£46,800	£2,500c.	Negligible	Negligible	Negligible	Negligible	This route will pass along South Mains Road, probably on-road, which is a residential street and a known rat-run. The proposed cycle route could potentially cause delay to rat running traffic but this would be minimal.

Capabilities on project:
Transportation

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
Secure cycle storage facilities built at rail stations and in town centres	£86,400	£1,500c.	Negligible	Negligible	Negligible	Negligible	This option may reduce the time taken to park cycles securely, however, this is not likely to provide any meaningful time saving benefit. The option will not conflict with car and public transport movement.
Development of a local network of walking and cycling paths which serve desire lines and converge on town centres, and stations	£540,000	£5,000c.	Negligible	Negligible	Negligible	Negligible	<p>It is envisaged that these routes will be on enhanced / new shared use foot/cycleway. Therefore, this option should not affect public transport movements. There may be some journey time benefit if cyclists are encouraged to ride off the road. The benefits in terms of journey times are likely to be minimal.</p> <p>It should be noted that the scope of this intervention may vary depending on future design and feasibility work.</p>
Development of a high quality path which links the Kilmardinny development and Milngavie station	£720,000	£2,500c.	Negative	Negative	Minor Negative	Minor Negative	This option will potentially require a signalised crossing to be installed on the A81, between Burnbrae Roundabout and Auchenhowie Road. The junctions and the link between them are typically busy and would be difficult / unsafe to cross without signal control. Crossing facilities are provided at Auchenhowie Road junction - the use of this would therefore require a 200m deviation from the desire line. It is unlikely that cyclist and pedestrians would make such a deviation; therefore a

Capabilities on project:
Transportation

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
							<p>dedicated signalised crossing would need to be installed, the inclusion of which will negatively affect traffic flow in the area. This can be mitigated against by linking the crossing with the Auchenhowie Road junction.</p> <p>This option will have little impact on bus journey times as few regular services pass along this section of the A81.</p>
Total	£1,403,200	£12,500	Negligible	Negligible	Negligible	Negligible	

Table 8.17 Package 3 (Public Transport and Access)

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
Provision of a rail station and associated parking (circa 150 spaces)	<p>£5,882,564</p> <p>Double Track</p> <p>£19,255,680</p>	£30,000c.	Minor Positive	Minor Positive	Positive	Positive	<p>This option will encourage more people to use more sustainable means of commuting into Glasgow. The Allander station will fill an accessibility gap which encompasses the Kilmardinny development and existing residential properties in the vicinity of Mosshead</p>

Capabilities on project:
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Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
							<p>Road. Although there is bus service provision for this area, journey times into Glasgow are comparatively poor relative to rail. This option will significantly reduce journey times by public transport for those within the accessibility gap and will encourage modal shift. This will potentially reduce existing traffic levels and mitigate against the addition vehicular trips generated by the Kilmardinny development. It is therefore considered that this option will have a positive impact on public transport journey times for local residents and to a lesser extent car journey times.</p> <p>Beyond the station catchment, this option is expected to have a minor negative impact on public transport journey times, particularly passengers travelling to and from Milngavie rail station. The Allander station would lengthen journey times by around 1 minute 30 seconds for passengers boarding and alighting at Milngavie.</p> <p>As outlined in the Allander Rail Station Feasibility Report (Appendix B), a change to the departure time of trains leaving Milngavie is likely to be required in order to maintain service reliability – this could impact on the wider timetable across the Strathclyde area. The</p>

Capabilities on project:
Transportation

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
							feasibility and acceptability of making such changes requires an assessment by Network Rail. Existing resilience can be maintained with the Allander station if the sections of single track on the branch are doubled, but this has significant implications in terms of costs.
Bus priority / congestion bypasses at key points on the network	£200,000	£10,000c	Negative	Negative	Positive	Positive	Based on bus priority southbound through the busy traffic network between Hillfoot and Kessington.
Installation of RTPI at Bus Stops	£360,000	£5,000c	N/A	N/A	Minor positive	Minor positive	The installation of RTPI will not impact on journey times or journey time reliability, but will improve the quality of journeys through enhanced information.
Improvements to bus stops and shelters	£316,800	£10,000c	N/A	N/A	Minor positive	Minor positive	Improvements to shelters will not impact on journey times or journey time reliability, but will improve the quality of journeys for passengers.
Bus detection included within SCOOT	£3,000	£500c.	Minor Negative	Minor Negative	Minor Positive	Minor Positive	SCOOT is already installed on the A81 between Kessington to Hillfoot. There is little opportunity to provide bus priority to bypass traffic. However the system can delay, lengthen and change signal patterns and green times to prioritise the arm of the approaching service. This will improve bus movement through the signalised junctions, but the bus will still

Capabilities on project:
Transportation

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
							<p>remain within general traffic. It is considered this option will have a minor positive on public transport journey times.</p> <p>Traffic running on the same phase as the approaching bus will benefit from the system and benefit from reduced journey times. However, vehicles on those arms which are suppressed to permit the bus priority will suffer greater delay. The impact on car journey times would be minor negative.</p>
New shuttle bus connecting residential areas to stations	£1,152,000	£550,000c.	Negligible	Negligible	Minor Positive	Minor Positive	<p>A shuttle bus will improve connectivity from some residential areas that are over a 10 minute walk from a bus stop. There would also be benefits to residents closer to existing bus stops through frequency improvements. If timetabled appropriately with other train and bus services overall journey times could be positively affected. This option is considered to have a minor positive impact.</p>
Increase the frequency of bus services in the corridor	N/A	N/A	Negligible	Negligible	Minor Positive	Minor Positive	<p>Increased bus service frequencies will have a positive impact by reducing the generalised cost of travel.</p>

Capabilities on project:
Transportation

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
TOTAL	£7,914,3647	£605,500c	Negligible	Negligible	Positive	Positive	

Table 8.18 Package 4 (Roads)

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
Implementation of a gyratory at the A81/ Roman Rd / Roman Drive junction (inc. ban of right turn from Boclair Rd)	£648,000	£1,500c	Negligible	Negligible	Minor Positive	Minor Positive	In the absence of traffic modelling, it is unclear what effect this option will have on journey times, turning movements and capacity. It is likely that some movements through the junction will be negatively affected and others positively affected. This will depend on the nature and scope of this scheme which requires further investigation. Bus services, most of which pass straight along the A81, will experience improved journey times through the junction.
Carriageway marking / localised narrowing	£36,000	£1,500c	Negligible	Negligible	Negligible	Negligible	Localised schemes to narrow the carriageway are unlikely to have a significant effect on car or public transport journey times.

⁷ Assumes single track option for Allander rail station

Capabilities on project:
Transportation

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
Place making initiatives to enhance town centre environments	£129,600	£5,000c	Negligible	Negligible	Negligible	Negligible	This scheme is unlikely to have a significant effect on both car and public transport journey times.
TOTAL	£813,600	£8,000c	Negligible	Negligible	Negligible	Negligible	

Table 8.19 Package 5 (Combined)

Option	Cost	Ongoing Revenue (Annual)	Journey Time / Journey Time Reliability / Journey Quality Effects				Comments
			Car		PT		
			AM Peak	PM Peak	AM Peak	PM Peak	
Package 2	£1,403,200	£12,500	Minor Negative	Minor Negative	Negligible	Negligible	
Package 3	£7,914,364 ⁸	£605,500	Negligible	Negligible	Positive	Positive	
Package 4	£813,600	£8,000	Negligible	Negligible	Negligible	Negligible	
TOTAL	£10,131,164	£640,000c	Negligible	Negligible	Positive	Positive	

⁸ Assumes single track option for Allander rail station

Capabilities on project:
Transportation

8.6.3 Economy Summary

Package 1: Do Minimum

Whilst the schemes identified in the Do Minimum package are not expected to have significant benefits in terms of journey times in relation to baseline conditions, the package of improvements to be implemented as part of the Kilmardinny development will assist in mitigating the impact of additional traffic generated by the development. In addition, the Kessington Hub scheme is expected to deliver benefits to the local economy through improved public realm and accessibility. Introducing parking waiting restrictions and charges at Milngavie town centre will deliver benefits to the local economy by reducing the spaces occupied by staff and commuters and increasing the number of spaces available to shoppers. The cycle scheme on the A81 will also assist deliver indirect economic benefits through improved accessibility for cyclists and enhanced journey ambiance through the corridor.

Package 2: Active Travel Modes

Whilst the direct journey time savings are limited, this package will improve overall accessibility to the network, which is expected to reduce the generalised cost of travel. The package also has the potential to reduce the number of car trips on the network, which could reduce journey times relative to the Do Minimum. These benefits will be offset to some extent through the requirement to provide additional crossing facilities. It should be noted that in order to maximise the uptake of the component schemes within the package, marketing and promotion work is required, which would be an additional component to current the package. The overall capital cost of this package, including optimism bias of 44% is estimated at £1,403,200.

Package 3: Public Transport and Sustainable Modes

For public transport, the overall journey time benefits are considered to be positive, primarily due to the Allander rail station proposal. However, the journey time benefits of this option are very much dependant on the timetable changes required not adversely affecting the wider rail network. It is outside the scope of this project to evaluate the timetable requirements beyond the study area. Double tracking the line would enable the station to be accommodated within the existing timetable and possibly improve network resilience, but the additional cost implications of this are significant.

The overall capital cost of this package, including optimism bias of 44% is estimated at £7,914,364 – this assumes the single platform option for Allander rail station (£5,882,564⁹). If Network Rail concludes that the double tracking option is required the cost of this element of the package would increase to £22,871,360 - this factors up the estimate produced by Atkins (in 2003) to 2014 prices, plus 44% optimism bias.

Regarding high cost items such as the shuttle bus service and in particular the rail station option, in the absence of demand forecasting and cost benefit analysis it is difficult to determine the demand and justification for the options in economic terms, although there is anecdotal demand from residents and community groups. However, it has not been determined whether the demand generated for a shuttle bus or by a station at Allander would be sufficient to justify the level capital investment and ongoing revenue costs.

Package 4: Road

Time savings for car journeys are expected to be negligible, whilst public transport may actually experience minor improvements in journey times. This is primarily a result of the issues regarding the operation of the gyratory scheme at A81 / Boclair Road junction and its effects on neighbouring junctions. Transport modelling and assessment is required in order the understand the relative benefits and disbenefits more fully.

The other schemes in the package are primarily reduced vehicular speeds. These measures are considered to be localised and will have minimal effects on overall corridor journey times.

The overall capital cost of this package is estimated to be £813,600, including 44% for optimism bias. The majority of this cost is attributable to the gyratory scheme.

Package 5: Integrated Road and Public Transport/Sustainable Modes

Overall, the combined journey time savings for car drivers are considered negligible and minor positive for public transport. This is mainly attributable to Package 3 where public transport is likely to generate positive journey time benefits. The total capital cost is estimated to be £10,131,164, which includes 44% uplift for optimism bias.

It should be noted that the costs associated with each option are estimated based on project and industry experience. It is assumed each option will be subject to a detailed design exercise to determine scope and accurate costs.

⁹ Single track option (44% optimism bias has been added to the cost estimate included in Appendix B (£4,085,114).

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8.7 Integration

8.7.1 Transport Integration

An integrated transport system must operate as a true network across all modes in order that passengers can move easily from one service to another in a comfortable environment. Integrated transport can reduce the need to travel, tackle congestion and pollution and support a strong economy, a sustainable environment and a healthy and inclusive society. Consideration of integrated transport typically includes the integration of different elements of the public transport network (ticketing, interchanges, timetables, inter-modal opportunities), but extends to include opportunities such as Park & Ride and other sustainable modes.

Package 1 (Do Minimum) may achieve marginal improvements to integration through the implementation of travel planning and walking and cycling measures. The segregated cycle route, the “Bearsway” will improve cycle links throughout the corridor which will improve integration. Overall, the package is expected to have a broadly neutral to moderate positive impact on transport integration.

Package 2 (Active Travel Modes) will facilitate improved and convenient access from residential areas to transport services and local services. Option 23 and 24 will provide enhanced walking and cycling links from residential areas to rail stations. Option 22 will provide good quality and secure cycle parking at key transport halts, this will improve transport integration.

Package 3 (Public Transport and Access) in general will have a positive impact on transport integration through the measures that it promotes:

- New rail station at Allander - inclusion of parking at this site will also encourage people to transfer from cars to rail services at a dedicated interchange site. However, unless new bus services are implemented there would be no integration with the bus, therefore limiting the catchment area in which the station could be accessed by sustainable means.
- Quality Bus Corridor - improved information and signalling technology on the route will improve integration between modes.
- Bus feeder services - such services would be timetabled to dovetail with the existing rail services and thus significantly improve integration between bus and rail modes.

Package 4 (Road) is unlikely to have a positive or negative impact on transport integration, although reduced traffic speeds and place making initiative may encourage more people to walk / cycle to rail or bus services.

Package 5 (Combined) will generally have a positive impact on transport integration. Particularly the combination of Option 20 (cycle link between Mains Estate and Allander) and Option 7 (new rail station at Allander). If delivered on its own Option 20 will have a negligible impact on transport integration.

8.7.2 Land Use Integration

Recent developments in UK and Scottish Government policy have provided a clear framework for the integration of land use and transport planning with a general requirement to promote sustainability and reduce the need to travel to relevant existing or future developments.

The land use integration sub-objective should consider whether:

- Any land required for the proposal is preserved for uses which are incompatible with transport (e.g. protected or conservation areas);
- The proposal fits with the general policies of all authorities at all levels concerning transport and land use; and
- The proposal conflicts with any other existing or planned development.

There is a requirement for the identification of the land use policies or proposals conflicting with statutory planning documents at local, regional and national levels. This has been carried out to some extent during the STAG Part 1 process and any serious conflicts would have been identified at this earlier stage.

At a national level, the Scottish Planning Policy (SPP) 2014 acts as Scotland’s overarching policy framework. It provides policy guidance and support to the Scottish Government’s transport vision through the integration of land use, economic development, environmental issues and transport planning, and replaces the previous 2010 SPP and a number of former policy documents including the former SPP17 – Planning for Transport. The SPP sits alongside other Scottish Government planning documents, including the National Planning Framework (NPF3, 2014), which sets out the Scottish Government’s spatial development priorities for the next 20 to 30 years. The SPP sets out policy that will help to deliver the objectives of the NPF.

NPF3 and SPP 2014 share a single vision for the planning system in Scotland:

“We live in a Scotland with a growing, low-carbon economy with progressively narrowing disparities in well-being and opportunity. It is growth that can be achieved whilst reducing emissions and which respects the quality of environment, place and life which

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makes our country so special. It is growth which increases solidarity – reducing inequalities between our regions. We live in sustainable, well-designed places and homes which meet our needs. We enjoy excellent transport and digital connections, internally and with the rest of the world.”

The SPP outlines that the planning system is a key mechanism for integration and should support patterns of development which:

- Optimise the use of existing infrastructure;
- Reduce the need to travel;
- Provide safe and convenient opportunities for walking and cycling for both active travel and recreation, and facilitate travel by public transport;
- Enable the integration of transport modes; and
- Facilitate freight movement by rail or water.

The latest SPP is more focused on maximising opportunity from existing infrastructure, rather than developing completely new infrastructure. SPP integrates with the placemaking, connectivity, active travel and sustainability agendas in a more ordered way than the previous SPP. Regarding new rail station development;

“The strategic case for a new station should emerge from a complete and robust multimodal transport appraisal in line with Scottish Transport Appraisal Guidance. Any appraisal should include consideration of making best use of current rail services; and should demonstrate that the needs of local communities, workers or visitors are sufficient to generate a high level of demand, and that there would be no adverse impact on the operation of the rail service franchise. Any appraisal should include consideration of making best use of current rail services”

More locally, EDC adopted the Local Plan 2 in October 2011. The Local Plan 2 presents a number of policies and proposals for integrating land use and transportation in East Dunbartonshire. Of particular relevance to this study are the following proposals:

- TRANS 1 – Development and Transport: the Council will take an integrated approach to development and transport with the aims of ensuring that the need for travel is reduced, that active and travel by public transport is facilitated and encouraged and the effect of air quality is ameliorated;
- TRANS 2 – Road Design Guidance and Parking Standards: Development proposals must ensure that road layout and design ensures the safety of all users;
- TRANS 4 – Rail Network and Park and Ride Facilities: the Council will support proposals which encourage extended capacity of rail infrastructure as opportunities arise; and
- TRANS 5 – Active Travel Network, the Council will develop proposals defining and enhancing a safe and comprehensive active travel network, incorporating footpaths, cycleways and bridleways.

TRANS 4 further states that *“The Council will support proposals which encourage extended capacity of rail infrastructure as opportunities arise. The Council will define and reserve sites...for new rail halts at Woodilee, Westerhill and Allander, pending an investigation... into the merits, costs and feasibility of these facilities. The Council will support the principle of expanded park and ride capacity, and related provision for active travel (including secure cycle storage) and convenient feeder bus services”*.

EDC is in the process of preparing a new Local Development Plan (LDP) for the area, which will replace the Local Plan 2. It is expected that the LDP will be adopted in 2016 and will guide the future use of land, set out proposals for development and provide the framework for dealing with planning applications.

‘A Catalyst for Change’ – The Regional Strategy for the West of Scotland 2007-2021 was published in 2007 by SPT. The vision of the Regional Transport Strategy (RTS) is:

“A world-class, sustainable transport system that acts as a catalyst for an improved quality of life for all”.

The shared goals of the RTS are to:

- Develop the economy;
- Promote social inclusion and equality; and
- Improve health and protect the environment.

The Glasgow and Clyde Valley Strategic Development Plan (SDP) published in 2012, sets out a framework for sustainable development, with particular focus on land use and integration. The plan identifies options for improving transport along the A81 corridor; which are to improve / develop rail service frequency and improve core bus frequencies and routings. Neither Milngavie nor Bearsden were identified as strategic economic centres.

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Noting the above and the policy context analysis undertaken in Chapter 2, the following general statements can be made in terms of overall land-use transport integration:

Package 1, the Do Minimum scenario, will have a neutral impact on land-use integration through the construction of committed schemes.

The options associated with Package 2 have a positive impact on local land-use integration as it will facilitate safer and more convenient access from residential areas to transport services, local services and employment opportunities. Options 20, 23 and 24 in particular will provide new or enhanced links between large dormitory areas and key services but active modes.

With regard to Package 3, the QBC proposal has a negligible impact on land-use integration beyond what already exists, although it is noted that improved facilities and journey time reliability may have a minor benefit. The provision of service improvements will have a positive effect on land-use integration. A new shuttle bus, which will access new areas, some of which have no public transport links within a 10 minute walk, will enhance local and corridor land use integration. The shuttle service will also interchange with rail stations and other bus services.

A rail station at Allander would encourage more sustainable travel to the Glasgow from the new Kilmardinny development, which is a major local development. The station would be located within a ten minute walk of most properties in Kilmardinny and a number of properties within the vicinity of Mosshead Road, Kilmardinny Avenue and Galbraith Drive. The rail station will contain parking which would better enable car users to access the rail network, thus having a moderate positive impact on access to land uses in the wider area including education, employment and shopping.

Package 4 (Road) will result in improved traffic flow through the corridor may have a minor impact on land use integration however this would be counterbalanced by the speed reduction option. Overall the impact on land use integration is considered negligible.

Package 5 (Combined) would have a positive impact on land use integration for the reasons discussed above.

Overall, it is considered that each of the options would bring benefits to facilitating the achievement of land-use aspirations, to varying degrees, through promoting sustainability and reducing the need to travel. Furthermore, it is considered that none of the land required for the proposals is reserved for uses which are incompatible for transport.

8.7.3 Policy Integration

The Policy Integration criterion examines whether the proposed scheme contributes to, and is consistent with, other Government policies and legislation beyond transport. Consideration of transport planning policy has been undertaken within Chapter 2 of this study and no conflicts have been identified. A brief overview of key transport planning policies is provided below, together with consideration of wider Government policies.

In addition, a Planning Appraisal Framework (PAF) has been used to demonstrate the contribution of each option to meeting current Scottish Government transport policy objectives, this presented within Appendix F.

At a regional level, the SPT RTS supports a wealthier, fairer, healthier, safer, stronger, smarter, greener Scotland. It is considered that each of the Options will support the RTS goals through contributing to the following RTS objectives:

- **Safety and Security:** To improve safety and personal security on the transport system;
- **Modal Shift:** To increase the proportion of trips undertaken by walking, cycling and public transport;
- **Excellent Transport System:** To enhance the attractiveness, reliability and integration of the transport network;
- **Effectiveness and Efficiency:** To ensure the provision of effective and efficient transport infrastructure and services to improve connectivity for people and freight;
- **Access for All:** To promote and facilitate access that recognises the transport requirements of all;
- **Environment and Health:** To improve health and protect the environment by minimising emissions and consumption of resources and energy by the transport system;
- **Economy, Transport and Land-Use Planning:** To support land-use planning strategies, regeneration and development by integrating transport provision.
- The **SPP 2014** sets out four planning outcomes, and these outcomes are consistent across the NPF3 and SPP:
 - **A successful, sustainable place** – supporting sustainable economic growth and regeneration, and the creation of well-designed, sustainable places;
 - **A low carbon place** – reducing our carbon emissions and adapting to climate change;
 - **A natural, resilient place** – helping to protect and enhance our natural and cultural assets, and facilitating their sustainable use; and
 - **A more connected place** – supporting better transport and digital connectivity.

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The spatial strategy set out in NPF3 is complemented by an ongoing programme of investment in transport infrastructure. It outlines that the economy relies on efficient transport connections, within Scotland and to international markets, and planning can play an important role through improving connectivity and promoting more sustainable patterns of transport and travel as part of the transition to a low carbon economy.

The overall purpose of the Scottish Government Economic Strategy (2011) is to “focus the Government and public services on creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth”. The measures proposed in all Options will help to encourage economic development through improving journey time reliability and enhancing the level of accessibility and inclusiveness to key services.

The Glasgow And Clyde Valley Strategic Development Plan (SDP) (2012) is a 25-year land use plan for Glasgow and the Clyde Valley city-region that supports the Scottish Government's central purpose of increasing sustainable economic growth. It provides “...a policy framework to help shape good quality places and enhance the quality of life in the city region. The Plan focuses on growing the economy of the city region in a low carbon and sustainable manner and setting out a planning framework which positively encourages investment within Glasgow and the Clyde Valley.”

In the Competiveness section of the SDP it is stated that if low carbon economy in the city-region is to be achieved; climate change targets are to be met; the city-region's carbon footprint to be minimised; and the vision is to be delivered by 2035, transport within the city-region must undergo a significant step-change in terms of:

- An increase in the levels of active travel;
- The level and quality of public transport provision, increasing patronage and integration; and
- The scale of shift from private to public modes.

Schedule 4 – Public Transport Corridors and the Range of Potential Options for Public Transport Step-Change of the SDP identifies 14 public transport radial corridors across the city region (all of which converge on the city centre of Glasgow), as well as a range of potential broad-level strategic options and interventions which could meet the need for step-change. Specifically, corridor 14 includes the A81 corridor. As mentioned above the options for improving transport along this corridor are to improve / develop rail service frequency and improve core bus frequencies and routings. Neither Milngavie nor Bearsden were identified as strategic economic centres.

The Climate Change Act 2008 sets national targets for reductions in greenhouse gas emissions. The Act outlines that the net UK carbon account for the year 2050 should be at least 80% lower than the 1990 baseline and that CO₂ emissions should be reduced by at least 26% of their 1990 baseline levels. It is considered that each of the Options, through the promotion of public transport, will reduce the adverse environmental impacts of private car traffic, particularly harmful local emissions.

Prior to the Equality Act 2010, there were three separate public sector equality duties covering race, disability and gender. The Equality Act 2010 replaced these with a new single equality duty covering race, sex, disability, sexual orientation, religion and belief, age, gender reassignment and pregnancy and maternity. The new duty in the Equality Act 2010 came into force on 5 April 2011 and replaces all previous equality legislation including the Disability Discrimination Act 1995.

In the context of this study, such adjustments will be covered through Option 11 - 14 (Quality Bus Corridor), Option 25-26 (Bus Service Improvements) and Option 20, 23-24 (Enhanced Walking and Cycling), for example high access kerbs, shelters, tactile paving and information provision.

The EDC Joint Health Improvement Plan (2013-2016) sets out the commitment of EDC, East Dunbartonshire Community Health Partnership and partners to work together to improve the health and wellbeing of people living in East Dunbartonshire and to reduce health inequalities throughout the area. The relevant high level outcomes which the Options contribute to are as follows:

- Improve active travel infrastructure (all Options through the provision of sustainable transport and / or sustainable access measures);
- Improve access to training and employment opportunities (all Options through increased access to, and / or extension of, public transport provision);
- Increase community safety (all Options through the promotion of public transport); and
- Improve transport infrastructure to improve access to health, leisure services and employment (all Options).

The following general statements can be made in terms of overall policy integration:

- Do Minimum – minor / negligible impact on policy integration through the implementation of measures such as travel plans, segregated cycleway and sustainable travel policies which will encourage modal shift.

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- Packages 2, 3 and 5 promote sustainability Quality Bus measures, new rail stations, new bus services, improved active travel links and improved access to existing public transport facilities, all of which could encourage modal shift and assist in achieving a healthy, prosperous and inclusive society.

In addition, the options will contribute to the following wider Government policies:

- **Disability** – The design of Option 7 (new station at Allander) will be fully compliant with the Equality Act 2010 and will provide easy access to wheel chairs and push chairs, thus facilitating access for the mobility impaired, including the elderly and those with young children. Options 11 - 14 (Quality Bus Corridor), Options 25-26 (Bus Service Improvements) and Option 20, 23-24 (Enhanced Walking and Cycling) would be designed to take due cognisance of the Equality Act;
- **Health** – Active travel improvements will provide greater opportunities to access employment, education and recreational facilities without the need of a car and public transport. Further, the expected modal shift from car to active travel and public transport modes for journeys by local residents will provide greater opportunities for increased walking and cycling trips to reach public transport stops. In addition, the use of public transport (as opposed to cars) will reduce the adverse environmental impacts of traffic, particularly harmful local emissions, with an overall positive effect on health, albeit the impact of this may be negated in relation to Option 7 if parking at the proposed Allander Rail Station sites results in additional traffic on local roads;
- **Rural affairs** – The options do not reach rural areas and therefore can do very little to contribute to improve rural affairs or retaining rural communities;
- **Social exclusion** – Each of the options, fit in with policies to promote social inclusion, by enabling the socially deprived (particularly those with no access to a car) access to the public transport network. It is anticipated that the new shuttle bus option would perform best in this regard, by improving access to the public transport network for those outside a 10minute walk of a transport halt.

It can therefore be said that each of the Options has the potential to be supportive of national policies beyond transport.

8.8 Accessibility

Accessibility defines the ability of people and businesses to access goods, services, people and opportunities. STAG highlights four aspects of accessibility that need to be considered in relation to transport schemes, grouped under the headings of Community Accessibility and Comparative Accessibility. These are:

- Community Accessibility
 - Public transport network coverage; and
 - Access to local services.
- Comparative Accessibility
 - Distribution of impacts by people group; and
 - Distribution of impacts by location.

8.8.1 Community Accessibility

Community accessibility relates to the existing public transport network coverage and access to local services; both of these elements are reviewed below.

8.8.2 Public Transport Network Coverage

This is measured by the changes in the number of people with public transport access to key services and destinations.

Analysis of access to bus services (as shown in Chapter 3) showed that there are some sections of the study area that are located further than a 10 minute walk from a bus stop and as such have relatively poor access to the bus network. Furthermore, bus journey times do not compare favourably with car journey times in general and services are often unreliable due to a lack of bus priority along the A81 corridor and delays incurred on other parts of the network. Therefore, local residents have little incentive to switch to using the bus under the current situation.

While the study area contains a number of rail stations, and the frequency of the services is considered to be good, there are certain sections of the study area which are located further than a 10 minute walk from a rail station and as such are poorly connected. Existing services to access the rail stations, such as Mybus, are inflexible and often do not meet the needs of residents.

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Package 2 and 3 (and Package 5 by definition) aim to increase accessibility to public transport, with key benefits realised by those who do not have access to a private car and the socially disadvantaged. The proposals to implement Quality Bus Corridor measures and bus feeder services will enhance the level of accessibility to public transport services. The rail station at the Allander site would increase accessibility to the rail network for those currently outside a reasonable walking distance. Analysis of the Accession isochrones plots in conjunction with the Census (2011) data shows that the population within a 10 minute walking distance of the station site is 949. The Kilmardinny development would add up to 320 additional households to this catchment – based on the average household occupancy for the study area (2.45), this would increase the catchment within 10 minutes by 784 to 1,733 in total. Whilst this is significant, it is considerably less than the population catchment within 10 minutes of other stations in the study area, which is as follows:

- Bearsden (2,928);
- Milngavie (3,655) ;
- Hillfoot (3,398); and
- Westerton (6,774)

Overall, Packages 2, 3 and 5 will have a positive impact in improving access to key services and destinations via the public transport network.

Package 4 is expected to have a neutral impact on public transport network coverage owing to the fact that it contains only road measures.

8.8.3 Access to Local Services

The local accessibility criterion considers walking and cycling access to local activity centres and to public transport.

Package 2 contains proposals to enhance walking and cycling access through the implementation new walking and cycling links from residential areas to town centres, local services and rail stations.

Package 3, QBC and enhance bus service options, particularly the introduction of shuttle services and bus priority, will also be of benefit in improving access to local services. The overall impact on local accessibility is likely to be positive for Package 3 (and thus Package 5).

The impact of Package 4 is expected to be neutral as the road improvements are likely to be of more benefit to those wishing to access services located outside the study area.

8.8.4 Comparative Accessibility

The distribution of accessibility impacts is relevant in that it identifies the extent to which the proposals benefit certain social groups (i.e. by car availability, gender, age, employment status, mobility impairment, trip purpose) or geographical locations (i.e. regeneration areas, areas of multiple deprivation or poor public transport provision) most in need of access by public transport to essential services).

8.8.5 Distribution of Impacts by People Group

The Socio-Economic analysis undertaken in Chapter 3 examined a number of measures and reported that:

- Residents within the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow;
- Unemployment within the study area is relatively low;
- Employment within the study area is skewed towards highly skilled occupations and industries - the health, education and financial services are the largest employers;
- Workers within the EDC area enjoy above average level of wages;
- The study area experiences high levels of car ownership; and
- Most of the study area has been classified as having the lowest levels of deprivation in Scotland.

Package 2 aims to provide alternatives to the private car for short / local journeys which can be made by walking and cycling. The package will provide an enhanced walking and cycling environment with high quality surfacing, signage, street furniture, crossings and street lighting.

Package 3 seeks to tackle the problem of private car use by encouraging a modal shift towards public transport and sustainable modes of travel. As such the package proposes measures to improve accessibility to the public transport network. While this will enhance the level of accessibility for those without the use of a car, evidently existing car users will also be encouraged to leave their cars at home in favour of other modes.

Capabilities on project:
Transportation

Package 4 specifically targets those who will choose to remain in the private car by promoting a package of measures designed to improve journey times along the corridor and increase the level of safety on the road.

Package 5, as a combination of the two packages, will provide an overall package of benefits which will have the benefits for the whole spectrum of people groups located within the study area.

8.8.6 Distribution of Impacts by Location

The distribution of impacts is likely to be localised, rather than corridor-wide or strategic impacts, owing to the nature of the measures being proposed in all packages.

The benefits of Package 2 should radiate out from the town centres of Bearsden and Milngavie (and their rail stations). Naturally the benefits of the schemes will reduce towards the edge of the town, particularly for walking.

In Package 3, the provision of a new rail station at Allander would be of direct benefit to any residential development within the Kilmardinny masterplan area. It would also provide access to the rail network for those residing outside the development site, but within a reasonable walking distance of the station. The bus feeder services would provide an enhanced level of accessibility for residents of the housing areas located broadly within the study area, while increased parking and parking controls at the rail stations would enhance accessibility at those specific strategic locations. Bus priority will improve bus journey times and reliability thus improving area wide accessibility.

In Package 4, the junction improvements proposed Boclair Road, may have minor overall journey time savings for the corridor as a whole, but are more location-specific in their benefits. Similarly, proposals including lining measures to enforce/reduce speeds will be of benefit to specific accident 'hotspot' areas along the corridor.

Package 5 will therefore provide the widest distribution of impacts across the study area as it takes into account measures which incorporate both the areas surrounding the A81 Corridor, linking into measures located outside the immediate study area, and also the A81 itself.

8.9 Costs to Government

STAG outlines that it is essential that the likely net cost of a scheme from the public sector's point of view be identified. This will enable a comparison with the total benefits of the scheme in order to assess the overall value for money.

Costs to Government refer 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, revenues, and taxation impacts.

8.9.1 Capital Costs

Tables 9.9 to 9.12 in Section 9.5 provide outline capital cost estimates associated with each package of measures.

8.9.2 Operation and Maintenance Costs

A number of the schemes identified in the packages will result in an overall increase in operational and maintenance costs. Measures such as the bus feeder services would require an ongoing level of subsidy to sustain their operation. Further detailed work on the specification of the services would be required to ascertain the level of support needed. Parking control measures in the town centres would also include operational costs, but further work would again be required to specify the costs. Other measures which would give rise to increase operational and maintenance costs include longer trains, and the rail halt at Kilmardinny.

8.10 Deliverability and Public Acceptability

Deliverability has been a key consideration during the development of the packages. Clearly, any package which cannot be realistically delivered cannot be taken forward. In the preceding chapters a number of potential options have been excluded from further investigation as they were not considered deliverable noting existing and future constraints.

Furthermore, the implementation of the preferred package should involve minimum disruption to the transport network and the travelling public. It should also be compatible with potential long-term development strategies within the study area. Construction and operational risks should also be minimised.

Package 2: Active Travel Modes

In general terms, each of the constituent options associated with this package are considered to be both deliverable and publically acceptable. However, it is noted that the deliverability, and to a lesser extent public acceptability, for Option 23 will depend on the nature and scope of the scheme. Routing active travel schemes along pedestrian desire lines may not always be possible due to barriers such as buildings and roads. Significant deviation from desire lines can reduce schemes effectiveness.

Capabilities on project:
Transportation

Package 3: Public Transport and Access Modes

Provision of a rail station and associated parking (circa 150 spaces)

AECOM has undertaken a high level review of the operational and engineering feasibility of a new rail station at Allander - this is contained within Appendix B of this report. In summary there are no apparent engineering barriers which could not be overcome to deliver a rail station at Allander. However the study did not undertake any ground investigation, topographical survey, flooding / drainage and environmental investigation, beyond a desk top study.

The review has been based on the assumption that the construction of the station will not require any new sections of double track, beyond the existing arrangement on the line and that only one platform will be required. From an operational perspective, for a service to operate reliably an adjustment of two to three minutes is needed to the times of trains from Milngavie towards Glasgow at Westerton. Without this adjustment resilience on the line will be reduced. Feedback from the stakeholder consultation exercise highlighted that often an outbound service from Milngavie is delayed by an inbound train passing along the single track section of line south of Milngavie.

The timetable adjustment may have a knock-on effect across the greater Glasgow railway network. More detailed work, including in-depth discussions with Network Rail, is required to confirm the feasibility/acceptability of adjusting the timetable. If this cannot be achieved, the track would require doubling in order to maintain levels of reliability, which will clearly have significant cost implications. It is likely that adjustments to the timetables may only be permitted if there are no disbenefits to the rail network. The proposal would need to be taken forward through Network Rail's GRIP process.

Noting the operational uncertainties, which should be investigated further, doubling the track, may be a preferable solution from an operational perspective. This may receive more external support as it would not require timetable changes. In 2003 Atkins undertook a study which considered that costs of a new station at Allander, inclusive of double tracking. The overall cost was £9,000,000, exclusive of optimism bias (2003 prices) to maintain existing service resilience / turn round times, updating this value to 2014 prices give an approximate cost of £23million inclusive of optimism bias. A single track / single platform solution is estimated at £5,882,564 (inclusive of optimism bias). These values are exclusive of any design and investigation fees, which may be significant.

The single and double track options both have affordability issues - the scheme had previously been investigated assuming developer contributions would be available from Kilmardinny. As discussed previously developer contributions have now been set by a Scottish Government appointed reporter and did not include any provisions for a rail facility. Reviewing the proposed LDP and existing Local Plan 2 there are no proposed developments of sufficient size within the vicinity of the A81 which developed contributions for the rail station could be reasonably sought. Therefore, funding would need to be provided by public sector agencies, namely EDC/SPT. Given the existing pressures on public sector finances funding the scheme, including the design and development costs is likely to be challenging.

Generally public acceptability of this option is considered to be high; there has been significant support / campaigning for a rail facility at Allander. However, once Kilmardinny is further developed there may be concern from future residents regarding noise, light, traffic and visual pollution associated with the construction and operation of a rail station.

Land has been protected, by the report, within the masterplan permission for a rail facility at Allander, therefore even with the full development of Kilmardinny land will remain available for a station. As discussed in Chapter 2 of this report Scottish Planning Policy states that funding partners must be identified before rail proposals are included within a development plan and prior to detailed technical assessment and design work being undertaken. At present there are a number of factors that are limiting the deliverability of this option; further investigation beyond the scope of this study is required.

Notwithstanding the above, the deliverability and economic viability of a rail station at Allander has still to be fully established in line with Scottish Planning Policy. In the absence of demand forecasting it is difficult to determine whether the scheme would have a positive business case and provide value for money given the likely capital investment costs.

Quality Bus Corridor Options

- Bus priority / congestion bypasses at key points on the network
- Provision of real time information at stops along the route
- Improvements to bus stops and shelters
- Bus detection included within SCOOT

In general the options for a QBC are considered to be deliverable, all are within the existing road environment and do not encroach on any additional land. The measures have minimal visual intrusion and implementation is unlikely to face significant opposition. However, if options such as bus priority remove parking or increase congestion for general traffic there may be a level of public criticism. It should be noted that due to carriageway constraints full deliverability of the Bearsway may limited the deliverability of bus priority at constrained parts of the network.

Capabilities on project:
Transportation

Bus Service Improvement Options

Most bus services in the area are commercial operations - EDC and SPT have limited influence over service coverage, frequency and cost. Generally if the demand is sufficient commercial operators will introduce appropriate service provision. Where demand for a service is significant but not sufficient to make it commercially viable SPT can financially support services. The ability to do this is constrained by many factors, particularly budgetary and that SPT cannot legally support a service which can be deemed to be competing with a commercial service.

Service provision along the A81 has dropped in recent years, which will most likely have been driven by market pressures. If demand is sufficient to make higher frequency of service viable it is likely that the commercial operator would respond to the demand. It should be noted that most services commence and terminate outside of EDC; service providers will consider demand across a route not just in East Dunbartonshire. It is also noted from the stakeholder consultation that the relative journey times between bus and rail into Glasgow significantly reduces the attractiveness of the bus. The bus from Bearsden / Milngavie to Glasgow will not be able to compete with rail therefore it is unlikely that patronage within EDC will rise sufficiently to justify higher frequency.

An option for the client group to ensure that service frequency improves is by entering into a Statutory Quality Partnership (SQP) agreement with bus operators. SQP legislation permits minimum service frequencies to be set.

SPT would be unable to provide additional services from Bearsden / Milngavie to Glasgow as it would illegally compete with the commercial service. Therefore, improved service frequency is not considered to be deliverable, however EDC and SPT can lobby commercial operators to increase service provision.

A shuttle service within the local area of Bearsden and Milngavie is unlikely to generate sufficient demand to encourage commercial operators to run the service. SPT can support services such as this where a social need is identified, demand is sufficient, it is affordable and there is a realistic chance of becoming commercially viable. A review of the accessibility maps in Chapter 3 shows that most properties within Bearsden and Milngavie are within a 10 minute walk of a bus service which serves a town centre and rail station. Those areas which are further away from a bus stop are unlikely to be penetrated further by shuttle service. Therefore, the shuttle service may not improve accessibility significantly beyond existing service provision. For this reason the level of demand may not be sufficient to justify the implementation of publically funded service. Other issues arise with the legality of a supported service, generally most areas are served (within a reasonable walk) by a commercial service, SPT are not permitted to operate a service which may be in competition with commercial services. It may be argued that a shuttle service would double up significantly on existing commercial provision which may prevent its implementation. Finally a new shuttle service would require the installation of new bus stops, predominantly in residential areas which have historically have had no bus provision. The location of bus stops can be contentious and generate local objection / concern, this may occur if this scheme was implemented.

Package 4: Roads

The impact of each option on air quality has been considered below;

- Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road) From an engineering perspective this option is considered to be feasible and deliverable. Operational issues are likely to arise from this option which may limit its deliverability. Diversion of traffic onto a gyratory will lead to increased traffic levels on Roman Drive and Roman Road, including HGVs. The gyratory will require the negotiation of two priority junctions (currently) and it is unclear whether capacity will be sufficient to meet the demand. Constraints at the Roman Drive / Roman Road junction, particularly the presence of driveways may also be an issue. Further investigation, beyond the scope of this study, is required to determine the traffic impacts of the gyratory system. The deliverability of the scheme will be unclear until this work has been undertaken. Consideration should also be given to the schemes impact on neighbouring junctions to determine its deliverability.

The Do Minimum includes the "Bearsway" segregated cycle lane from Milngavie to Kessington, Bearsden; it will pass through the section of the A81 which forms part of the gyratory. It is unclear if it is envisaged that it will be segregated or not in this area, which is often known to be very busy. If it is segregated it will narrow the carriageway on the approaches to the junctions from Hillfoot to Kessington, which is the busiest area of the A81 in Bearsden. The scheme could exacerbate this, with or without the gyratory system. It is unclear if both schemes are compatible (deliverable) with one another.

It is likely this scheme will give rise to significant concerns from local residents, particularly those on Roman Drive and Roman Road where traffic levels, noise and pollution will inevitably increase. The scheme is likely to provide a benefits and disbenefits to drivers depending on their routing. Therefore this scheme may generate a mixture of views from drivers. Those drivers who experience disbenefits may choose to rat run through residential areas, particularly the Kessington area where this is already a perceived problem. As a result the scheme may be negatively viewed by local residents.

Capabilities on project:
Transportation

Overall, it is anticipated that the scheme will be deliverable although there are a number of challenges which would need to be overcome and it is unclear whether the benefits will outweigh the disbenefits. Overall, it is considered that there are likely to be issues regarding the public acceptability of the scheme.

Other Roads Options

- Carriageway marking / localised narrowing
- Place making initiatives to enhance town centre environments

These schemes are deliverable within the existing carriageway and generally unlikely to face significant public opposition. Speed reduction measures are not fully accepted by all members of the public; however these measures will be horizontal measures which are generally more acceptable to the general public.

Package 5: Combined Active Travel, Public Transport and Road

This package reflects the deliverability of Packages 2, 3 and 4.

8.11 Summary of Appraisal

This Chapter has considered the key elements of the appraisal, summarising the operational aspects and the performance of the appraised packages against the Government's five key objectives of Environment, Safety, Economy, Integration, and Accessibility and Social Inclusion. In addition, consideration has been given to the likely Costs to Government and Deliverability and Public Acceptability.

A summary of the appraisal of each option is shown in Table 8.20 below.

Capabilities on project:
Transportation

Table 8.20 Technical Deliverability Summary

Scheme Type	Option No.	Scheme	Environment									Safety			Integration				Economy			Access and Social Inclusion (Score)	Deliverability (Score)	TPO
			Noise and Vibration	Air Quality	Water Quality, Flooding and Drainage	Biodiversity	Geology	Agriculture and Soil	Visual Amenity	Cultural Heritage	Score	Accident	Security	Score	Transport	Land Use	Policy	Score	Cost	Journey Time Saving	Score			
Active Travel	19	Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station	0	+1	0	0	0	0	0	-1	0	0	+1	+1	+2	+1	+3	+2	-1	0	-1	+1	+1	+2
	20	Completion of the cycle link between Mains Estate and Allander Leisure Centre	0	+1	0	0	0	0	0	0	0	-1	0	-1	+1	+2	+2	+2	-1	0	-1	+2	+1	+2
	22	Secure cycle storage facilities built at rail stations and in town centres	0	+1	0	0	0	0	-1	-1	0	0	+2	+1	+2	+1	+3	+2	-1	0	-1	+2	+2	+1
	23	Development of a local network of walking and cycling paths which serve desire lines and converge on town centres, and stations	0	+1	0	0	0	0	-1	0	0	+1	+2	+2	+2	+2	+2	+2	-2	0	-1	+2	+1	+2
	24	Development of a high quality path which links the Kilmardinny development and Milngavie station	0	+1	0	0	0	0	0	0	0	0	0	0	+1	+2	+2	+2	-2	-1	-2	+2	+2	+2
Public Transport and Access	7	Provision of a rail station and associated parking (circa 150 spaces)	-1	+1	-1	-1	-1	0	-1	0	-1	0	0	0	+2	+2	+1	+2	-3	+2	-1	+3	-2	+2
	10	Bus priority / congestion bypasses at key points on the network	0	+2	0	0	0	0	-1	-1	0	+1	+1	+1	+1	0	+1	+1	-2	+1	0	+2	+1	+1
	11	Installation of RTP1 at Bus Stpos	0	0	0	0	0	0	0	0	0	0	0	0	+2	+1	+2	+2	-2	0	-1	+2	-1	+1

Capabilities on project:
Transportation

Scheme Type	Option No.	Scheme	Environment									Safety			Integration				Economy			Access and Social Inclusion (Score)	Deliverability (Score)	TPO
			Noise and Vibration	Air Quality	Water Quality, Flooding and Drainage	Biodiversity	Geology	Agriculture and Soil	Visual Amenity	Cultural Heritage	Score	Accident	Security	Score	Transport	Land Use	Policy	Score	Cost	Journey Time Saving	Score			
Public Transport and Access	12	Improvements to bus stops and shelters	0	0	0	0	0	0	0	0	0	0	+1	+1	+1	0	+2	+1	-1	0	-1	+1	+3	+1
	14	Bus detection included within SCOOT	+1	0	0	0	0	0	0	0	0	0	0	0	+1	0	+1	+1	-1	-1	-1	+1	+3	+1
	25	New shuttle bus connecting residential areas to stations	-1	+1	0	0	0	0	0	0	0	0	+2	+1	+2	+2	+2	+1	-3	0	-2	+2	-1	+1
	26	Increase the frequency of bus services in the corridor	-1	+1	0	0	0	0	0	0	0	0	+1	+1	+1	+1	+1	+1	-2	0	-1	+1	-1	+1
Roads	27	Implementation of a gyratory at the A81/ Roman Rd / Roman Drive junction (inc. ban of right turn from Boclair Rd)	-2	-1	0	0	0	0	-2	0	-1	-1	0	-1	-1	+1	+1	0	-2	-2	-2	+1	-2	+1
	29	Carriageway marking / localised narrowing	0	0	0	0	0	0	0	0	0	+1	0	+1	0	0	+2	+1	-1	0	-1	+1	+3	+1
	31	Place making initiatives to enhance town centre environments	0	0	0	0	0	0	+2	+1	0	+1	+1	+1	+1	+1	+2	+1	-1	-1	-1	+1	+2	+1

Capabilities on project:
Transportation

None of the packages are considered to have a significantly detrimental impact on the environment, with 'Minor Negative to Moderate Negative. Furthermore, the impacts upon the environment could be mitigated with appropriate measures. The two options which may have the greatest impact on the environment is the rail station at Allander and the gyratory system at Boclair Road. Although the impact of these measures will not be fully understood until a detail design exercise is undertaken, it is considered highly likely that there will be some negative impacts at a local level. Notwithstanding this it is considered highly likely that most impacts could be mitigated and reduced. Overall, most of the options are designed to promote modal shift away from the private car onto public transport, the reduction of vehicle trips will help improve air quality. Although it is noted that the provision of bus priority measures and / or segregated cycleways will constrain the roads this may increase delay and as a result have a detrimental impact on air quality and noise pollution.

Safety is considered to improve under the packages, with a possible reduction in accidents as a result of a modal shift towards public transport, as well as the road options to reduce/enforce speeds. Notwithstanding this, the gyratory Option 27 may present road safety issues, notably concerning traffic queuing into preceding junctions, lane designations and impacts on neighbouring junctions. Security will generally increase as a result of enhanced active travel and public transport facilities.

The costs and expected impact on journey time attributable to each option have been detailed in Table 8.15 to 8.19. It is noted that in the absence of journey time data for the corridor journey time savings could not be quantified accurately. Generally most options have a beneficial impact on journey times, although the rail station at Allander option will increase journey times to and from Milngavie and constraining the existing carriageway either by implementation of the Bearsway or on-road bus priority may increase overall congestion for general traffic therefore journey times for private car journeys may increase.

The options presented serve to meet integration objectives, through promoting integration between modes and land-use integration, and also integrating well with other Government policies relating to key objectives such as health, the economy, disability and inclusion. Accessibility will be improved through reduced journey times for public transport modes, as well as the provision of an enhanced public transport network covering bus and rail modes and also sustainable modes such as walking and cycling. The packages are considered to be broadly deliverable and acceptable with the general public, although options 3,4, 13 and 27 may generate some public objection, especially from neighbouring properties. Option 24 may also encourage rat running, already a known issue in Bearsden, resulting in further public concern / objection.

With respect to the rail station and parking at Allander, previous advice in 2008 stated "that the scheme should only be progressed in conjunction with development of site". As stated earlier in this report the ability to secure developer contributions from the Kilmardinny is no longer possible. Therefore the scheme may not be financial viable, however the client group may wish to pursue other funding streams. As stated above there a number of operational challenges relating to the scheme on both the local and wider rail network, which would be costly to overcome. It is outside the scope of this study to undertake detailed network modelling, cost benefit analyses, economic appraisal and demand forecasting. High cost / impact schemes, particularly the rail station option, should be subjected to these works to ensure they are most appropriate options for development.

8.12 STAG Part 2 Package Refinement

Following the STAG Part 2 appraisal, some of the proposed options have been excluded from further investigation - these are:

11) Provision of real time information at stops along the route

This option offers significant benefits to public transport passengers and thus will attract patronage however it is only truly beneficial if taken forward as a regional scheme. Locally it is unlikely to be cost effective. It is understood SPT is currently investigating real time bus passenger information across the region, such a scheme would be beneficial.

25) New shuttle bus connecting residential areas to stations

There are merits in this option however; it is unlikely to be commercially viable as most of the areas which would be serviced are already served by or close to existing bus services. With the exception of small pockets of residences most areas of Bearsden and Milngavie are within a reasonable walk of a bus stop which has service links to rail stations and town centres. SPT can support services which serve a social need but may not be commercially viable; however it is unlikely that this could be justified given the level of existing service in the area. In addition, generally SPT support services which have a realistic chance of generating enough patronage for a future commercial service. Again given the existing provision in the area this is considered unlikely. SPT cannot use funding to compete with commercial services. Finally, SPT has a limited budget to fund non-commercial service and noting the above this option is not considered to have sufficient merit to justify further investigation.

Capabilities on project:
Transportation

26) Increase frequency of bus services in the corridor

Bus service provision is generally subject to the commercial market forces and client group are limited to lobbying commercial operators to increase services. It is anticipated that if there was a commercial justification for delivering an increased service then this would have already been done.

27) Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road)

This option has been excluded from further investigation primarily due to concerns over traffic operations, road safety and the local environment. Furthermore it did not generally perform as well as other options against the Transport Planning Objectives. A detailed traffic modelling exercise may identify that this option is beneficial to traffic operations of the local network, but this exercise is outside the scope of works. Unlike some of the other options which also require work beyond the scope of the work, the benefits to accessibility, modal shift and integration are more apparent thus merit inclusion.

The rail station at Allander should be subject to further detailed consideration, primarily due to its anticipated benefits to accessibility, integration, social inclusion and modal shift. This option also addresses a number of the Transport Planning Objectives and will help reduce the impact of increased traffic generated by the Kilmardinny development. Therefore, as discussed above it is recommended that the client group undertake detailed operational modelling, cost benefit analysis, detailed economic appraisal and demand forecasting to ensure this is an appropriate and deliverable solution. This will need to be undertaken in line with Network Rail's GRIP process. Potentially this option may only be deliverable by double tracking the existing section of single track on the branch line between Westerton and Milngavie. Inevitably this would increase costs significantly.

Most of the options are compatible with one another, however, it is anticipated that the Bearsway (which is a two way cycle facility), Bus Improvement Fund (BIF) projects and bus priority / congestion bypasses at key points on the network may not be fully compatible. The Bus Improvement Fund projects and bus priority / congestion bypasses at key points on the network are very similar in scope and compliment on another; however both may not be compatible with the Bearsway.

The compatibility issue particularly arises at constrained / busy sections of the network where traffic levels and parking demands are high and the carriageway space is limited. It is proposed that the Bearsway, although still subject to detailed design, will pass through along the A81 narrowing the existing carriageway and possibly increasing traffic congestion. Of particular concern are the southern movements beyond Hillfoot towards Kessington. Although not committed it is known there is an ambition to extend the "Bearsway" south beyond Hillfoot, the nature of this extension is still under consideration by the Council. Notwithstanding this, SPT has advised AECOM that this area would benefit from bus priority due to the delay and reduced journey time reliability cause by the congestion. It is highly unlikely that the network could surrender sufficient space for both dedicated facilities. Therefore, the following options may be available:

- Full implementation of the Bearsway without any bus priority through constrained parts of the network;
- Completion of the Bearsway to Hillfoot with on-road/with traffic cycling beyond; or
- Implementation of bus priority which also permits cycling from Hillfoot to Kessington.

Each scheme will provide benefits to the local area - therefore it is recommended that a compromised option is considered, which could include the following:

- Segregated two cycleway (Bearsway) between Milngavie and Hillfoot;
- Southbound bus lane between Hillfoot and Kessington, which southbound cycling;
- A crossing at Hillfoot to enable northbound cyclists to access the Bearsway; and
- Northbound shared surface or on-road cycle lane between Kessington and Hillfoot.

This would improve cycle and bus facilities in the area, but inevitably this will impact the ambitions of the Bearsway which is to provide a safe facility for inexperienced and less confident cyclists. Under the compromised scheme cyclist would share space with vehicles. Furthermore, the requirement to cross over the A81 at Hillfoot for northbound cyclists may limit Bearsway usage. In addition, any loss of carriageway space will reduce network capacity and increase delay and congestion. The negative effects of increased congestion on bus journey times and reliability may negate the benefits of any bus priority. Consideration needs to be given regarding the relative benefits of bus journey time savings, a saving of two minutes is only reducing the journey time between Milngavie and Glasgow by 4-5%, not considering any additional delay associated with increased congestion. It is understood that the most significant delay experienced by buses between the study area and Glasgow is outside the Council area, therefore the benefits of bus priority schemes in East Dunbartonshire are limited. Small journey time savings may not encourage significant modal shift.

Capabilities on project:
Transportation

Notwithstanding the above, if the schemes identified for BIF funding are not taken forward in full, the funding received by the Council may need to be returned.

Overall it is recommended that the both the Bearsway, bus priority and a combined option are subject to a detailed design exercise which includes, traffic modelling, demand forecast and cost benefit analysis to determine which option offers the greatest benefit.

It should be noted with the exclusion of Option 27 the remaining options of Package 4 Roads have been amalgamated into Package 3 as improvements to public realms and vehicle speed reductions are complimentary to public transport and access.

The options recommended for further consideration, in addition to the Do Minimum option listed below; are contained within Table 8.21

Package 1 (Do Minimum)

- Parking charges and waiting restrictions at Milngavie Town Centre to prevent rail users from using parking earmarked for town centre retail;
- Localised improvements associated with the Kilmardinny development, with developer contributions to support these improvements;
- Kessington Hub to promote interchange between walking, cycling and public transport travel and make Kessington more accessible for all users;
- Implementation of cycle corridor with Phase 1 from Burnbrae Roundabout to Hillfoot and Phase 2 from Hillfoot to Kessington (may not be compatible with Option 10 - Bus priority / congestion bypasses at key points on the network);
- Monitoring and maintenance of the Council's core path network in line with the Core Path Plan; and
- Signing, lining and general maintenance of the road network, consistent with the future maintenance schedule.

Table 8.21 Refined Options after STAG 2

Package	Option	Component schemes
2	Enhanced Walking and Cycling	<p>19) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station</p> <p>20) Completion of the cycle link between Mains Estate and Allander Leisure Centre</p> <p>22) Secure cycle storage facilities built at rail stations and in town centres</p> <p>23) Development of a local network of walking and cycling paths which serve desire lines and converge on town centres, and stations</p> <p>24) Development of a high quality path which links the Kilmardinny development and Milngavie station</p>
3	New Rail Station at Allander	7) Provision of a rail station and associated parking (circa 150 spaces)
	Quality Bus Corridor	<p>10) Bus priority / congestion bypasses at key points on the network (not compatible with Do Minimum cycleway option)</p> <p>12) Improvements to bus stops and shelters</p> <p>14) Bus detection included within SCOOT</p>

Capabilities on project:
Transportation

Package	Option	Component schemes
	Road Options to Enforce / Reduce Speeds and Enhance Appeal of Sustainable Travel	29) Carriageway marking / localised narrowing 31) Place making initiatives to enhance town centre environments

The refinement of the packages has resulted in the package costs being altered. The capital cost of implementing of the packages is as follows in Table 8.22.

Table 8.22 Refined Options Costs

Package	Option	Component schemes	Costs with Optimism Bias
2	Enhanced Walking and Cycling	19) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station	£10,000
		20) Completion of the cycle link between Mains Estate and Allander Leisure Centre	£46,800
		22) Secure cycle storage facilities built at rail stations and in town centres	£86,400
		23) Development of a local network of walking and cycling paths which serve desire lines and converge on town centres, and stations	£540,000
		24) Development of a high quality path which links the Kilmardinny development and Milngavie station	£720,000
		Total	£1,403,200
3	New Rail Station at Allander	7) Provision of a rail station and associated parking (circa 150 spaces)	Single Track £5,882,564
			Double Track £19,255,680

Capabilities on project:
Transportation

Package	Option	Component schemes	Costs with Optimism Bias
	Quality Bus Corridor	10) Bus priority / congestion bypasses at key points on the network (not compatible with Do Minimum cycleway option)	£200,000
		12) Improvements to bus stops and shelters	£316,800
		14) Bus detection included within SCOOT	£3,000
	Road Options to Enforce / Reduce Speeds and Enhance Appeal of Sustainable Travel	29) Carriageway marking / localised narrowing	£36,000
		31) Place making initiatives to enhance town centre environments	£129,600
		Total With Single Track Station	£6,567,964
		Total With Double Track Station	£19,941,080
Package 5 (Package 2+3)	Total With Single Track Station		£7,971,164
	Total With Double Track Station		£21,344,280

8.13 Inter-dependencies

This report has identified that there is a key interface between the Bearsway cycle proposals for the A81 corridor (included under the Do Minimum) and the QBC proposals in Package 3 - carriageway constraints mean that the potential for bus priority will be limited by the extent to which the Bearsway proposals utilise the available carriageway. In addition, some of the schemes would contribute towards the same objectives – for example, options relating to enhanced walking and cycling to existing stations and the new rail station at Allander would both support the Transport Planning Objective relating to improving access to the public transport network. Notwithstanding this, it is considered that these schemes are not mutually exclusive and that benefit would be largely incremental if they were to be delivered in conjunction with each other.

9 Monitoring and Evaluation

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9 Monitoring and Evaluation

9.1 Introduction

The Scottish Government requires monitoring and evaluation to be undertaken and documented for any proposal for which it provides funding or approval.

STAG requires that a new project or strategy be subject to planned evaluation and monitoring, in addition to regular revalidation throughout its development.

Monitoring is an on-going process of watching over the performance of a project identifying problems as these arise and taking appropriate action, whilst Evaluation is used for specific, post-implementation events, designed to assess the project performance against established objectives and to provide in-depth diagnosis of successes as well as deficiencies. Therefore, by gathering and interpreting information, monitoring and evaluation will demonstrate how the project or strategy performs against its objectives, identify any deficiencies and allow adjustments to be made.

Soon after implementation, the performance of the scheme should be assessed against the specified objectives. Recognising that certain projects require time before the full benefits can be realised, a further evaluation is required sometime after implementation.

In addition, regular monitoring of the scheme is essential against specified Key Performance Indicators (KPIs) to assess the ongoing effectiveness of the overall strategy and individual schemes.

This Chapter describes the measures which may be put in place by EDC to meet the requirements of the STAG with respect to evaluation and monitoring. An indicative monitoring process is indicated in Figure 9.1, on the following page.

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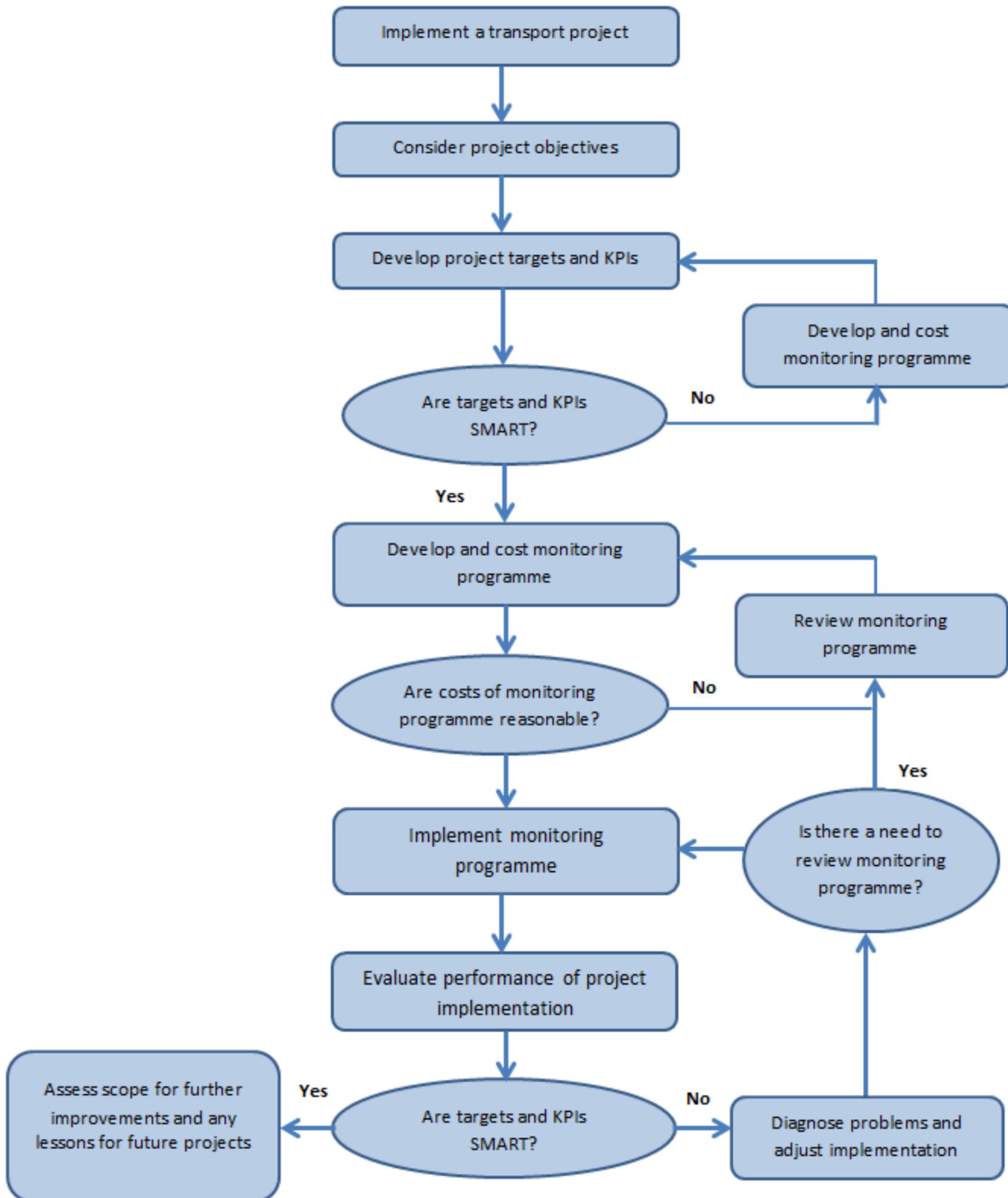


Figure 9.1 - Indicative Monitoring Process

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9.2 Objectives

9.2.1 Introduction

The objectives for the study are described in Chapter 5 of this report. The specific project objectives have been derived from a range of national and local policies. The project objectives have also been developed to address the problems in the area and take on board the aspirations of stakeholders.

9.2.2 Transport Planning Objectives

The specific Transport Planning Objectives developed for the study, and against which the various proposals will be evaluated and monitored, are as follows:

- Promote modal shift to sustainable transport for trips (particularly commuting) from or to the study area.
- Improve access to the public transport network, particularly for the first and last miles of journeys.
- Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.
- Improve bus journey times and journey time reliability on the A81 corridor.
- Development of a transport networks that facilities and complements local economic development, contributing towards the sustainable economic growth of the study area.
- Delivery of a transport network that supports healthy lifestyles.
- Delivery of a transport network that enhances local air quality.
- Development of an integrated transport network, including co-ordination between modes and increased connectivity between active travel infrastructure and public transport.
- Provision of a transport network that improves safety and security across all modes of transport.

9.3 Base Case

It is considered premature to be prescriptive in terms of the establishment of the collection and organisation of the data that will provide the Base Case. It is anticipated that this will be developed and agreed with EDC, Transport Scotland, SPT, Network Rail and bus operators, as appropriate, during the period immediately prior to completion / operation of each individual element of the preferred Option.

It is likely that the baseline data may include, but will not necessarily be limited to:

- Data on noise, water quality, air quality, ecology etc;
- Pedestrian, cyclist and public transport activity along sections of the study area which will be affected by the proposals;
- Junction performance, queue lengths, etc at critical locations;
- Mode choice surveys; and
- Safety records.

It will be important to establish through discussions with other organisations (for example the neighbouring local authorities (Glasgow City Council and North Lanarkshire Council), train and bus operators) what information is available as part of their regular data gathering functions at that time, to avoid incurring additional cost and to limit the collection of new information to that which is strictly necessary to establish performance against scheme objectives.

It is also noted that it may be necessary to obtain some baseline data prior to start of construction to be certain that construction activities do not adversely impact the validity of any changes measured.

9.4 Project Development, Procurement and Construction

9.4.1 Project Validation

It is possible that circumstances may change within the time required for scheme development, approval and construction, which could affect the assumptions made regarding the proposals. During this time it will be necessary to keep under review the planning objectives, taking into account any changes in the underlying transport situation.

9.4.2 Cost and Revenue and Programme Monitoring

It is recommended that a management team comprising various advisors be appointed to manage the process of monitoring cost and revenue and programme issues throughout the development and construction options to be taken forward. The team will thereby evaluate any potential for changes in project costs and associated risks.

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9.5 Operations

9.5.1 Process Evaluation

Evaluations are specific post-implementation events designed to identify whether:

- A project has performed as intended (or under or beyond expectations);
- Established objectives have been achieved (fully or partially, and the reasons for any failures); and
- The project continues to represent value for money (also considering actual cost budget).

The Process Evaluation is conducted straight after the implementation. It will draw lessons for on-going implementation and for the design, management and implementation of future projects.

For the reasons given above with respect to Base Case data, it is not possible at this stage to be specific about the nature of the process evaluation. It seems likely at this stage that there will be a need to provide data which will measure changes in the baseline parameters mentioned above such as various environmental parameters, public transport passenger counts, mode choice surveys and junction performance.

Table 9.1, below, summarises a possible example which might be employed as the basis for the process evaluation:

Table 9.1 Evaluation Performance Indicators

Criteria	Performance indicator/measure	Performance target	Source of indicator	Monitoring method and frequency
Costs	Proportion of actual costs over budget	- X% of budget exceedance	Project costs	Budget and cost comparison – after implementation
	Proportion of budget allocated to EDC which was actually spent within timescale	- X% budget spent by completion	Project costs by time	Project costs by time – after implementation
Views	The extent to which (stakeholder, public) consultation influenced outcomes	Significant number of views taken into account	Consultation process	Qualitative examination of consultation, by group
	Stakeholder's views on how well the project was designed and implemented	Overall positive views	Stakeholder interviews	Qualitative survey results by group – after implementation
Transport	The extent to which model results reflect reality	- Traffic diversion - Congestion - Delays	CSTM12 model and traffic surveys	Comparison between modelled and actual – after implementation and again one year later
Local economy	Actual impact on economic activity	- Employment - Commerce -	Before and after surveys	Comparison between before and one year after implementation, by location and activity

Based upon the planning objectives discussed in Section 6.2, above, the following performance indicators could be appropriate:

- Traffic congestion:

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- Reduce traffic volume on key routes;
- Reduce traffic delays; and
- Achieve a volume and mix of traffic within the study area, in line with the existing and future road hierarchy.
- Accessibility:
 - Improve access to public transport network; and
 - Improve access to employment opportunities.

Table 9.2 summarises potential performance indicators and a possible monitoring programme.

Table 9.2 Potential Performance Indicators and Possible Monitoring Programme

Criteria	Performance indicator	Definition of indicator	Performance target	Source of indicator/target	Monitoring method and frequency
Accessibility	Access to sustainable transport network	<ul style="list-style-type: none"> - Percentage of population within 400 metres walk distance from a public transport stop/service - Public transport use 	<ul style="list-style-type: none"> - X% by 2024 - X million per year by 2024 	<ul style="list-style-type: none"> - Population (from Scottish Census) 	<ul style="list-style-type: none"> - Yearly population and distribution updates by ward - Continuous monitoring of bus and train ticketing - Ongoing public transport / cycle user surveys
	Access to employment opportunities	<ul style="list-style-type: none"> - Transport connections to employment and regeneration areas 	<ul style="list-style-type: none"> - X% improvement in Geographic Access To Services by 2024 - X% car use for travel to work (and school) Data from various sources. Census data. 	<ul style="list-style-type: none"> - SIMD Geographic Access To Services - Travel to Work (and School) Data from various sources. Census data. 	<ul style="list-style-type: none"> - Ongoing review of SIMD data, Travel to Work Data, Census data, as available.
Traffic Congestion	Traffic volumes - key routes	<ul style="list-style-type: none"> - Average AM/PM, daily, weekly, monthly and annual traffic volumes on key routes - Growth in car traffic 	<ul style="list-style-type: none"> - Volume of traffic in line with existing and future road hierarchy 	<ul style="list-style-type: none"> - Traffic flow / volume surveys 	<ul style="list-style-type: none"> - Ongoing review of permanent/ temporary site automatic/manual traffic count programme - EDC roads standards manual

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Criteria	Performance indicator	Definition of indicator	Performance target	Source of indicator/target	Monitoring method and frequency
	Journey times	- Changes in journey times by car and road-based public transport	- Reduction in journey time through study area by 2024	- Journey time surveys	- Journey time surveys every 2 years
Environmental Impact	Air Quality	- Changes in key indicators of air quality	- Meet or exceed the air quality management targets adopted by EDC - X% by 2024	- Air quality monitoring	- Ongoing review of EDC air quality monitoring programme

Before the monitoring programme is agreed upon, consideration must be given to the actual availability of the data, practicalities from collecting new data, its format, whether it will properly reflect the indicators proposed and the cost of obtaining it. Indicators and targets should be subject to regular reviews to ensure that they continue to properly reflect the performance of the project against its objectives, throughout the monitoring period.

9.6 Summary

This Chapter has set out the project objectives, together with actions to be taken during the various phases from scheme development through to operation to meet the requirements of the STAG guidance with respect to evaluation and monitoring.

The following Chapter outlines the key risks and uncertainties relating to the study.

10 Risk and Uncertainty

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10 Risk and Uncertainty

10.1 Introduction

Risk management strategies should be adopted throughout the appraisal and implementation stages of proposals in order to ensure that steps have been taken to prevent and mitigate risks and uncertainties. Once reliable estimates of relevant costs are built up, risks are explicitly assessed and quantified, and work to minimise project-specific risks is undertaken, any optimism bias can be reduced.

Once risk factors have been explicitly quantified and valued, adjustment should be made to the costs and benefits in order to calculate risk-adjusted “expected values”. An expected value provides a single value for the expected impact of all risks. However, in general, 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.

10.2 Optimism Bias

Experience has demonstrated a tendency for insufficient contingency costs or programme time to be made; a phenomenon known as Optimism Bias. The economic analysis in this report has been undertaken using the standard optimism bias uplift of 44%. Should the preferred Option be progressed towards construction, a plan for the management and mitigation of risk will require to be adopted. This Chapter describes our recommended approach.

10.3 Risk Management Process

STAG states that all risks and uncertainties associated with an Option need to be fully identified and accounted for in the appraisal process. As stated in the HM Treasury Green Book (2003)¹⁰, in appraisals it is always likely there is some difference between what is expected and what actually happens. This is the consequence of biases unwittingly inherent in the appraisal process, and risks and uncertainties that materialise. As a result, it is important to identify and mitigate risks, and make allowances for Optimism Bias.

The objectives of the risk management process are to:

- Identify risks from all sources;
- Assess the potential likelihood, impact and hence overall significance of those risks, thereby prioritising those most in need of management and mitigation;
- Identify appropriate mitigation strategy;
- Allocate responsibility for management of the mitigation process; and
- Periodically review progress towards mitigation and assess the resultant reduction in the Optimism Bias uplift factor.

10.4 Risk Identification

This process will involve inputs from all appropriate stakeholders: in this case, we would recommend that Transport Scotland and SPT be involved in discussions, together with Network Rail and rail and bus operators, as appropriate. A Project Risk Workshop would be useful at an early stage. Prior to the workshop, attendees should be asked to advise areas of potential risk and, from this, a list can be compiled to provide the basis for the discussions.

The workshop should assess risks for their potential likelihood and potential impact, in order to develop a priority for mitigation, and also to suggest an initial strategy for mitigation. During this process, further risks may be identified. Following the meeting an extended list can be compiled. This forms the basis of the Risk Register, which can then be circulated for further comment.

10.5 Risk Register

The Risk Register should be structured to identify:

- A unique identification reference
- A description of the risk
- The stage of scheme development at which the risk might materialise
 - Planning;
 - Procurement;
 - Construction; and
 - Operations.

¹⁰ Green Book, Appraisal and Evaluation in Central Government, HM Treasury (2003) http://www.hm-treasury.gov.uk/economic_data_and_tools/greenbook/data_greenbook_index.cfm

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- Elements impacted by the risk
 - Capital expenditure;
 - Operating expenditure;
 - Revenue;
 - Programme;
 - Quality;
 - Functionality;
 - Approvability; and
 - Safety.
- The likelihood of realisation of the risk, the likely impact of the risk and hence its significance (a rating for which is derived from the product of likelihood and impact)
 - Prior to mitigation; and
 - Following mitigation.
- Responsibility for mitigation management
 - Lead responsibility; and
 - Support to be provided to task leader.
- Mitigation strategy
- Action taken
- Mitigation factor achieved

The Risk Register would be a living document and subject to regular review and amendment. An initial draft risk register is set out within Table 10.1, overleaf.

10.6 Risks Identified Within STAG Appraisal

It is recognised that the identification of risks and uncertainties would form an ongoing process. At this stage, the following risks have been identified:

- Limitations of appraisal, this study is limited in scope to an update on the 2008 study, which was predominantly a qualitative study. Therefore, elements of a typical appraisal analysis, such as a cost benefit analysis and demand forecasting has not been undertaken. Taking forward schemes, particularly resource intensive schemes such as rail facilities or new bus services maybe subject to significant risk without further analysis; it is recommended that separate cost benefit analysis is undertaken for the options generated by this study.
- Consent risk - legal and planning issues, specifically where planning approval or powers are required.
- Capacity constraints on rail network to accommodate a rail station at Allander. It is likely that there would ultimately be a need for more investment, for example upgrading single track sections of the Westerton – Milngavie branch line to double track. This would maybe a more deliverable solution in terms of rail network operation but would be significantly more expensive.
- Availability of funding - issues relating to the commercial viability and funding of the bus-based options, in particular the shuttle-bus option, would need to be discussed further with bus operators and SPT. In addition, Scottish Planning Policy published in June 2014 states within Para 277 that “Agreement should be reached with Transport Scotland and Network Rail before rail proposals are included in a development plan or planning application and it should be noted that further technical assessment and design work will be required before any proposed new station can be confirmed as viable.”
- Mining - AECOM has consulted the Coal Authority interactive maps database, which has indicated that the area is classed as a high risk due to mining works. It is not expected that there would be high risks of mineral instability so close to the railway line, but this would require further investigation in due course.
- Flooding and environment – the deliverability of options may be limited or prevented by environmental and flooding issues, which will only become apparent during a detailed design exercise. Often issues can be alleviated, however not without cost implications.
- Resilience on rail network – the additional stopping times associated with new rail stations at Westerhill and / or Woodilee would impact on the resilience of the rail network. The level of impact and any associated risk would require to be discussed further with Network Rail and Transport Scotland should these Options be progressed.
- Public acceptability at future consultations.

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10.7 Risk Register

The risk register as shown below in Figure 10.1 summarises each of the risks identified, and considers the likelihood and impact of their occurrence. In addition each risk has been categorised when the may occur, some risks are associated with the ability to deliver and implement whilst others are associated with the operation of the option post implementation.

Table 10.1 Indicative Risk Register

RISK IDENTIFICATION							
Category	Risk Assessment			Risk Description	Risk Nature		Notes
	Risk Likelihood 1-5	Risk Impact 1-5	Risk Rating		Deliverability	Operation	
Appraisal	4	4	16	As noted throughout this study the scope of this appraisal is limited to updating the 2008 study which relied on qualitative analysis and did not include demand forecasting, cost benefit analyses or modelling. The scope of this study is commensurate with the 2008 study. It is recommended that these elements are undertaken. Without these elements it is likely funding, planning and transport authorities may object to any proposals due to gaps in the analysis / justification.	✓	✓	
3rd Parties / Stakeholders	5	5	25	Resilience on rail network – the additional stopping times associated with new rail stations at Allander would impact on the resilience of the rail network. The level of impact and any associated risk would require to be discussed further with Network Rail and Transport Scotland should these options be progressed.		✓	
3rd Parties / Stakeholders	5	5	25	Rail Policy - It is likely that this option will need to go through the GRIP 4 process for rail investment which is a costly exercise which would not guarantee implementation support. A significant level of further expenditure will be required before a determination on the deliverability of this option can	✓	□	

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				be made.			
Funding	4	4	16	Financial Support - Progressing interventions beyond the STAG project will require further funding, either by EDC or their partners. There is a risk that sufficient funding may not be secured, particularly for complex and expensive options.	✓	✓	
Land and Compensation	5	4	20	Consent risk - legal and planning issues, specifically where planning approval or powers are required.	✓		
3rd Parties / Stakeholders	5	4	20	Significant objections to proposals by stakeholders/public resulting in delays/challenges resulting in increasing costs.	✓		
Commercial (Economic)	4	5	20	Availability of funding - issues relating to the commercial viability and funding of the bus-based options, in particular the shuttle bus (Option 25), would need to be discussed further with bus operators and SPT. In addition, Scottish Planning Policy published in June 2014 states within Para 277 that "Agreement should be reached with Transport Scotland and Network Rail before rail proposals are included in a development plan or planning application and it should be noted that further technical assessment and design work will be required before any proposed new station can be confirmed as viable."	✓	✓	
Design	4	3	12	Capacity constraints on rail network to a rail station at Allander. To achieve new rail stations, there could ultimately be a need for more investment, including widening existing single track sections to double track to allow trains to pass. This would be a significant undertaking.	✓	✓	

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Design	2	5	10	Mining - AECOM has consulted the Coal Authority interactive maps database, which has indicated that the area is classed as a high risk due to mining works. It is not expected that there would be high risks of mineral instability so close to the railway line, but this would require further investigation in due course.	✓		
Construction	3	3	9	Traffic management issues - (Problems with construction sequencing)	✓	✓	
Environmental	2	4	8	Archaeological finds on one scheme impact on programme for subsequent schemes.	✓		
Commercial	2	4	8	Procurement - contractual issues affect programme delivery e.g. disputes with Contractors, existing contractual franchises with rail operators.	✓	✓	
3rd Parties / Stakeholders	2	3	6	Difficulties in defining expectations and level of information required from Statutory Consultees impacted by the scheme proposals.	✓		
3rd Parties / Stakeholders	3	3	9	Implementation of options may require authorisation from the planning authority and would be subject to public objection. Improved parking at the rail stations and the rail station at Allander will require planning permission.	✓		
Construction	2	3	6	Impacts on tourism, local businesses, major events, etc. during construction.	✓		
Construction	3	3	9	Delivery of the do minimum package may impact on the deliverability and operation of options. In particular, the A81 bus priority options.	✓	✓	

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Construction	2	3	6	Fibre-optic servicing may need to be moved and replaced to implement an option. This would increase costs significantly	✓		
Commercial (Economic)	3	3	9	Introduction of bus priority on the A81 may require TROs which may restrict access to local businesses which may impact their revenue	□	✓	
General - modelling, stds, legislation, taxation	3	2	6	Some options may increase traffic congestion along the A81. This may result in traffic rat running through residential roads to minimise delay. This would result in a loss of local amenity and road safety issues.		✓	

10.8 Summary

Consideration of risk and uncertainty is essential throughout project development. In addition to incorporating an initial Optimism Bias adjustment, ongoing requirements have been set out which are necessary to manage risk and uncertainty during project development. The following Chapter presents the key conclusions arising from the STAG Part 2 appraisal.

11 Recommendations and Conclusions

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11 Conclusions

11.1 Introduction

AECOM has been commissioned by Strathclyde Partnership for Transport (SPT) and East Dunbartonshire Council (EDC) to undertake an update of a STAG study which was undertaken in 2008. The previous study appraised the transport situation on the A81 corridor between Bearsden and Milngavie; this led to the development of intervention options designed to improve transport in the area. SPT and EDC have employed AECOM to undertake this update exercise to ensure the findings from the previous study are still valid. The study will support delivery of the Council's Local Transport Strategy (LTS) 2013-2017 and emerging Local Development Plan and future Local Transport Strategies.

This Chapter brings together the findings from the STAG appraisal process. A summary of each of the refined packages (following the STAG Part 2 appraisal) is provided below in Tables 11.1-11.2 and then the overall recommendations of the study.

11.2 Option Packages

For ease of reference the packages and options determined appropriate for further investigation have been summarised below.

11.2.1 Package 1 (Do Minimum)

The Do Minimum package comprises of committed schemes in the study area. As such, it provides a base case by which the other packages can be compared. While the measures will result in some improvements, they would not fully address the travel issues facing the A81 Corridor if taken in isolation. The Do Minimum comprises:

- Parking charges and waiting restrictions at Milngavie Town Centre to prevent rail users from using parking earmarked for town centre retail;
- Localised improvements associated with the Kilmardinny development, with developer contributions to support these improvements;
- Kessington Hub to promote interchange between walking, cycling and public transport travel and make Kessington more accessible for all users;
- Implementation of cycle corridor with Phase 1 from Burnbrae Roundabout to Hillfoot and Phase 2 from Hillfoot to Kessington; and
- Bus Improvement Fund.

In addition the Do Minimum covers general maintenance, which includes monitoring and maintenance of the Council's core path network in line with the Core Path Plan and signing, lining and general maintenance of the road network.

The estimated total capital cost of the Do Minimum package is £1.5million which includes optimism bias, plus around £160,000 from Bus Improvement Funding.

11.2.2 Package 2 (Active Travel)

Table 11.1 Refined Package 2

Option	Component schemes
Enhanced Walking and Cycling	19) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station 20) Completion of the cycle link between Mains Estate and Allander Leisure Centre 22) Secure cycle storage facilities built at rail stations and in town centres 23) Development of a local network of walking and cycling paths which converge on town centres and stations 24) Development of a high quality path which links the Kilmardinny development and Milngavie station
Approximate Capital Cost - £1.4million	

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Package 2 promotes schemes designed to make active travel an attractive alternative to car travel in the local area. The package includes the completion of the cycle link between the Allander Sports Centre and Mains Estate and extending the link on Woodburn Way north of the junction with Park Road. The largest scale option is developing a network of walking and cycling routes in both Bearsden and Milngavie converging on the town centres and rail stations. This option is designed to encourage local active travel trips and reduce short car journeys.

11.2.3 Package 3 (Public Transport and Access)

Table 11.2 Package 3 (Public Transport and Access)

Option	Component schemes
New Rail Station at Allander	7) Provision of a rail station and associated parking (circa 150 spaces)
Quality Bus Corridor	10) Bus priority / congestion bypasses at key points on the network (not compatible with Do Minimum cycleway option) 12) Improvements to bus stops and shelters 14) Bus detection included within SCOOT
Road Options to Enforce / Reduce Speeds and Enhance Appeal of Sustainable Travel	29) Carriageway marking / localised narrowing 31) Place making initiatives to enhance town centre environments
<p>Approximate Capital Cost – £6.5million* (£19.9million if double tracking for the Allander Rail Station is required)</p> <p><i>*Note – Single Rail Station Option Capital Cost – £5.9million</i></p>	

Package 3 offers a number of initiatives with the ultimate aim of encouraging modal shift to public transport and sustainable modes, while reducing congestion on the A81 Corridor. The package as a whole, through its various components, meets the five Government objectives of Environment, Safety, Economy, Integration, and Accessibility and Social Inclusion. In addition, the Planning objectives specific to this study are met. It should be note that elements of a forth package with road based options have been amalgamated into Package 3.

Package 5 is a combination of Package 2 and 3 and would offer a holistic approach to providing solutions to the transport problems experienced in the study area. Taking into account public transport/sustainable modes and road improvements, this integrated package would meet the five Government objectives as well as the specific Transport Planning Objectives (TPOs) set for this study. This is because the combined benefits of both Packages 2 and 3 would be realised. Evidently, this package has the highest associated capital cost at an estimated £7.9million, including Optimism Bias and reflects the combined cost of Packages 2 and 3 following refinement. This is based on a rail station at Allander not requiring double tracking, if this is required then the costs are more likely to be £21.3million.

11.3 Conclusion

Having assessed each individual package against Government and Planning objectives, it is considered that an Active Travel and, Public Transport and Access package would be best placed to provide a range of solutions to address the pressing travel issues in the study area. While Package 5 represents the greatest capital costs, it will also provide the greatest level of benefits when compared to the individual Packages 2 and 3. Table 11.3 below highlights the extent to which each individual refined package meets the specific TPOs for this study.

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Table 11.3 Planning Objectives met by Refined Packages

Transport Planning Objective	Do Minimum	Active Travel Package	Public Transport and Access Package	Combined
A) Promote modal shift to sustainable transport for trips (particularly commuting) from or to the study area	✓	✓	✓✓	✓✓✓
B) Improve access to the public transport network, particularly for the first and last miles of journeys	✓	✓✓	✓	✓✓
C) Provision of a transport network that supports enhanced access to employment, social and leisure opportunities	✓	✓✓	✓✓✓	✓✓✓
D) Improve bus journey times and journey time reliability on the A81 Corridor	-	-	✓✓	✓✓
E) Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	✓	✓	✓✓	✓✓
F) Delivery of a transport network that supports healthy lifestyles	✓	✓✓	✓	✓✓
G) Delivery of a transport network that enhances local air quality	✓	✓	✓✓	✓✓
H) Development of an integrated transport network, including co-ordination between modes, including co-ordination between modes and increased connectivity between active travel infrastructure and public transport	✓	✓✓	✓✓	✓✓✓
I) Provision of a transport network that improves safety and security across all modes of transport	✓	✓	✓✓	✓✓

11.4 Allander Rail Station

Despite scoring positively against the TPOs and throughout the appraisal process, the deliverability and economic viability of a rail station at Allander has still to be established in line with Scottish Planning Policy. The rail line between Milngavie and Hillfoot stations (where the proposed station would be located) varies between single and double tracked sections. This is an existing constraint which does affect network resilience and journey time reliability. The addition of the Allander station is likely to exacerbate these issues; therefore it anticipated that there would be opposition from key rail and transport stakeholders. Potentially these issues could be alleviated by adjustments to the existing timetables, however train operations in the Glasgow conurbation are finely balanced and any local timetable adjustments are likely to have a knock-on effect on the regional network. The viability, issues and options regarding wider timetable changes are outside the scope of this study and have not been determined.

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Given the above, it is questionable whether a station could be successfully implemented without upgrading the single line sections between Hillfoot and Milngavie to double track. Doing this should mean the station could be implemented within the existing timetable and resilience requirements. This option may be more favorable to key rail stakeholders as it is unlikely to generate disbenefit across the conurbation. However, upgrading the track increases the cost of implementation significantly from approximately £6million to £19.5million. Therefore, although the option becomes viable from an operational stand point but the economic viability reduces.

In term of potential demand, analysis of the Accession isochrones plots in conjunction with the Census (2011) data shows that the population within a 10 minute walking distance of the station site is 949. The Kilmardinny development would add up to 320 additional households to this catchment – based on the average household occupancy for the study area (2.45); this would increase the catchment within 10 minutes by 784 to 1,733 in total. Whilst this is significant, it is considerably less than the population catchment within 10 minutes of other stations in the study area, which is as follows:

- Bearsden (2,928);
- Milngavie (3,655) ;
- Hillfoot (3,398); and
- Westerton (6,774)

Whilst the above is informative, in the absence of demand forecasting it is difficult to determine whether there would be a positive business case for a new a station - specifically, it will be important to understand whether the demand (excluding existing rail users) generated by a station at Allander would be sufficient to justify the level of capital investment required. Notwithstanding this, the station will help alleviate the additional travel demands placed upon the existing transport network by the new Kilmardinny development.

Whilst noting the above, the rail station does show merit in transport planning terms and against the objectives of this study as well as generating local support. Therefore, is considered appropriate to retain the station as an option for further assessment – this should include business case development and progression through Network Rail's GRIP process to determine the operational feasibility.

11.5 Way Forward

This draft version of the STAG report is submitted for consideration by officers of EDC and Strathclyde Partnership for Transport. In turn the findings of this report will assist the relevant decision makers in making decisions on future transport interventions and investment in the A81 corridor.

Appendix A – Consultation Material and Feedback

**East Dunbartonshire Council – Multi-Modal
Transport Study: A81 Bearsden / Milngavie –
Glasgow Corridor**

**STAG Update Exercise Workshop:
Summary of Discussions**

EDC Headquarters, Kirkintilloch, 6th November 2014



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Rev No	Comments	Prepared by	Reviewed By	Approved by	Date
1	Draft for client review	KK	DA	DA	14/11/14
2	Issue for Workshop Attendees	KK	DA	DA	20/11/14

1. Introduction

1.1 Purpose of the Workshop

A Transport Appraisal Workshop for the *A81 Bearsden / Milngavie – Glasgow Corridor Multi-Modal Transport Study* was held in Kirkintilloch on the 6th November 2014 with representatives from East Dunbartonshire Council (EDC) and their consultants AECOM. The workshop was designed to achieve two objectives;

- a) Review the updated transport and socio-economic evidence base and clarify the transport problems, opportunities and constraints in the A81 corridor; and
- b) To seek the views of delegates on the validity of previously developed interventions in the current context and identify new interventions.

A previous study took place along the A81 corridor in 2008 and led to the development of a number of options designed to improve transport along the corridor. This work seeks to review and update this study by understanding the current problems and opportunities in the study area. Therefore, outcomes from the workshop will inform the STAG appraisal process of potential transport improvement measures for the corridor.

Link to the 2008 Report:

http://www.eastdunbarton.gov.uk/content/transport_and_streets/transport_policies/a81_corridor_transport_study.aspx

1.2 Workshop Format

In advance of the workshop, stakeholders who had confirmed their attendance were provided with a Workshop Handbook including various briefing information explaining the purpose of the workshop, background information on the study context and STAG, including the options developed as part of the 2008 study. The workshop followed an agenda, as set out below.

Time	Item
13:15-13:30	Registration Tea / Coffee provided.
13:30-13:45	Introduction, Overview and Briefing
13:45-14:45	Review of Problems, Opportunities and Objectives, and Stakeholder Input Review of previously identified problems, opportunities and objectives associated with, but not limited to: <ul style="list-style-type: none"> - Active Transport; - Public Transport; - Private Transport; and - Development and Trip Attractors / Generators.
14:45-15:45	Review of Options and Stakeholder Input Review of the previously developed options and determining their validity within the existing corridor context and considering other interventions which could be more appropriate in 2014.
15:45-16:00	Summing Up and Next Steps

13.15 – 13.30: Introduction

An introduction and welcome was provided by Alison Laurence, Team Leader - Land Planning Policy at EDC. AECOM then delivered a short presentation providing an introduction, study overview, summary of work to date and programme for the workshop.

13.45 – 14.45: Review of Problems, Opportunities and Objectives, and Stakeholder Input

This session began with a brief presentation further explaining the background to the study and key findings from a review of the evidence base which included socio-economic and transport data. Following the presentation, stakeholders were split into three break-out groups to discuss the problems, opportunities, constraints and objectives which should be considered in the appraisal process. Each break-out group comprised of stakeholders from a range of backgrounds and was facilitated by representatives from AECOM and EDC.

Appendix A presents the results from these group discussions.

14.45 – 15:45: Review of Options and Stakeholder Input

This part of the workshop included a presentation by AECOM to outline the options developed in 2008 and relevant updates about options which have, or are in the process, of being delivered. The break-out groups then re-convened to discuss the relevance of these options today and if there were alternative or additional options which could be considered.

Appendix B presents the results from these group discussions.

15.45 – 16.00: Summing Up and Next Steps

The workshop concluded with a short presentation outlining the project schedule going forward and how the work will be used to support the STAG process. AECOM thanked all stakeholders for their input and emphasised the additional opportunities available to comment further on the study (see section 3.1 for more information).

1.3 Summary of Workshop Outputs

Representatives from AECOM recorded the various comments made by the stakeholders throughout the workshop, and specifically during the facilitated break-out sessions.

In Appendix A and B, all comments from the workshop have been collated for presentation and the information presented reflects the discussion across the three break-out groups. It will be used to inform the study going forward and is not an exhaustive list of the problems/issues and options that will be considered as the study progresses.

2. Workshop Participants

Attendees:

Name	Organisation
Lex MacDonald	Bearsden East Community Council
Jacqueline MacRae	Bearsden East Community Council
Lesley Coggins	Bearsden East Community Council
Martyn Reynolds	Milngavie Community Council
Nick Allan	Dunbartonshire Chamber of Commerce
Lesley Shaw	Milngavie Business Improvement District
David Radford	East Dunbartonshire CHP
Shona Rawlings	SUSTRANS (Currently seconded to SPT)
Mark Esdaile	Bearsden North Community Council
R Hooper	Mains Estate Residents Association
Neil Sturrock	SPT
Cllr. Alan Moir	East Dunbartonshire Council
Stevie Neilan	First Bus Glasgow
Chris Hampson	First Bus Glasgow
Fiona Bartels	Freight Transport Association
Stuart Davies	SNH
Ken Sutherland	Railfuture Scotland
John MacKenzie	Glasgow City Council
Tom O'Hara	Cycling Scotland
Alan Slack	Bishopbriggs Community Council
Richard McKinlay	Go Bike! Strathclyde Cycle Campaign
David Torrance	Transport Scotland
Alex Moore	Police Scotland
Alan Reid	East Dunbartonshire Council - Roads and Neighbourhood Services
Kathleen McWhirter	East Dunbartonshire Council – Transport and Access
Eric Gotts	East Dunbartonshire Council – Councillor (Milngavie)
Vaughan Moody	East Dunbartonshire Council – Councillor (Bearsden South)
Alison Laurence	East Dunbartonshire Council
Ewan Wilson	East Dunbartonshire Council
Manuel Ruiz	AECOM
Richard Hernan	AECOM
Stephanie Thompson	AECOM

Name	Organisation
David Arthur	AECOM
Katrina Keddie	AECOM

Apologies From:

Name	Organisation
Stuart Davies	SNH
Isabel Stringer	Community Transport Glasgow
Ann Porter	Community Transport Glasgow
Rose Tweedale	Transport Scotland
Allan Comrie	SPT
Suzanne Bruce	East Dunbartonshire Council
Frazer Durie	Network Rail
Janice Kennedy	Scottish Enterprise
David Adams McGilp	Visit Scotland
Bernard Lavery	Scottish Ambulance Service
Urszula Szupczynska	Historic Scotland
Joseph Scott	Glasgow and Clyde Valley Strategic Development Authority

3. Going Forward

3.1 Further Engagement

Whilst the workshop is a key component of the study, stakeholder consultation is ongoing and stakeholders were invited to submit any further comments on the study to AECOM; contact details for whom are set out below.

For Further Information:

AECOM Contact: Manuel Ruiz, Senior Consultant

Address: AECOM, 225 Bath Street, Glasgow, G2 4GZ

Email: manuel.ruiz@aecom.com

3.2 Next Steps

In terms of next steps, AECOM and East Dunbartonshire Council will analyse the outcomes from the workshop and any further comments that are received in order to develop a list of potential transport options to be considered within the STAG multi-criteria framework.

STAG Part 1 Appraisal involves an initial appraisal and broad assessment of impacts – this will inform whether a proposed option should proceed, subject to meeting the planned objectives and fitting with relevant policies.

Based on the appraisal findings, a STAG Report will be submitted to East Dunbartonshire Council. It is important to highlight that STAG does not recommend a preferred option – instead, it provides a robust base on which relevant stakeholders can rely to inform their decisions.

Appendix A: Review of Problems, Opportunities and Objectives Discussion

Project:	EDC A81 Study	Job No:	60332121
Subject:	Workshop Notes of Discussion (6/11/14)	Date:	12 Nov 2014
Prepared by:	KK		
Checked by:	DA		

ISSUE THEME	COMMENTS
<p>Active Travel</p>	<ul style="list-style-type: none"> • Some commented that visually cycling does appear to have increased along the A81 corridor. However, it was noted that Glasgow City Council have cycle counters on key arterial corridors at the council boundary and the two corridors from East Dunbartonshire (A81 and A803) are the only corridors to have shown a decrease in cycling. • The security of cycle storage facilities at train stations was discussed. One stakeholder highlighted a recent local newspaper article which suggested £5,000 worth of bicycles had been stolen from Milngavie and Westerton stations [<i>article found: http://www.milngavieherald.co.uk/news/local-headlines/warning-about-bicycle-thefts-1-3597954</i>]. The lack of cycle storage facilities was said to discourage those who wanted to cycle to the station from doing so, therefore, it was felt increased security with storage lockers would be ideal. • There was a general feeling that currently there is a lack of cycle racks/lockers especially at Bearsden and Westerton train stations. • The Milngavie BID plan to install cycle stands throughout Milngavie Town Centre was discussed, however, as cyclists are unable to cycle through the pedestrianised area of the town centre this was identified as a barrier to the stands encouraging cycling. • The quality of the road surface was highlighted as a concern and considered a barrier to cycling. • When considering cyclists and cycle measures, several participants felt it was important to acknowledge the

	<p>differing requirements of leisure and commuter cyclists to ensure the needs of both are met.</p> <ul style="list-style-type: none"> • Concerns were expressed regarding the safety of the proposed “Bearsway” cycleway, particularly around the Boclair Road and Asda Junction. • A lack of lighting on country roads was highlighted as being dangerous for those cycling. • Some participants noted a preference for the development of more off-road cycle provision rather than on-road and/or segregated measures. Off-road facilities were preferable as it was felt that the roads were not built for dual purpose and were unsafe. • It was suggested that cyclists needed to be educated to reduce the number of cyclists using the pavement, cycling whilst wearing headphones and not adhering to traffic signals. It was felt that there could not solely be a reliance on car drivers to ensure the safety of cyclists. • The west side of the A81 was identified as a location where cyclists rode on the pavement. • It was felt that more cycle infrastructure needed to be built to encourage more people to start cycling / cycle more often. • Lack of engagement by workplaces to support commuting by bicycle, for example, a lack of showers / changing facilities and adequate cycle storage was raised. • When discussing the walking and cycling network, it was noted that there were several “missing links” within corridor and connections to the surrounding area, for example, it was highlighted that there is a need to ensure cycle routes within the study area are connected with those in Glasgow. Another suggestion was for a cycle route following the railway line. • Although the gradient of hills cannot be changed, it was highlighted that the hills of Bearsden make it difficult for cyclists as well as difficult for elderly people walking. • Street lighting was considered a barrier to walking during winter months when the days become darker earlier as it was reported people felt unsafe. • A lack of gritting of side streets was considered a deterrent for walking during poor weather.
<p>Rail</p>	<ul style="list-style-type: none"> • Since the 2008 study, there has been an increase in rail patronage, particularly from Milngavie station.

- It was suggested that there is a significant suppressed demand for rail due to the parking constraints at rail stations. The lack of parking at stations was therefore considered a significant barrier to greater rail travel. It was stated that residents from outlying communities, for example, Strathblane and Balfron, arrive at Milngavie Station Park and Ride early, using significant capacity and preventing local residents from parking.
- The desire for increased parking at Milngavie and Bearsden station was repeatedly expressed. Furthermore, others reported commuters had driven to Croy due to a lack of car parking spaces at these stations. Also, the proposed decking of the car park at Tesco was reported to now be unlikely to go ahead given changes in market conditions.
- Participants highlighted that the car park at Milngavie station is typically full by 8am resulting in a reliance on parking on residential streets surrounding the station. Similarly, it was reported that there were complaints at Hillfoot train station of residential areas being used for parking due to a lack of spaces at the station.
- Rail pinch points were identified at Hyndland, Partick and Jordanhill.
- The issue of resilience in the rail system was discussed – some stakeholders felt double tracking was necessary to accommodate a new rail facility at Allander. Similarly, others noted that the train line was previously reduced from a double to single track and suggested it may be necessary to examine the need to increase it back to being a double track line. Furthermore, it was reported there are often delays when departing Milngavie whilst a late running train passes through the single track section south of Milngavie. The rail overbridge south of the A81 Auchenhowie Road junction was seen as a barrier as it is only single track. It was recognised that rail infrastructure improvements are expensive.
- Comment that train services do not run late enough for returning home from Glasgow.
- Suggestion that there had been a missed opportunity to collect funds for the Allander rail halt from the developer at Kilmardinny.
- The importance of understanding Network Rail and Scotrail's plans for investment in the stations was highlighted.
- It was considered likely that there has been some transfer from bus to rail, whilst others specifically noted rail was preferable to the bus because the journey time was faster. In addition to the quicker journey time by rail, it was also felt the rail journey time was more reliable in comparison with the bus.

	<ul style="list-style-type: none"> • Recognition that any delays in the services are outside EDC's influence.
<p>Bus</p>	<ul style="list-style-type: none"> • The limited number of cross-council bus services (for example between Milngavie and Kirkintilloch) was raised as an issue. Similarly, others noted residents were isolated from the east side of the county if reliant on bus services, for example, there are no bus services to Bearsden Cross. There was a general attitude that services were designed for travelling into Glasgow rather than elsewhere. • It was felt the frequency of bus services ought to be improved. The bus links to Kirkintilloch were specifically identified as being poor because there were just three services per day. • The journey time into Glasgow was identified as a barrier for bus travel into Glasgow. It was stated that the journey time was 35-40 minutes by bus and the lack of an express service was a problem which should be addressed. • Bus stands and services were not perceived to be of a good standard and compared to rail were felt to be less clean and less comfortable. • The cost of bus services was raised; with the cost of a short 2.5 mile journey into the local village stated to be the same price as journey into Glasgow. • Representatives from First identified that they are unable to compete with rail for trips to/from Glasgow. • It was recognised that in order to increase the attractiveness of the bus, certain bus operators have already introduced multi-journey tickets for local trips. • There was concern that if bus stops were introduced in areas which are currently isolated on the bus network, bus operators may not provide a service if it was not considered commercially profitable. Therefore, to avoid the problem of reliance on profit driving services, social inclusion should also be considered. • One participant felt rolling stock would become greener without active measures to change it as the need to go greener was occurring throughout society anyway. • Suggestion that the location of bus stops can be an issue with some sited particularly close together whilst others are a considerable distance apart. • There was a general opinion that the distance to bus and rail facilities was a barrier to public transport use.

	<ul style="list-style-type: none"> • Inadequate information about bus services was identified as a barrier to bus usage, particularly the lack of real time bus information along the corridor. However, SPT representatives did note that they are looking at the roll out of RTPI across the region. It was accepted some information was online, the reliance on everyone having a smartphone and access to the internet was an issue raised. • It was highlighted that bus timetables can be subject to change which reduces the attractiveness of bus services and this is exacerbated by poor dissemination of information. • As congestion can be outside the EDC boundary any measures within EDC to reduce journey times could struggle to have a significant impact on journey times to Glasgow.
<p>Private Car</p>	<ul style="list-style-type: none"> • Mixed opinion regarding the decrease in traffic levels since 2008 which was presented during the Workshop. Some agreed that since the recession there had been a reduction in traffic levels with the suggestion that people had changed from travelling by car to train and they simply have not switched back to travelling by car. However, others expressed surprise about the reduction in traffic levels and some perceived traffic levels to have increased. • Lack of parking was the main issue raised by participants with the problem considered to be particularly prevalent in Milngavie where it was said to have an impact on businesses. • Important to consider parking for tourists starting the West Highland Way. • Concern regarding the quality of road surfaces in the study area. • Query that little was being done to widen and improve the roads or create new roads. • Comment that space is limited, therefore, a bypass/strategic road cannot be accommodating like in Kirkintilloch with the KLR and Bishopbriggs with the BRR. • Congestion around Milngavie was raised.
<p>Other</p>	<ul style="list-style-type: none"> • Need for all road users to have greater awareness of other road users to improve road safety. • The ageing population within the local area was identified as an issue to consider when determining transport improvements. It was highlighted that when elderly people become unable to drive they become dependent on public transport, but it was felt the current bus provision was inadequate. Therefore, the need to ensure

	<p>elderly people have independence without a car was identified as an issue.</p> <ul style="list-style-type: none">• Recognition that there is a high level of car ownership in the area.• Need for improved integration of transport modes, for example, the need for different tickets for different bus operators and different modes (bus, train and subway once in Glasgow) was mentioned. Similarly, there was support for smartcard ticketing to make integrated travel easier.• Recognition that the new Southern General hospital should be considered to avoid problems regarding;<ul style="list-style-type: none">- Access to the hospital for staff and visitors; and- The impact of the new hospital on the transport network.• Increasing levels of homeworking were felt to make journey tickets uneconomical.• Poor connectivity with other areas within the Greater Glasgow conurbation.• Lack of knowledge about the Hillfoot Travel Hub with some local participants stating they did not feel this was particularly integrated despite acknowledging it was an ideal location due to the convergence of local roads nearby.
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Appendix B: Review of Options Discussion

Project:	EDC A81 Study	Job No:	60332121
Subject:	Workshop Notes of Discussion (6/11/14)	Date:	12 Nov 2014
Prepared by:	KK		
Checked by:	DA		

OPTION	COMMENTS
<p>Increase Car Parking at Bearsden, Milngavie, Hillfoot and Westerton Rail Stations</p>	<ul style="list-style-type: none"> There was a divided opinion regarding the aesthetics of multi-storey car parking; some said it would be visually intrusive whilst others felt it would not be problem aesthetically. There was support for the decking of Bearsden station car park in order to increase the number of car parking spaces. There was a suggestion that parking should be targeted at rail users with greater integration of rail and parking at stations required. For example, there was a suggestion that entry / exit from the car park could be permitted using the rail ticket. It was felt the 2008 option regarding multi-vehicle occupancy should no longer be considered due to the complexity of enforcing this. With regards to the expansion of Park and Ride facilities at rail stations, it was highlighted this would be difficulty around Hillfoot and Milngavie due to land constraints. However, Westerton and Bearsden were considered to have potential for provision of more parking with a partial decking option at Bearsden and opportunity for increased parking provision at Westerton opposite the existing Park and Ride site. Concern raised that increasing the number of car parking spaces would encourage more people to drive to the train station which in turn would increase congestion. There was a suggestion that it would be worthwhile conducting a detailed design study prior to increasing car parking to understand who is using the car park to ensure parking is being increased for those who are unable to use an alternative form of transport to access the station or are travelling from further afield like Strathblane, Killearn, Balfron etc rather than local residents

	<p>who are able to walk or cycle.</p> <ul style="list-style-type: none"> • It was recognised that a notable increase in parking spaces could result in a significant increase in the number of vehicles using the same access to the car park which could also create difficulties.
<p>Parking controls in town centres</p>	<ul style="list-style-type: none"> • There was support for parking controls in town centres as this could stimulate the local economy and help businesses as more customers would be able to park and shop because cars could not be left parked all day which currently limits parking availability for shoppers. • Some concern that parking controls in town centres would encourage people to visit out-of-town shopping centres, where there are no parking controls, resulting in town centre businesses losing out. • Query with regards to the 2008 option for a parking guidance system for Milngavie Town Centre as it was stated that there is no additional parking for people to be re-directed to. • Participants stated the introduction of decriminalised parking was due to be effective by April 2015, although concerns were raised that this could lead to parking on side streets. • It was highlighted that the introduction of any parking charges should be consistent across EDC so particular towns do not lose business due to higher parking charges than neighbouring towns.
<p>Rail Park and Ride at Kilmardinny (only to be taken forward as part of the Kilmardinny development)</p>	<ul style="list-style-type: none"> • There was a view that it was necessary to remove the reference to the Park and Ride only being implemented as part of the Kilmardinny development proposal. • Generally there was support for the proposed rail halt at Allander, however, it was recognised there was a need for this to be delivered with a reasonable provision of parking in order for it to be effective due to the demand for parking at rail stations in the local area.
<p>Quality Bus Corridor</p>	<ul style="list-style-type: none"> • With regards to the implementation of bus lanes along the A81, it was felt bus lanes along the whole route were not necessary and that it would be more appropriate to include bus priority measures at pinch points and on the approaches to junctions, for example at Hillfoot, Asda and Kessington. Furthermore, it was suggested there were not sufficient bus services operating along the route to make bus lanes worthwhile. • Another issue raised was the expected time benefits associated with implementing a bus lane in the study area because of the congestion in Maryhill. It was felt this congestion in the Glasgow City Council area would make any journey time benefits from the proposed bus lanes minimal.

	<ul style="list-style-type: none"> • The 2008 study suggested a southbound bus lane from Burnbrae Roundabout to Boclair Road but some participants were sceptical about the bus lane being southbound only because whilst travel into Glasgow would be quicker, the return journey home would not improve. • An alternative option was raised was for bus detection to be incorporated within SCOOT to assist with bus priority. • A number of measures were suggested to improve the quality of bus services including: <ul style="list-style-type: none"> - Improvements to stops and shelters; - More lighting at stops and shelters; - Greater information provision at stops and shelters so that passengers are aware when the next bus is due, with real time information specifically mentioned by a number of participants; - Raised kerbs at bus stops to assist boarding / alighting from the bus; and - Moneyless ticketing system to speed up boarding.
<p>Rail Improvements</p>	<ul style="list-style-type: none"> • Smart ticketing was an option favoured by participants to encourage greater rail patronage, however, it was understood that this measure would require co-operation from all rail operators and therefore, to some extent, implementation is outside EDC control. • The need for integrated ticketing between bus and rail was considered common sense as it would offer greater flexibility to users. It was suggested this integration should be extended to include parking at rail stations.
<p>Enhanced Walking and Cycling</p>	<ul style="list-style-type: none"> • There was widespread support for measures which would increase the accessibility of the stations for pedestrians and cyclists, for example, with more and improved cycle storage and improved access routes to the station by foot and bike. In addition, it was noted that improved access for pedestrians and cyclists would reduce the demand for car parking and help to ease parking pressures at stations. • It was emphasised that cycle storage facilities across the study area needed to be improved with the following suggestions: <ul style="list-style-type: none"> - More cycle storage;

- Covered cycle racks; and
- Ensuring cycle parking is secure.

Specific mention was made to Hillfoot, Bearsden and Westerton train stations and the Precinct. Also, it was suggested that to improve access to cycle storage, bike racks should be located away from walls/fences to allow proper access to the existing Sheffield style bike racks. A further suggestion was the development of a purpose built park and ride facility for cycle users.

- Westerton train station was highlighted as a potential location for enhanced cycle parking, however, it was felt that parking and traffic issues along Canniesburn Road would need to be dealt with to maximise the attractiveness of Westerton for cyclists.
- It was suggested that walking and cycling routes should radiate outwards from town centres, train stations and bus stops to improve access. These routes should follow desire lines and it was felt hedges should be removed to accommodate these paths if necessary.
- With regards to cycle routes, it was felt more lighting was needed to improve cyclists safety. More specifically, with regards to off road cycle paths one suggestion was for solar studs to be used to safely identify the route rather than large lights which can encourage anti-social behaviour.
- Incorporating cycling and bus travel was also mentioned with specific options including allowing bikes on local buses and bike racks at bus stops.
- The need for a new pedestrian crossing from Burnbrae Roundabout to Hillfoot, as suggested in the 2008 option, was not considered necessary.
- Connectivity between local areas of Milngavie and the rail station were considered poor and it was felt developing a walking and cycling network, with high quality street lighting for safety, which converged on the town centre and train station could encourage more active travel journeys to be made. However, Milngavie Town Centre was mentioned as a barrier to cycling due to the ban on cycling the pedestrianised area so the scheme would require careful design to increase cycling whilst minimising conflict between pedestrians and cyclists.
- Suggestion for a high quality walking and cycling route linking the Kilmardinny development with Milngavie

	station.
Bus Feeder Services	<ul style="list-style-type: none"> • There was support for bus feeder services to improve access to public transport for local residents but there were concerns regarding the financial viability of this and if private bus operators would be willing to provide the service. • It was considered sensible to implement a new shuttle bus service which connects residential areas to stations. • Some discussed a loop bus service in Milngavie and made a comparison to a similar service in Cambeltown which had two loop bus services.
Junction Improvements	<ul style="list-style-type: none"> • There was support in principle for a gyratory system (Roman Road/Roman Drive Junction) but it was suggested that this was already being progressed by EDC. • There was concern about Burnbrae Roundabout because a major supermarket was planned to be built at this location and it was noted that this junction would require changing from the current layout to accommodate the increased demand on the road. However, EDC representatives noted this was currently being looked at. • With regards to junction improvements, some commented that the current SCOOT system outside ASDA does not work properly during off peak hours as it only allows 2-3 cars through at a time which causes driver frustration.
Variable Message Signs	<ul style="list-style-type: none"> • VMS measures were generally seen as positive, as they would provide additional information. However, there were concerns regarding the financial cost and because the signs do not directly address the problem of congestion. • Concerns were raised that VMS signs could generate rat runs.
Highway Options to enforce or reduce speeds	<ul style="list-style-type: none"> • It was highlighted that speed is perception and one participant noted the amount of speeding which takes place is lower than expected because residents generally perceive speed to be faster than it actually is. • Vehicle activated speed warning signs were generally supported with participants noted they would try to ensure they were not speeding when their speed / smiley face was activated.
Other	<ul style="list-style-type: none"> • In general, it was felt that it was important to examine increased access for sustainable modes in greater

detail than the 2008 options covered.

- Greater integration of rail and bus services was highlighted as a method to encourage public transport use and discourage car use. For example, one specific suggestion was to harmonise the First 747 service at Partick with rail services.
- There was a suggestion for car sharing schemes to be considered, for example, with multiple occupancy vehicles being permitted to use bus lanes.
- Participants regularly mentioned smartcards and felt they would encourage more people to use public transport due to the flexibility and ease of use.
- An offsite park and ride site within proximity of Milngavie was discussed, however, it was felt that any site would be too far away and people were unlikely to use it due to this distance. A bus park and ride, with express services, was discussed for a few sites alongside the A81, however, the use of this service was thought to be limited because of the relative journey time compared with rail.

Appendix C: Follow-Up Telephone Records

Call To:	Gordon Cox (Convenor of Bearsden North Community Council)	Date:	20 November 2014
Taken by:	David Arthur	Time:	1:30pm
Copies:	-	Reply by:	-
Subject:	Allander Rail Station Proposal	Job No/Ref:	60332121
Project Title:	A81 Corridor Study		

	Record of Discussion	Action By
	<ul style="list-style-type: none"> • GC highlighted that the Allander rail station proposal has not progressed in part due to the prohibitive costs incurred by the inclusion of doubling the single track section of line. • Bearsden North Community Council had commissioned the Oxford Rail Strategies study, which concluded that the stop could be accommodated within the existing timetable, thereby negating the requirement to double the track. • DA confirmed that AECOM would be undertaking a review of the feasibility of the rail station covering engineering and operational aspects. This would include a review of the Oxford Rail Strategies report. • GC asked whether AECOM would be producing a cost estimate for the scheme – DA identified that AECOM would be providing an indicative cost based on similar schemes elsewhere. 	

Message read by Project Manager <small>(Sign here only if not the originator of the Message)</small>		Date:	
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File: Treat as correspondence

Appendix D: Follow-Up E-mails

E-mail from:	Ken Sutherland (Railfuture Scotland)	Date:	8 November 2014
<p>Richie</p> <p>Just a quick note of thanks to yourself, David Arthur and Alison Laurence for the opportunity to participate in the Multi-Modal Transport Workshop sessions of 6 November 2014. I will be sending in some detailed comments by Friday 14th November 2014 for your further consideration.</p> <p>In the meantime a couple of quick points of clarification arising from Thursday's meeting:</p> <p>(1) I very much appreciated David Arthur's Power-Point presentation of transport data relating to the A81 Corridor study in the afternoon session. Other people to whom I spoke also agreed that this was very helpful in grasping the significance of a range of issues and trends relating to Bearsden/Milngavie and the Blane Valley communities beyond. I seem to recollect David mentioning the possibility of these Power-Point slides could be made available for community use on request</p> <p>Could you please confirm if this was correct, and if so how could such be requested from your Company? Thanks.</p> <p>(2) I had intended to ask yourself (or David) whether AECOM had available any outline capital cost estimate for constructing a single platform Allander rail halt given that such would be an integral component of your STAG 2 studies - and relevant to the Allander Rail Halt Consultancy Study Report for Bearsden North Community Council undertaken by Oxford Rail Strategies.</p> <p>The outcome of this Study, of which you and David, have a copy, simply confined itself to confirming that an additional rail halt at an Allander [Leisure Centre] location <u>was</u> feasible within the existing rail infrastructure and could offer a half hourly frequency on the [current] Lanark/Motherwell services into Central Low Level station into Glasgow Central Low Level station. Their analysis confirmed that such an additional Allander stop could be achieved <u>without</u> disruption to the existing timetable.</p> <p>Although the remit of this study did not include any capital cost estimate of actual construction, it would be interesting to know whether AECOM has any sort of working estimate to feed into your forthcoming STAG 2 study? My recollection from 'outline estimates' used elsewhere by Network Rail the cost of a single platform halt requiring no rail over bridge comes in at around £2-4 m. Given the proximity of adjacent / easy road access within the Lower Kilmardinny development site, which is very compatible with the vertical height of the rail line, one might presume construction of such an Allander Halt could be achieved within those 'outline estimate' figures ?</p> <p>Any available data on this issue would be appreciated - if it already exists?</p> <p>Kind regards</p> <p>Ken Sutherland, Research Officer - Railfuture Scotland (0141-942-0194)</p>			

E-mail from:	Gordon Cox (Convenor of Bearsden North Community Council)	Date:	8th October 2014
<p>Alison many thanks for this, I look forward to being involved with colleagues from the other local Community Councils. Please can you advise whether the study will involve the calculation of an indicative cost for the proposal as outlined in the Oxford Rail Strategies study. I feel that would be important to give balance against the existing 2008 study cost for the much more ambitious proposal outlined there at many millions of £s</p> <p>Regards Gordon</p>			

E-mail from:	Mrs R Hooper (Mains Estate Residents' Association)	Date:	6 November 2014
<p><u>A81 summary of comments by MERA 6 November 2014</u></p> <p>Representing approx. 1000 households of which half will have age group 50 and over. Have taken one street of 36 houses as an example. Three households have families with school age children. Two of those households having primary school age the other secondary. The other 33 households all house retired or semi retired householders. Apart from four where both/one householders work full time. Two of the households have cyclists. One a young mother the other a retired householder. Both are leisure cyclists one cycles for pleasure the other as a fitness regime. The households with children one primary child walks to school the other children are driven to school. (note cyclist drives children to school)</p> <p>The remaining 33 households all have at least one car, many two. Some residents have had hip replacements, others undergoing cancer treatments and have a variety of issues. However, all are independent, apart from one household where carers come in. However there are two people in this property and the other householder still drives and is independent. Of these 33 households two householders commute to work in Hamilton and Paisley and would not consider cycling or taking public transport to work, as it would take too long and be costly. One resident confirmed that even this journey he has been doing for many, many years and he is now leaving an hour and half earlier that he did 10/15 years ago to do the same journey. Another comment was that they have to arrive presentable to work and if they cycled would need shower and changing facilities, which their employers do not provide. Two of those working, are shift workers and one shift worker needs to take a taxi sometimes to get to work.</p> <p>Some have commented that there seems to be a culture of sickening the motorist off the road instead of making improvements for the flow of traffic.</p> <p>Others say that public transport needs to be better and that cycling as commuting is not an option as the arriving neat and tidy is an issue, especially with our weather.</p> <p>Condition of roads and the fact that they are extremely busy would not encourage residents to cycle, even for pleasure and definitely not work. Public transport is not good enough, however the 15-bus service was praised and for the moment the buses are clean and presentable. (Clean and presentable</p>			

obviously another factor). There is only one an hour, however this does go to the train station linking with A81 transport hubs. Advertising of routes by the bus companies is poor too.

Many people will walk for pleasure and enjoy the countryside, walking seems to be something they all do, weather permitting. Apart from those with ill health. Weather therefore is a key issue. However, a point made that in order for older, fairly healthy people (in other words not registered disabled) to remain independent they like to be able to drive, some having automatic cars to enable them to still drive (this is extra cost to them for such cars). This let's them get shopping, attend doctors and hospital appointments in reasonable time without being a burden to others or NHS/Social Services. It also enables them to assist with grandchildren and to enjoy normal social and family events. The suggestion that they should use public transport and shop daily is rejected. The cost of doing this was also mentioned as not all are eligible for a bus pass and how long will governments afford this. One point made was that the bus companies charge the same if you are going a short two half-mile journey to the village and going into town.

Those who cycle say there should be dedicated, off road lanes. One suggestion was, where possible a dedicated cycle lane should follow the train line as one was put in place along side the new link to Edinburgh at the Edinburgh side. Your own figures showed that cycling had decreased and any proposals for cyclists should be off the road. There would seem to be leisure cyclists, commuter cyclists and the speed, usually weekend cyclists, who pass through the area and would appear to be doing time trials. More likely to be part of a club/group. However, your own figures show a decline and still only a very small percentage, less than 1%. So small in fact it hardly showed on your charts. Concern was also raised as to cyclists adhering to traffic lights and road regulations.

The train service was praised, especially the new link to Edinburgh however it was felt that long stay and park ride facility was essential, as many residents would park and ride. Many drive to side streets surrounding the station and leave car to go into Glasgow or day trip to Edinburgh and other destinations on route. Milngavie should also been seen as a destination. There is also a huge problem with commuter parking as Milngavie is required to service not only it's own residents and Bearsden but those from surrounding areas, like Torrance, Baldernock, Strathblane, Blanefield, Drymen etc. Milngavie also gets a lot of tourists and again long stay parking is required for this to facilitate day walkers and those doing the world-renowned West Highland Way. The suggestion that priority parking spaces could be given to vehicles who had more than one occupant was deemed to be unworkable as there would not be the staff/resources to enforce this.

There is extremely strong support for a park and ride and that EDC should engage with owners of the station car park to provide another tier, at least of parking at the train station. As mentioned in your notes another tier could also be provided at Tesco recycling car park. However, in the current climate if this would be down to Tesco it would be unlikely, as their development is not going ahead. Another tier could also be provided behind the Town Hall next to the station where commuters already park. These areas all being full by 7.30/8a.m. However, any development of the station car park would need to be sympathetic to the listed station building which is of great value to the community and enhances the tourist experience.

It is hoped the new parking measures to be introduced next year, will free up spaces for shoppers, however there is concern that this will move employees of the area into the side streets. It is felt nothing is being done to target businesses in the area to do more to encourage their employees onto bikes, public transport, walking etc. Also EDC is huge employer in the area, there are a high traffic flow along the A81 corridor of their own staff. Schools are seen as problem areas and that a bad example is set by most teachers driving to school and parking in the grounds all day, some having play areas removed to allow for this. However it is not suggested that they park in the surrounding streets as

there is already a problem with teaching staff doing this in some areas. There maybe no solution. However, if you wish to influence children, teachers are a group who do this. Also parents wish to drive to drop off children and then make their way to work.

Approx. 25/30 years ago there was a proposal to create a raised by-pass road from approx. Baljaffray roundabout across fields to link onto the roundabout at Dobbies. Due to planning approvals we would doubt that this is possible. However, are there any long-term proposals for a better road infrastructure? Milngavie and Bearsden have a problem that there are only a few main arteries, the A81 being one of them, into the area to cope with commuting traffic, working traffic, daily traffic and tourists. Apart from trying to encourage people onto public transport, to walk and cycle is anything being done to widen and improve the roads and/or even create new roads? It is felt the motorist is the poor relation. The Auchenhowie route does not have any significant public transport link apart from a small bus route to Kirkintilloch, which does not run often enough. However, there may not be a need or desire for this public transport link but there does not seem any research into road use and how residents and visitors would wish to travel/commute. There is no public transport route to Glasgow along this route. Traffic flow is seen as essential, Asda area is another bottleneck. However the Canniesburn roundabout does work fairly well apart from peak rush hour.

Another comment made is that on one hand EDC and governments are encouraging house building thus increasing the demand to commute and other facilities but unless new roads or road improvements are made many residents feel this cannot go on. The Kilmardinny development has not started yet and this will again impact on the A81 corridor. Whilst there is the 60A bus route along the road at this point which goes onto Glasgow/Easterhouse along Maryhill Road, perhaps there maybe a need for a route picking up at say the Allander Rail Halt (which needs to be pursued along with associated long stay parking) and going along the A81 and then progressing along the Switchback/Great Western Road or Crow Road and onto other destinations. Another factor to bear in mind is the amount of staff who are employed or will be employed in the new hospital at the Southern General together with Gartnavel. Has any research been done as to where they live and would they take public transport if available?

MERA thank EDC and Aecom for the opportunity to contribute to this workshop and hope that their input will be considered.

R Hooper (Mrs)
Secretary
Mains Estate Residents' Association
Contact – secretary@mera-milngavie.co.uk
Website – www.mera-milngavie.co.uk
We are also on Facebook

Appendix B – Rail Station Feasibility Report

Allander Rail Station

Feasibility Report



Prepared by:
Konstantinos Chronopoulos
Graduate Engineer

Prepared by:
Edwin Marks
Associate Director

Checked by:
James Macintosh
Engineer

Approved by:
Duncan Shaw
Senior Engineer

Allander Rail Station Feasibility Report

1 Tanfield, Edinburgh, EH3 5DA
Telephone: 0131 301 8600 Website: <http://www.aecom.com>

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Executive Summary

AECOM has been appointed by East Dunbartonshire Council/Strathclyde Partnership for Transport to undertake an update of a Scottish Transport Appraisal Guidance (STAG) report produced in 2008 by Faber Maunsell (now AECOM). The 2008 report examined and developed various options to improve the transport offer within the A81 corridor. The main purpose of this commission is to update the report to reflect the current situation within the corridor, including an assessment of the options. Part of the overall remit is to review the feasibility of a new rail station at Allander from an engineering and operational perspective. This has included a review of a report produced by Oxford Rail Strategies by Bearsden North Community Council in February 2014.

Following an examination of all available information, AECOM considers that it should be technically feasible to construct a single platform rail station at Allander. From an operational perspective, for the service to operate reliably an adjustment of two to three minutes is needed to the times of trains from Milngavie towards Glasgow at Westerton. More detailed work, including in-depth discussions with Network Rail, are required to confirm the feasibility/acceptability of adjusting the timetable. If this cannot be achieved, the track would require doubling in order to maintain levels of reliability, which will clearly have significant cost implications. If the proposal is taken forward it would need to proceed through Network Rail's Governance for Railway Investment Projects (GRIP) process which would require a number of areas to be investigated further.

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1. Introduction

In 2002 East Dunbartonshire Council (EDC) were awarded funding by the Scottish Government (at the time known as the Scottish Executive) to undertake a study examining various options for linking the planned development of the green belt site known as Kilmardinny and the transportation links associated with the scheme. Atkins were appointed a year later by EDC to produce a report which examined the viability of sustainable transport options which could serve the wider catchment area. The report recommended that if EDC agreed to the release of the green belt site then, from the options examined, a new rail station should be considered at Allander.

In 2008 EDC appointed Faber Maunsell/AECOM with the task of carrying out an investigation to establish a range of options aimed at improving transport conditions on the A81 corridor. This investigation was known as the 'A81 Corridor Study' and was undertaken in accordance with the Scottish Transport Appraisal Guideline (STAG) document. As part of the Kilmardinny development proposal, the report identified the construction of a new rail station at Allander as a means of promoting rail travel, reducing parking capacity issues at the existing local rail stations as well as reducing road congestion. Since 2008, a number of projects proposed within the study area have been delivered or are in development stages, however, some elements remain to be addressed, including the Allander rail station.

In February 2014 Oxford Rail Strategies (ORS) completed a feasibility study for Bearsden North Community Council (BNCC) - the aim of this study was to investigate how a new rail station at Allander would affect the running of trains using the current Working Timetable (WTT).

East Dunbartonshire Council/Strathclyde Partnership for Transport (SPT), has commissioned AECOM to undertake an update of the 2008 study report. Part of the remit is to review the proposal for the rail station with respect to engineering and operational feasibility, including a review of the report produced by ORS.

2. Existing Infrastructure

Introduction

This chapter introduces the study area location and existing rail infrastructure.

Location

East Dunbartonshire Council is one of thirty-two local authorities within Scotland. East Dunbartonshire shares its borders with a number of other local authorities including Glasgow City to the south, West Dunbartonshire to the west, Stirling to the north and North Lanarkshire to the east. The A81 carriageway runs from Callander to Glasgow and is one of the main contributory roads to the M8, which connects Glasgow and West central Scotland to Edinburgh and The East. The A81 runs along the east of the catchment area passing through the towns of Bearsden and Milngavie. Running parallel to the A81 is the Glasgow to Milngavie rail line referred to by Network Rail’s Engineering Line Reference as MGE. Four rail stations are located around the Bearsden and Milngavie area, as shown in Figure 1 and Appendix A - these stations are:

- Westerton Station;
- Bearsden Station;
- Hillfoot Station; and
- Milngavie Station.

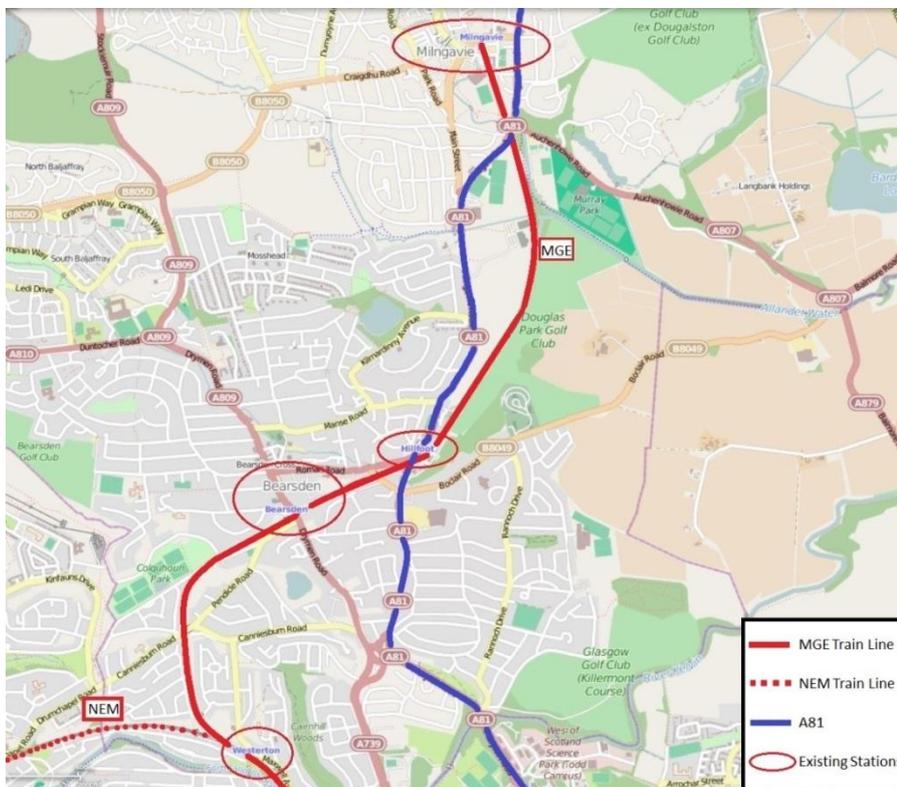


Figure 1: Location plan

(Source: AECOM GIS Mapping system)

Rail Infrastructure

The MGE train line passes through the four stations in the study area, terminating at MGN station. North of Westerton station, the track splits into two with another line, referred to as NEM, going towards Anniesland.

Bearsden rail station is manned with a ticket office, has a waiting room, a car park which can accommodate 92 cars with two spaces assigned for disabled parking. The next station on the line is Hillfoot rail station which is located approximate 1 mile to the north of Bearsden. The station is within the town of Bearsden and accommodates commuters on the east side of Bearsden. It has 16 car parking spaces, two disabled car park spaces and bicycle stands. The final station is Milngavie where the service terminates and is located approximately two miles to the north of Hillfoot. It currently has a car park of 134 spaces with three disabled parking spaces and a bicycle storage area. All of the station car parks are highly utilised during the day a shortage of parking at the stations is a particular issue for local residents.

3. Proposed Station Location

Introduction

This chapter considers the proposed site for Allander station and reviews the ORS report with regards to the civil engineering and operational aspects that must be considered prior to the construction of a rail station at the proposed site.

Proposed Station Location

Figure 2 and Appendix B show the location of the Kilmardinny development site and its position between the existing Milngavie and Hillfoot rail stations. The proposed site contains a series of smaller developments ranging from retail to recreational and a wide range of high quality residential homes. The A81 lies to the west and the MGE rail line is to the east and they act as borders to the site.

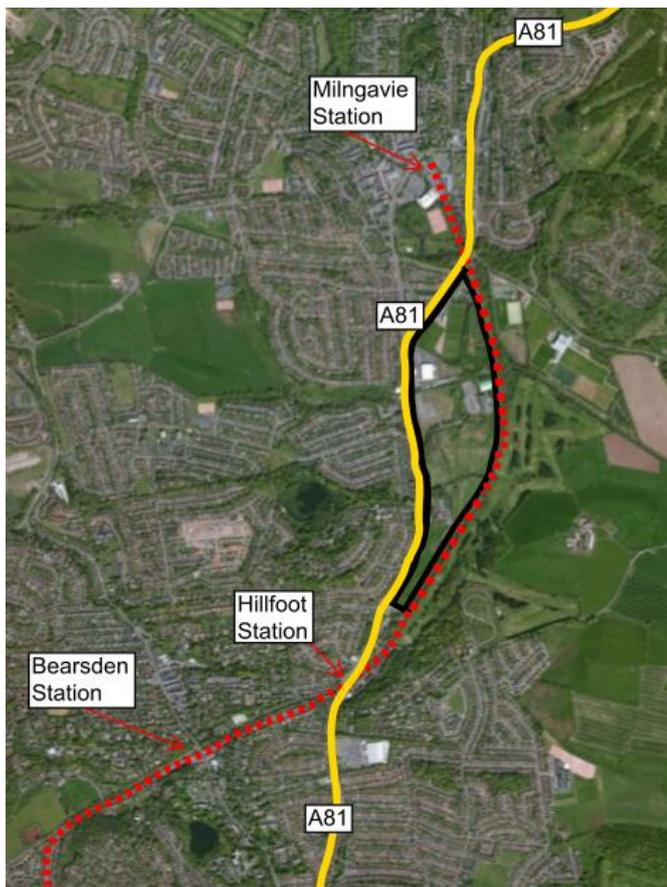


Figure 2: Kilmardinny development site
(Source: AECOM GIS mapping system)

Following discussions with EDC it has been indicated that within the master plan for the Kilmardinny site an area of land has been assigned as the potential location for Allander rail station. The area is located to the rear of the

current Allander Leisure Centre (ALC) which is situated to the east side of the Kilmardinny development site, as shown in Figure 3 and Appendix C.

The area suggested for the rail station by EDC is approximately 3.5km². It is accessed by an unnamed road which junctions with the A81 approximately 60metres south of Mosshead Road. On the current access road there is a road bridge that was recently inspected by EDC as part of their principle inspection programme for 2013/14 and was found to be fully operational and in fair condition. The section of rail track that passes through the suggested area is a single track line that is bi-directional and electrified with 25kV overhead line. To the east of the rail track is the Douglas Park Golf Course. There are several watercourses that surround the suggested site. The Manse Burn runs parallel to the MGE rail line for the majority of track and crosses the railway track at three separate locations. The Craighdu Burn runs through the centre of the Kilmardinny site and crosses under the MGE line before joining the Manse Burn and eventually contributing to the Allander Watercourse.

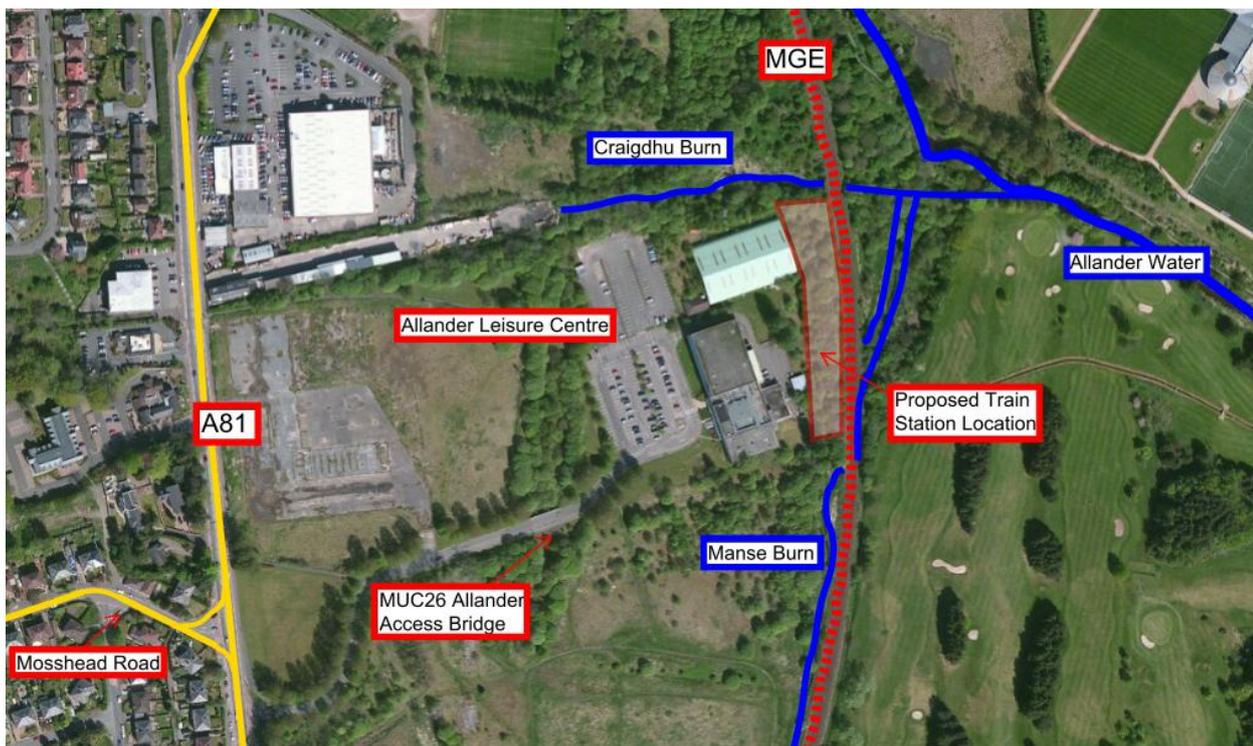


Figure 3: Area identified within the Kilmardinny Masterplan
 (Source: AECOM GIS mapping system)

Civil Engineering Aspects

AECOM has assumed that the proposed station at Allander would be built alongside the existing single track with no modifications. With regards to civil engineering aspects, the following should be considered, in addition to the issues identified in the ORS report.

Planning Issues

AECOM have reviewed EDC's online planning portal website to identify if there are any potential planning applications that would affect the site. Although the proposed station is located within the Kilmardinny development site, an area has been reserved for the station indicating that this should not be an issue.

Land Ownership

As mentioned earlier, the area behind the Allander Leisure Centre has been reserved for the station. AECOM has liaised with EDC who indicate that they own the area surrounding the leisure centre. However, the land ownership details of an area of land between the leisure centre and the land belonging to Network Rail have not been established. This will require further investigation and obtaining this information will have cost implications.

Mining

The Coal Authority has an interactive graphical / mapping system that is a national database which provides information on past and present coal mining in the UK. AECOM has consulted the system and examined the potential site location, which indicates there was a historic mining operation in the area. Additionally, shallow coal presence creates the possibility for future coal extraction in the general region of the Kilmardinny site. Further investigation is advised.

Access to Site

As previously discussed, at present accessing the potential site location is achieved by travelling along a single carriageway which links the A81 to Allander Leisure Centre, crossing the road bridge structure referenced as MUC26. However, if the station was to progress to the construction phase an approach road would be required to be built to allow access to the land behind the leisure centre. This temporary approach road could form part of the potential finalised access route.

Environmental Impact

An independent environmental study has not been undertaken as part of this report; however, one was carried out as part of the Kilmardinny master plan. The study stated that the area surrounding the Craighdu Burn has been identified as a Nature Conservation site with the presence of badgers. Additionally, within the master plan environmental study it was acknowledged that the Allander Water contains migratory salmon as well as bats, otters, water voles and potential newts nesting habitats. It is assumed that a rail station at this location would have a negative impact on the surrounding environmental area. It is recommended that any subsequent study would require a full environmental study to be undertaken potentially including badger and bat surveys.

Right of Way / Core Path

A right of way or core path is a route along which the public have a right of passage. These routes are typically recorded by the Scottish Rights of Way and Access Society (Scotways) in partnership with Scottish Natural Heritage and the local authority. This information is typically stored on the local authority's website. Following a

review of EDC's website it indicated that there are no core paths or rights of way that could affect the proposed station location.

Flooding and Drainage

As stated earlier within this report there are a number of watercourses located within the vicinity of the proposed rail station site. AECOM has undertaken a review of the Scottish Environmental Protection Agency (SEPA) flood risk maps to ascertain whether the area would be at risk from fluvial, pluvial or tidal flooding. As the area is not coastal, tidal flooding can be eliminated. However, the SEPA flood risk maps indicate that there is a high risk of river flooding from the Allander Water. Again, as part of the Kilmardinny master planning phase a Flood Risk Assessment was carried out, however the report did not focus on the impact of a rail station therefore a Flood Risk Assessment study would be required.

Tree Preservation Orders

The area designated for the station within the Kilmardinny master plan contains a large number of trees. In order to construct the station within this area there would be a requirement to remove several trees. The Bearsden Tree Preservation Order (TPO) covers part of the site to the south of the Craighdu Burn, however EDC has confirmed that no TPO exists for the specific proposed station location.

Costs

Whilst a detailed cost estimate has not been completed as part of this study, based on experience from similar schemes it is estimated that construction of the station would cost in the region of £4.08 million (single platform option) – this has been updated to include an allowance for design costs. A breakdown of the cost items is provided in Appendix D. If the proposal is taken forward, further work will be required to confirm the construction costs.

Operational Aspects

This section provides an operational review of the report by Oxford Rail Strategies (ORS) on the proposed station at Allander on the Milngavie branch.

The current version of the Five Mile Plan¹ appended to the ORS report has been consulted, however it was not legible so the file was accessed from an alternative source. In addition it was not possible to append this plan to the report for licensing reasons. Features visible on aerial mapping have been correlated with this plan.

The preferred site for the station access is to the east of the leisure centre. The platform would be located mainly on the formation of the former second track, so could be positioned with the access anywhere along its length. This is constrained to the south by a signal, which should not be within the platform length and could not be moved without considerable cost and possible approval risks.

Platform Gradient

The preferred location for the station east of the leisure centre locates the platform in a dip in the track, with gradients out of the platform of 1 in 92 northbound and 1 in 232 southbound.

The ORS report quotes a Network Rail requirement that new stations should be sited on gradients not steeper than 1 in 500. Following the completion of the Railway Safety and Standards Board research project T815² in 2010, this requirement has now been dropped and no maximum gradient is now defined for stations, such as Allander, where no splitting or joining of trains will take place³. It is, however, stated to be desirable to locate platforms on a constant gradient.

The T815 project also gathered data on existing stations with gradients that did not meet the then standard for new stations and those in the Strathclyde area can be seen in Table 1: Significant rail station platform gradients.

Station	Gradient
Singer	1 in 289
Carluke	1 in 98
Wishaw	1 in 102
Motherwell	1 in 143
Cambuslang	1 in 163
Inverkip	1 in 168
Neilston	1 in 70

Table 1: Significant rail station platform gradients in Strathclyde

¹ MGE-01 dated 11-02-10

² Not publically linkable but available by registering on www.rssb.co.uk

³ Guidance note GI/GN7616 Issue Two: March 2014 available on www.rgsonline.co.uk

From the gradient point of view the ideal location for a station in the vicinity would be south of the signal and towards the south end of the development site, which would place it on a constant and gentle gradient of 1 in 732 and give northbound trains some distance to accelerate before reaching the 1 in 92 ascent. However this does not align with the site master plan, and would also extend over an over bridge which is visible on aerial mapping but appears to be missing or misplaced on the Five Mile Plan. Hence our recommendation is to position the platforms immediately north of the signal, aligning with the ORS recommendation to keep them as far from the 1 in 92 gradient as possible.

The evidence of acceptable safety record on steeper gradients suggests that the station could be built even on the 1 in 92 gradient if necessary, but the recommended location minimises the risk of trains slipping when stopping or starting.

Platform Length

The ORS report suggests a platform length of 130 metres to accommodate 6-car units of classes 318, 320 and 334. The newest electric train units operating on the Strathclyde network are class 380, which are formed of longer vehicles than the older types. Although class 380 are not currently permitted to run on the Milngavie branch, either they or new builds of similar dimensions may operate the route in future.

Existing useable platform lengths on the route are shown below in Table 2:

Station	Shortest useable platform length
Milngavie	141m
Hillfoot	140m
Bearsden	134m
Westerton	125m
Anniesland	142m
Hyndland	128m
Partick	129m

Table 2: Neighbouring rail station platform lengths

While consideration should be given to the possibility of building the platforms to take longer trains, the limitations on platform lengths at stations closer to Glasgow suggests that this possibility is remote and it is therefore recommended to build the platform at only 130m length. Current standards no longer require ramps at platform ends, and omitting the ramp facilitates extension should this ever be required.

Journey Times

The speed and gradient profile between Hillfoot and Milngavie in both directions has been entered into AECOM's ARTEM journey time model, which has been shown to produce good correlation with actual times in a wide range of projects.

The current Working Timetable gives start-to-stop times of three minutes between Hillfoot and Milngavie in each direction. The ARTEM model gives similar times without the Allander stop and indicates that an intermediate stop at Allander would extend these by about one and a half minutes inclusive of thirty seconds dwell time as allowed for at other stations along the route. Predicted start to stop times are as follows:

- Hillfoot to Allander: 2min
- Allander to Milngavie: 2min
- Milngavie to Allander: 2min
- Allander to Hillfoot: 2min

Details of sectional running times were not included in the supplied copy of the ORS report, but our results are broadly consistent with the results presented. The ORS report gives a time penalty of two minutes for the Allander stop, which is more than adequate.

Timetabling

A review of Network Rail's latest available Timetable Planning Rules confirms that there are no constraints that would affect the operation as proposed by ORS. Similarly the current Working Timetable is consistent with the times presented by ORS.

AECOM support the arguments presented by ORS that an Allander stop will reduce turnaround time at Milngavie, but that this remains sufficiently long. It is noted in passing that the ORS mention of time to undertake token exchanges does not apply. The line is signalled on the Track Circuit Block system which does not involve token exchanges.

Notwithstanding the above, there is an issue with the proposal relating to incoming trains arriving late at Milngavie delaying the departing train. The situation is best illustrated by a train graph showing 30min of the existing service (this pattern repeats all day), see Figure 4. The vertical axis is distance and the horizontal axis is time, with each line representing a train journey. The sections between Westerton and Bearsden and between Hillfoot and Milngavie are single track, so only one train can be between these station pairs at any time.

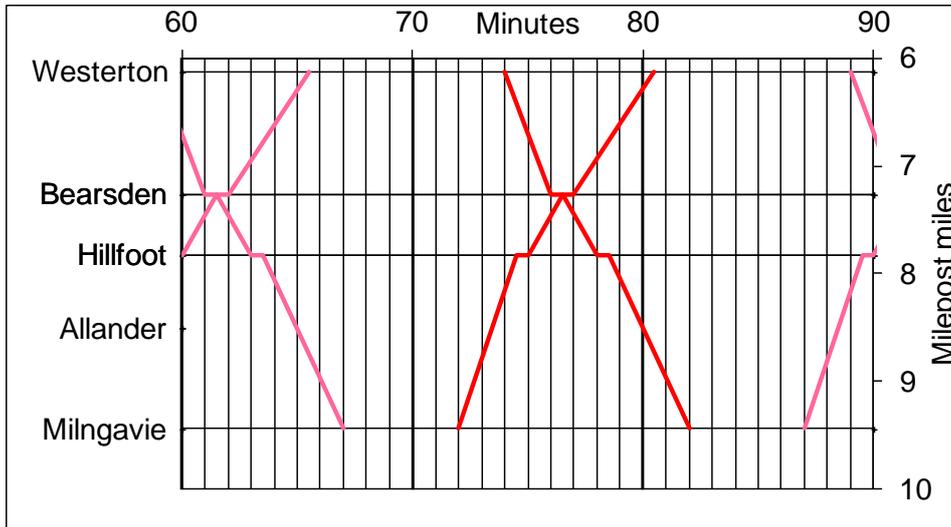


Figure 4: Current timings

It can be seen on Figure 4 that the trains on the branch are scheduled to pass at Bearsden and five minutes after each train arrives at Milngavie, a train departs from the other platform. Because of the single line sections, a train approaching Milngavie late will delay a train in the other direction at Bearsden, and if more than about 3 minutes late will also delay the train that is waiting to depart from Milngavie.

Introducing an Allander stop on the Lanark/Motherwell but not the Edinburgh services while keeping the existing times at Hillfoot and beyond, as proposed by ORS, reduces the five minute gap to three minutes therefore making this situation more likely to occur (see Figure 5 below).

We consider this reduction in service robustness would not be acceptable. A train approaching the branch more than 1-2 minutes late would either:

- be held at Westerton or Hillfoot and arrive at Milngavie 10min late, still able to depart on time but treated as a failure in performance statistics; or
- delay the next departure by a similar number of minutes, with the risk of causing further delays as it passes through the central Glasgow area where trains are timed at close headways over several complex junctions.

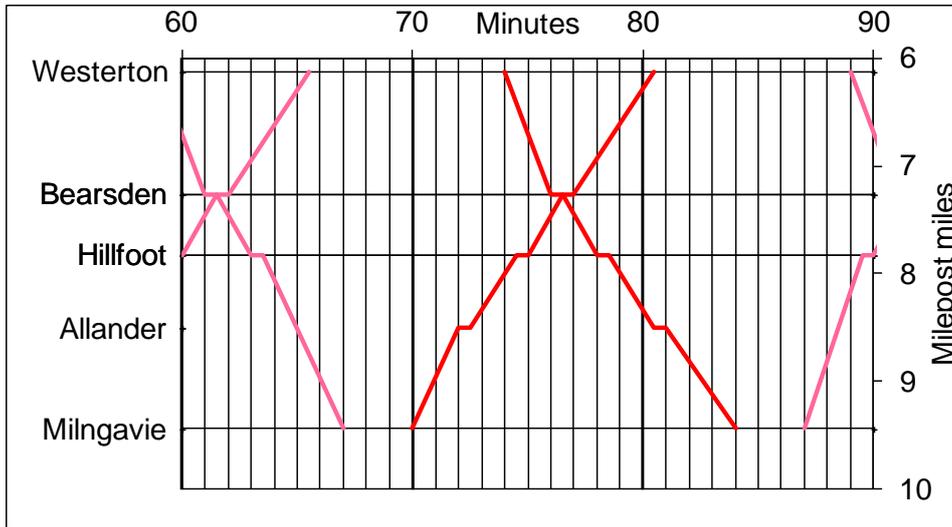


Figure 5: Timetable as proposed by ORS

It may be possible to resolve this issue by making trains leave Milngavie three minutes later, thereby increasing the current five minute interval from arrival to departure to six minutes (see Figure 6 below) and also making it less likely that trains will be delayed at Bearsden. It does mean that a delayed departure from Milngavie will delay the next arrival, but this is less likely because the departing train stands at Milngavie for 20 minutes so is likely to be ready to leave on time.

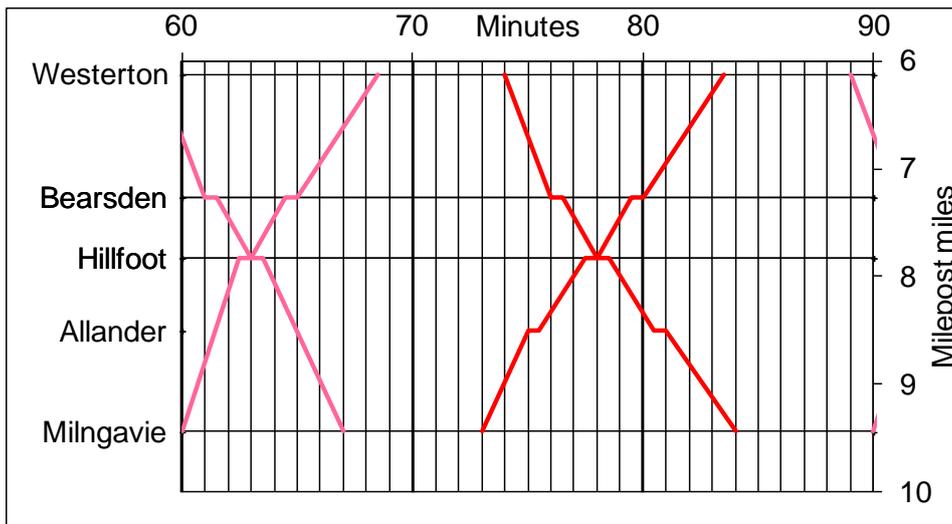


Figure 6: Alternative Timetabling

However, making this change to the Milngavie branch does affect train times at Westerton and therefore impacts on the timetable for the wider area. Within the scope of this study it is not possible to say whether the Strathclyde suburban timetables could be modified to accommodate this change.

4. Standard Rail Station Design

Introduction

This chapter considers the design requirements for any new rail station before considering specific design suggestions for Allander.

New Station Requirements

Rail stations constructed in the United Kingdom are required to comply with a number of rail station design documents. These can include, The Railway Group's 'GI/RT7016 - Interface between Station Platforms, Track and Trains', Network Rail's 'Guide to Station Planning and Design' and 'Accessible Train and Station Code of Practice'. The items listed below are standard elements stated within these documents as being required for any new station:

- A platform length of 130m to accommodate six car units of classes 318, 320 and 334;
- Possible extension to 155m to accommodate two, three car sets of class 380;
- Waiting shelters;
- Customer information displays and public addresses;
- Driver only operation viewing facilities;
- Station lighting;
- CCTV and passenger help points;
- Car parking facilities;
- Access road;
- Disabled access from car park to the platform;
- Ticket vending machines;
- Good road links to local roads; and
- Pedestrian / bicycle access to National Cycle routes.

Allander Station Design

Whilst it is anticipated that the station at Allander would initially be unstaffed, passive provision has been considered in this feasibility study to accommodate a station building in the future. A standard modular building would be best suited to this area due to the limited space available. This would provide a covered waiting area, booking office, staff accommodation and public toilet facilities.

It is envisaged that a single platform would be located adjacent to the existing track rather than creating a rail track sidings as this will minimise construction costs from the outset. The ORS report indicated that the use of a single platform is more suitable with regards to reducing the overall cost as in contrast to installing a new double platform approach. The track appears to be on a curve, and without topographical or gauging information it is difficult to assess whether or not that this location is fully suitable. However, if the track was identified as being unsuitable then an alternative location north or south of the proposed area would be sought. If the proposed station could not be relocated then modifications of the track could be examined. However this would incur considerable design and construction costs.

Customer information display screens (CIS) and help points would be installed on the platform as well as lighting columns which could host CCTV cameras and Long Line Public Address (LLPA) speakers. These would be located at the back of the platform.

Weather protection for passengers would be provided by installing a single waiting shelter on the platform which would also contain ticket vending machines.

Signalling and telecommunications gantries may require modification within the area of the new station. This would be developed throughout the subsequent stages.

In order to encourage public transport use, bus stops and taxis pick up points would be located as close to the station entrance as possible. Bicycle parking would also be included in the design of the station to encourage the use of sustainable transportation. A designated car parking facility for the rail station could be built within the proposed area. The existing leisure centre car park can accommodate approximately 200 vehicles.

It is vital that the station meets the required standards for all the elements such as lighting and signs, but most importantly for access to the platform. The 'Accessible Train and Station Code of Practice' document recommends that an obstacle free route from the station entrance and associated drop off points to the platform must be less than 400m.

Given that the proposal suggests the use of a single platform at the station, no footbridge will be required.

5. Summary

Following a review of the information available, we have concluded that should be technically feasible to build a single platform rail station at the Allander site. From a civil engineering aspect there are no immediate issues that would cause any great concern.

The ORS conclusions regarding the operational feasibility of the Allander stop are broadly supported, but with one important exception - for the service to operate reliably an adjustment of two to three minutes is needed to the times of trains from Milngavie towards Glasgow at Westerton. More detailed work, including in-depth discussions with Network Rail, are required to confirm the feasibility/acceptability of this recommendation in terms of adjustments to the wider network timetable. If this cannot be achieved, the track between Milngavie and Hillfoot would need to be doubled to allow the service to run reliably with a station at Allander. The station itself would then require a second platform and an accessible access route to it – this would clearly have significant cost implications that could impact on the ability to fund the scheme, in addition to the business case.

AECOM recommends that if SPT and EDC decide to continue with this study then the proposed station should be taken through Network Rail’s GRIP process where the following should be carried out:

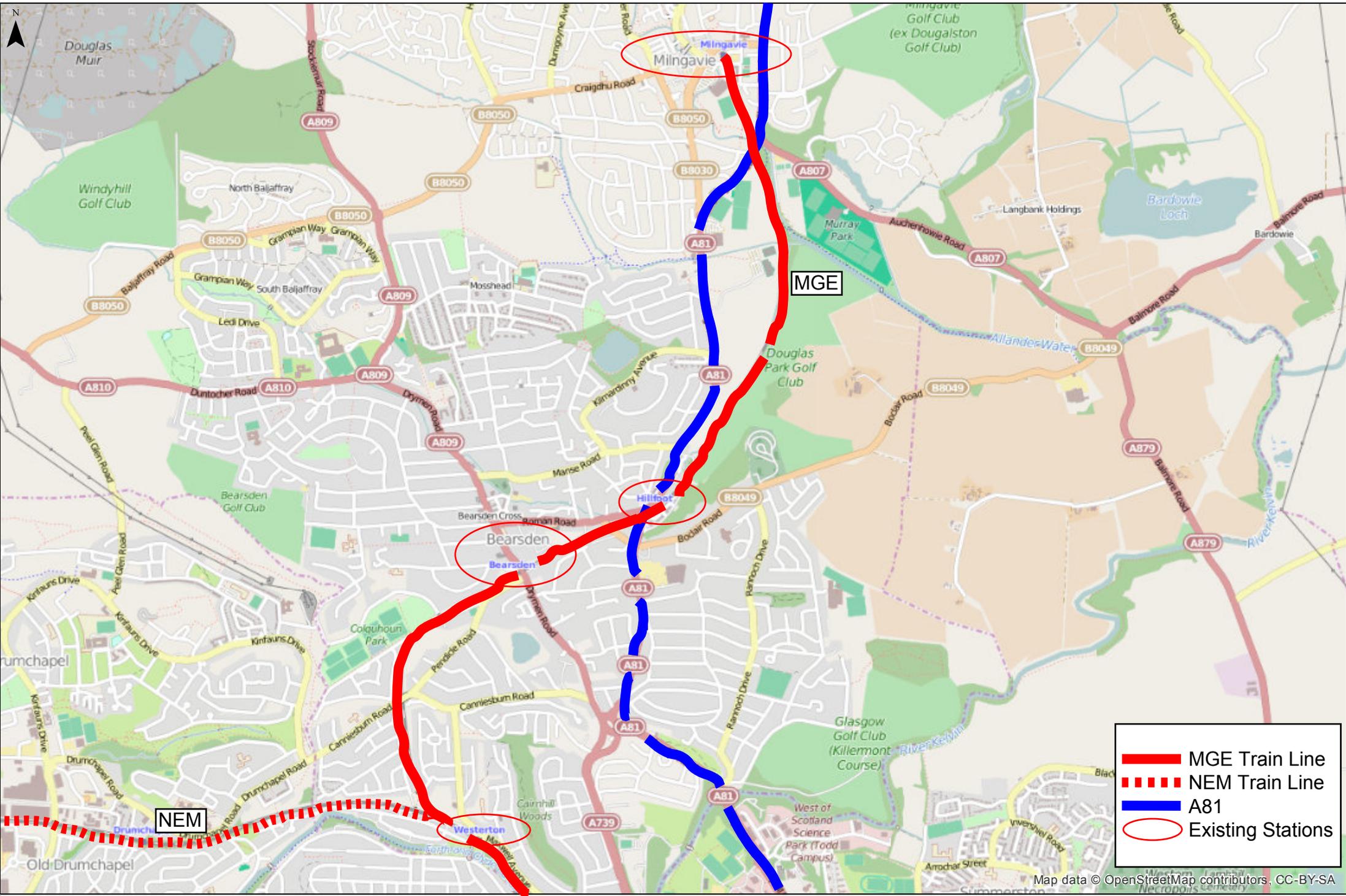
<ul style="list-style-type: none"> • A topographical survey (including gauging) 	<ul style="list-style-type: none"> • Signalling, telecoms and electrical study
<ul style="list-style-type: none"> • Outline Business Case development (including modelling of passenger demand and cost benefit analysis). 	<ul style="list-style-type: none"> • Utilities search
<ul style="list-style-type: none"> • Full environmental study 	<ul style="list-style-type: none"> • Land ownership search and engagement
<ul style="list-style-type: none"> • Engagement with Network Rail 	<ul style="list-style-type: none"> • Ground investigation works
<ul style="list-style-type: none"> • Detailed Flood Risk Assessment 	<ul style="list-style-type: none"> • Detailed consulting with The Coal Authority

6. References

- Network Rail. (n.d.). Guide to Station Planning and Design.
- Faber Maunsell | AECOM (July 2008), A81 Corridor Study, STAG Final Report
- Oxford Rail Strategies(February 2014), Allander Rail Halt
- East Dunbartonshire Council (EDC) and the Strathclyde Partnership for Transport (SPT) (July 2014), Milngavie, Bearsden and Glasgow (A81 Corridor)
- AECOM (October 2014) Allander Halt – Operational Issues
- McINALLY Associates (July 2006) Kilmardinny Non-Technical Summary of Environmental Statement <http://www.eastdunbarton.gov.uk/pdf/DE%20Planning/Non-Technical%20Summary.pdf>
- WSP (September 2013) ALLANDER ACCESS BRIDGE, Principal Inspection Programme
- Scottish Environmental Protection Agency. (n.d.). *Flooding Homepage*. Retrieved May 07, 2014, from SEPA.org.uk: <http://map.sepa.org.uk/floodmap/map.htm>

Appendices

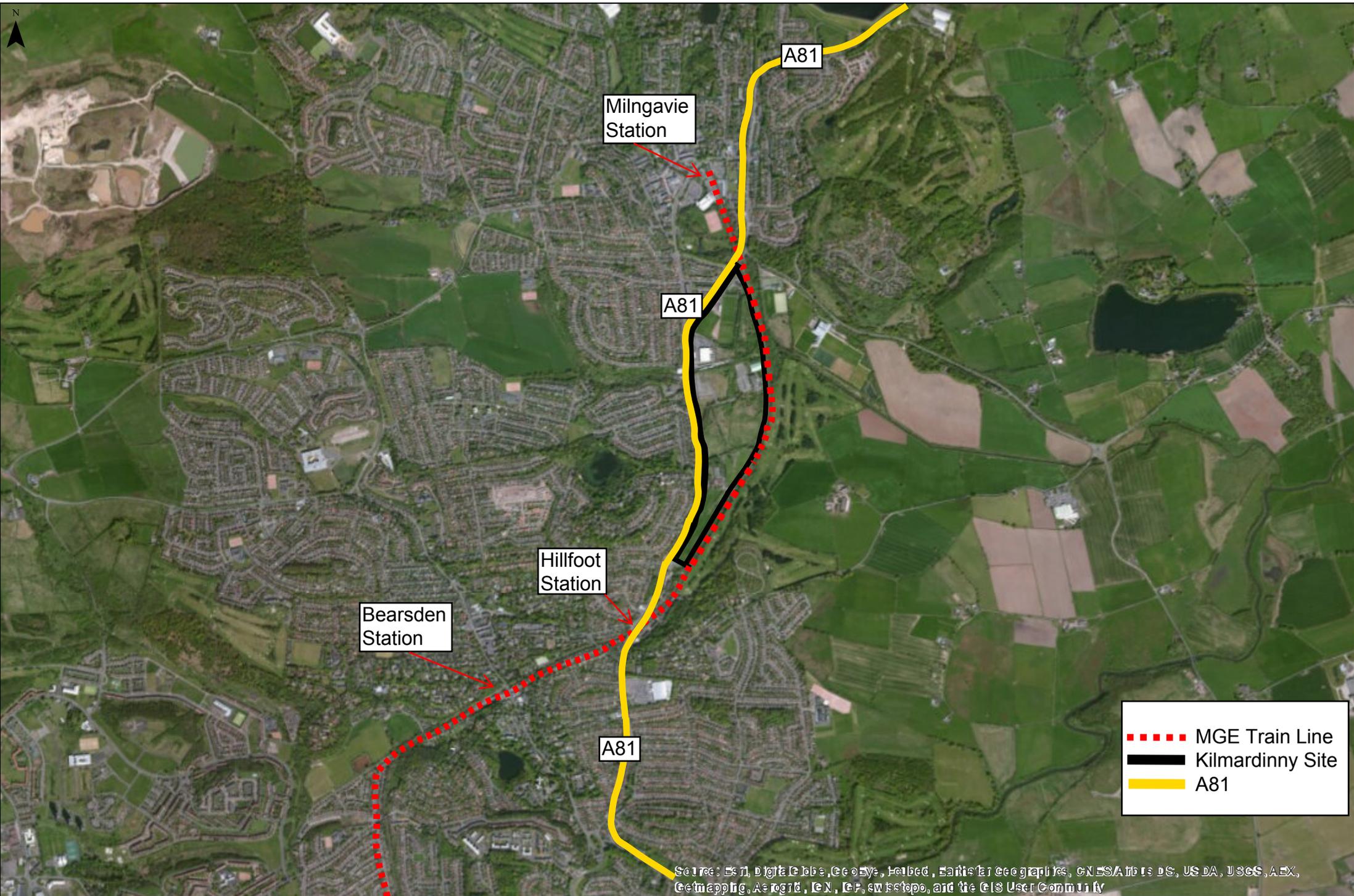
Appendix A: Location Overview Plan



	MGE Train Line
	NEM Train Line
	A81
	Existing Stations

Map data © OpenStreetMap contributors, CC-BY-SA

Appendix B: Kilmardinny Development Plan



Milngavie Station

A81

A81

Hillfoot Station

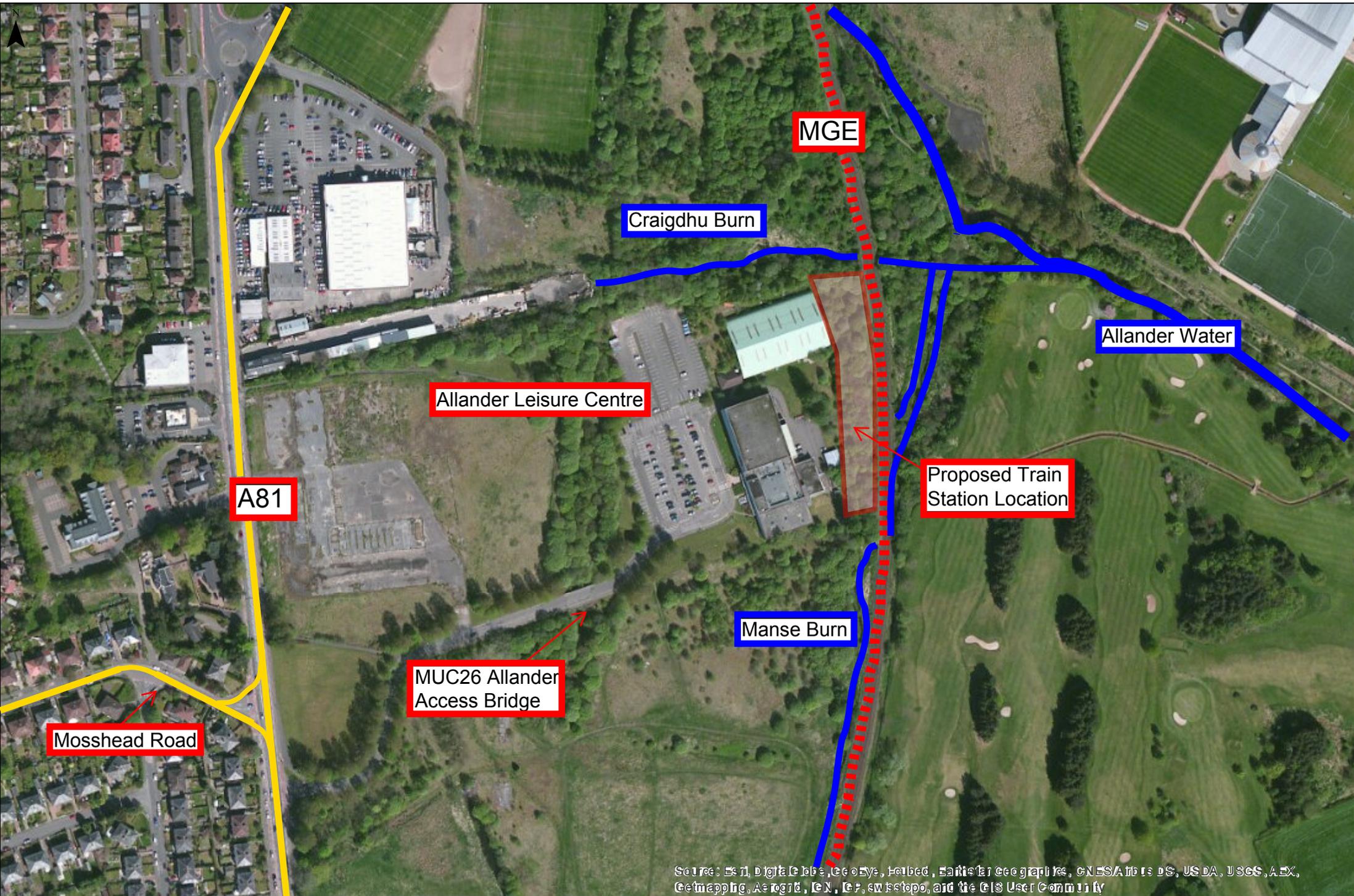
Bearsden Station

A81

--- MGE Train Line
— Kilmardinny Site
— A81

Source: Esri, DigitalGlobe, GeoEye, Helio, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aergrid, CNR, IGN, swisstopo, and the GIS User Community

Appendix C: Proposed Location Plan



Source: Esri, DigitalGlobe, GeoEye, AeroGRID, IGN, SIA, Airphoto, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Appendix D: Estimated costs

The following costs are based on a station being designed and built using the existing infrastructure layout.

Design Elements

Item	Description	Cost
1	Design from GRIP stage 2 - 5	£ 504,335
Total		£ 504,335
Contingency 20%		£ 100,867
Design Cost		£ 605,202

Construction Elements

Item	Description	Quantity	Unit of Measurement	Price (base year 2014)	Cost
Earthworks					
A1	Site Clearance (75% of area)	2,625	m2	£ 5	£ 13,125
B1	Tree Removal	50	nr	£ 500	£ 25,000
C1	Excavate Top Soil	656	m3	£ 10	£ 6,563
D1	Fill (re-use 60% of excavated)	393.75	m3	£ 10	£ 3,938
E1	Imported Fill	400	m3	£ 30	£ 12,000
F1	Disposal Excavated material	200.0	m3	£ 20	£ 4,000
G1	Disposal Contaminated material	200.0	m3	£ 80	£ 16,000
Station Building and Platforms					
A2	Station Platform incl shelters etc; 160x 4.0m	1	nr	£ 1,500,000	£ 1,500,000
B2	Platform Signalling	1	sum	£ 50,000	£ 50,000
D2	Signalling, Telecoms and OLE modifications	1	sum	£200,000	£ 200,000
Car Park					
A4	Car Park including Disabled parking (approx. 150)	1	sum	£ 322,500	£ 322,500
B4	Cycle Parking 15 spaces	1	sum	£ 550	£ 550
Roadwork's					
A5	Access Roads	1	nr	£ 120,000	£ 120,000
B5	Bus and taxi access (incl Bus stop)	1	nr	£ 15,000	£ 15,000
C5	Signalized road crossing	1	nr	£ 58,000	£ 58,000
D5	Modification to existing Road	1	nr	£ 50,000	£ 50,000
E5	Modification and resurfacing existing road	1	nr	£ 80,000	£ 80,000
F5	Road Marking & Signalling	1	nr	£ 5,000	£ 5,000
G5	Foot paths to existing routes	1	nr	£ 25,000	£ 25,000
Landscaping					
A6	Landscaping	1	nr	£ 15,000	£ 15,000
Total					£ 2,521,675
Preliminaries @ 15%					£ 2,899,926
Contingency 20%					£ 579,985
Station Cost					£ 3,479,912
Overall Cost					£ 4,085,114

Note: This estimate has not been calculated specifically for the scheme, but is based on similar schemes elsewhere. Further investigation will be required in order to provide a robust estimate.

Appendix C – AST 1 Tables

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 1	Name of Planner:	Katrina Keddie
Proposal Description:	Do Minimum	Estimated Total Public Sector Funding Requirement:	Capital costs: Committed
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

	persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.
Transport Planning Objectives	
Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	Positive impact on this objective by encouraging greater uptake of walking, cycling and public transport use.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Walking and cycling initiatives will improve access by active travel modes to the public transport network.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	The do minimum measures would have a small positive impact on this objective.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Reducing the occurrence of rail users parking in Milngavie Town Centre makes it easier for shoppers to visit Milngavie and thus supports local economic development. Meanwhile, improvements associated with the Kilmardinny development support sustainable travel to / from the development.
Delivery of a transport network that supports healthy lifestyles.	Do minimum measures would contribute to healthy lifestyles as a number of schemes specifically consider improving walking and cycling.
Delivery of transport that enhances local air quality.	Positive impact by encouraging walking, cycling and public transport use and therefore modal shift from the car.
Development of an integrated transport network, including co-ordination between modes and increased connectivity between active travel infrastructure and public transport.	The Kessington Hub specifically seeks to promote integration between walking, cycling and public transport.
Provision of a transport network that delivers safety and security across all modes of transport.	Negligible impact on safety and security.

Rationale for Selection or Rejection of Proposal:		Measures proposed in the Do Minimum are already committed schemes.
Implementability Appraisal		
Technical		
Operational		
Financial	The capital costs are committed.	
Public	The consultation process generally found stakeholders were amenable to measures which improve walking, cycling and public transport.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	1	The improvements planned for walking and cycling will help to encourage modal shift and thus will have a minor benefit.
Safety	0	Negligible impact on safety
Economy	1	Parking charges and waiting restrictions in Milngavie Town Centre to prevent rail users using parking earmarked for retail would support local retail. Furthermore, improvements to walking and cycling may encourage more people to use services within the local area.
Integration	1	This would improve integration between walking, cycling and the public transport network.
Accessibility & Social Inclusion	1	Improvements to walking and cycling will enhance accessibility and reduce social exclusion for those without a car.

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 2	Name of Planner:	Katrina Keddie
Proposal Description:	Rail Park & Ride at Allander	Estimated Total Public Sector Funding Requirement:	Capital costs: Medium - High
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.

Transport Planning Objectives

Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	The option would better facilitate access to the frequent rail service for a large section of the community which is currently remote from the rail network. It will also facilitate sustainable travel for the future Kilmardinny development. Whilst the overall impact on mode shift is expected to be positive, the provision of a Park & Ride facility may reduce the benefits of this option locally as it may increase local traffic levels.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Positive impact because a new rail station would address the identified accessibility gap with regards to access to the rail network. Furthermore, providing parking at this station could reduce parking constraints at existing stations.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	Expected to have a significant impact through providing a new station at Allander which will provide access to and from the proposed Kilmardinny development. The option addresses a gap in service provision between Milngavie and Hillfoot which has resulted in a number of properties being remote from a rail service; therefore, improving sustainable transport links from the area to employment, social and leisure opportunities, particularly in Glasgow City Centre.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Supporting rail travel to the Kilmardinny development will contribute to sustainable economic growth. However, the option may encourage residents to travel outside the local area for leisure and shopping, therefore, limiting the benefit to the local economy.
Delivery of a transport network that supports healthy lifestyles.	The new rail station creates a catchment area of residents within walking and cycling distances to the rail network which support healthy lifestyles. However, if the rail station is built with 400 spaces rather than 150 spaces, the impact is likely to be smaller as it may

	encourage more people to drive rather than walking or cycling to the station.
Delivery of a transport network that enhances local air quality.	Moderate positive impact as it encourages modal shift from the car to rail. A car park with 150 spaces is likely to have a greater impact on air quality compared with the 400 space car park as it would discourage dependency on the car for travel to the station. However, this assumes a rail station with 150 spaces attracts as much demand, and therefore modal shift, as a rail station with 400 parking spaces.
Development of an integrated transport network, including co-ordination between transport modes	New rail station with parking contributes to an integrated transport network by considering how people would access the rail station and ensuring the new station is well-integrated with the surrounding area.
Provision of a transport network that delivers safety and security across all modes of transport.	Negligible impact on safety and security.
Rationale for Selection or Rejection of Proposal:	The option aims to address the identified accessibility gap with regards to access to the rail network as well as ensuring sustainable access to the Kilmardinny development.
Implementability Appraisal	
Technical	In summary, it should be technically feasible to construct a rail park and ride facility at Allander, however, this is discussed in greater detail within the Feasibility Report (Appendix B). Land has been protected in the EDC Local Development Plan and Kilmardinny masterplan for the development of a rail station at Allander.
Operational	In order to operate a rail service at Allander reliably, an adjustment of –two to three minutes is needed to the train timetable but more detailed work, and discussion with Network Rail, is necessary to confirm the feasibility / acceptability of adjusting the timetable. If a change to the timetable is not possible, the track would require doubling to maintain reliability, which would have notable cost implications. A new station at Allander would need to be included on rail ticketing systems, rail maps, rail signalling systems, timetables etc which will incur a significant cost. There will be a continual maintenance cost to the Local Authority, rail operators and government. Parking controls are not envisaged to be necessary.
Financial	This option is expected to have a medium - high capital cost.
Public	There was widespread support for a rail station at Allander in the consultation process and it is likely this scheme would prove popular. It is worth noting currently there is only one neighbouring property (Allander Sports Centre); however, it is

	likely when the rail station is being constructed the Kilmardinny development will have been built out, at least partially, which could lead to some objections.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	-1	<p>This option would require consumption of land but the land identified has already been earmarked for development. The environmental impact will depend on the scale of facilities proposed, such as, whether the car park has 150 or 400 spaces.</p> <p>An independent environmental study was undertaken for this study but was carried out as part of the Kilmardinny masterplan and following this it was assumed a rail station would have a negative impact on the surrounding environmental area. It is recommended any subsequent study would require a full environmental study to be undertaken.</p> <p>SEPA flood risk maps indicate a high risk of river flooding from Allander Water so a Flood Risk Assessment study would be required.</p> <p>Several trees would need to be removed to construct the station, the Bearsden Tree Preservation Order (TPO) covers part of the site but EDC confirmed no TPO exists the specific proposed station location.</p> <p>During construction, traffic, dust and noise will have a negative impact on the environment.</p>
Safety	0	Negligible impact on safety.
Economy	1	<p>Positive economic impact by improving access to opportunities. Furthermore, encouraging modal shift should help generate greater revenue for public transport operators.</p> <p>However, this option may encourage shoppers to leave the local area, which they would otherwise have used for shopping, so could have a slight negative impact.</p>
Integration	1	<p>Transport - This would improve integration between the rail network and private car and the station could be connected to walking, cycling and bus routes in the area.</p> <p>Land Use - The option integrates a major residential development into the regional transport network.</p>

		<p>Policy - The option is well integrated with local policy directives but the integration with regional policy is negligible. Until recently, this option was relatively coherent with national policy but recent policy supports maximising the use of existing stations rather than creating new infrastructure.</p>
Accessibility & Social Inclusion	2	<p>This option addresses the accessibility gap to the rail network as well as ensuring Kilmardinny residents are not dependent on the private car.</p>

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 3	Name of Planner:	Katrina Keddie
Proposal Description:	Quality Bus Corridor	Estimated Total Public Sector Funding Requirement:	Capital costs: Medium
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.

Transport Planning Objectives

Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	Enhancing passenger facilities, information and marketing, and service provision aim to make bus travel more attractive. The benefits of bus priority facilities may limit the impact on modal shift due to the journey time delay experienced outside EDC area rialto Glasgow City Centre. However, journey times for more local journeys, particularly those locations within the study area and the West of Scotland Science Park, would improve.
Improve access to the public transport network, particularly for the first and last miles of journeys.	QBC measures seek to improve the quality of existing measures but very few of the specific options would improve access to the network, with the exception of real time passenger information.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	All QBC schemes would enhance access to employment and leisure opportunities, particularly within the local area by improving the quality of the bus network with regards to journey time, reliability and information provision.
Improve bus journey times and journey time reliability on the A81 Corridor.	The QBC will improve bus journey times and reliability through bus lanes, bus priority at pinch points and bus detection within SCOOT. An express bus service from Milngavie to Glasgow would provide a quicker journey time compared with regular services.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Improving the quality of bus travel and facilities supports local development and encourages bus travel within East Dunbartonshire.
Delivery of a transport network that supports healthy lifestyles.	Limited impact but this option improves the quality of bus services which may encourage more people to walk to a bus service if they consider it a suitable alternative for their journey.
Delivery of a transport network that enhances local air quality.	Negligible impact with the exception of an express bus service from Milngavie to Glasgow. This would encourage modal shift, particularly commuter flows to Glasgow, from the car to

	bus which would reduce private vehicle emissions.	
Development of an integrated transport network, including co-ordination between transport modes.	Real time information provision would improve integration between modes by giving passengers greater control over their journey.	
Provision of a transport network that delivers safety and security across all modes of transport.	Negligible impact on safety and security.	
Rationale for Selection or Rejection of Proposal:	The option aims to improve the quality of bus travel to encourage uptake.	
Implementability Appraisal		
Technical	The nature and scale of this option could vary but most QBC schemes are technically deliverable and would not require additional land.	
Operational	This option would require provision of improved bus infrastructure and ongoing maintenance. Enforcement of bus lanes will be essential to successfully operate this option. Maintenance of the bus priority measures will be a further issue.	
Financial	This option is expected to have a medium capital cost.	
Public	This option is unlikely to attract negative criticism nor be strongly supported. If QBC measures have a negative impact on general traffic movements this may be unpopular due to the high level of car ownership in the study area. However, on the whole, any improvements to bus services are likely to be seen as positive.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	1	Improving the quality of bus provisions seeks to encourage greater bus patronage and modal shift from the car to bus, without increasing the number of bus services.
Safety	1	Improvements to passenger waiting facilities, for example with better lighting, should improve safety. The perception of safety would be improved with the enhancements to passenger facilities.
Economy	1	Encouraging modal shift should allow vehicle operating cost savings and generation of revenue for public transport operators, particularly if priority measures are implemented to ensure the bus is more competitive with the private vehicle.
Integration	2	Transport - This option should improve interchange for bus users, for example, through improved information provision.

		Negligible impact on land use and policy integration.
Accessibility & Social Inclusion	2	This option improves bus services which would offer people greater travel choices resulting in a positive impact on accessibility and social inclusion.

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 4	Name of Planner:	Katrina Keddie
Proposal Description:	Area Wide Smartcard Ticketing	Estimated Total Public Sector Funding Requirement:	Capital costs: Medium - High
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.

Transport Planning Objectives

Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	Option aims to improve public transport ticketing making it easier to travel by public transport and therefore more attractive.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Improving the integration of ticketing may make people consider it a viable alternative; however, it does little to improve access to the public transport network.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	Small positive impact by creating a public transport network that was easier to use. The evidence review highlighted the commuter flow to Glasgow so improving ticketing is one way of improving public transport access and onwards to employment, social and leisure opportunities.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Negligible impact on local economic development / sustainable economic growth.
Delivery of a transport network that supports healthy lifestyles.	Integrating ticketing makes travelling by public transport more attractive and may encourage people to walk or cycle to public transport services as these become a viable alternative for the journeys they make.
Delivery of a transport network that enhances local air quality.	Small positive impact by encouraging modal shift through making travelling by public transport more attractive.
Development of an integrated transport network, including co-ordination between transport modes.	This option aims to ease the integration between modes with regards to ticketing. The need for multiple tickets was raised during the consultation process as a barrier to integrated travel and this option seeks to address this.

Provision of a transport network that delivers safety and security across all modes of transport.	Negligible impact on safety and security.	
Rationale for Selection or Rejection of Proposal:	The option aims to improve ticketing and thus make public transport more attractive to encourage modal shift.	
Implementability Appraisal		
Technical	Option requires the use of bus detection loops and onboard transponders should BIAS be implemented. However, this would not involve untried technologies.	
Operational	Requires a level of regular maintenance and management as well as a marketing campaign to encourage modal shift to public transport, particularly amongst car drivers.	
Financial	This option is expected to have a medium capital cost.	
Public	There was support for the introduction of smartcard ticketing at the consultation event.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	1	This option is expected to have a positive impact as improving the integration of ticketing seeks to encourage greater public transport use, without increasing the number of bus and rail services.
Safety	0	Negligible impact on safety.
Economy	1	Encouraging modal shift would generate revenue for public transport operators.
Integration	2	Transport - Positive impact on integration between modes and across neighbouring authorities. Land Use – Negligible impact. Policy - Negative impact on SPT regional ambitions as it would be complex to integrate an EDC and SPT system.
Accessibility & Social Inclusion	0	Negligible impact on accessibility and social inclusion.

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 5	Name of Planner:	Katrina Keddie
Proposal Description:	Improve Integrated Ticketing	Estimated Total Public Sector Funding Requirement:	Capital costs: Medium – High
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.

Transport Planning Objectives

Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	The option aims to improve public transport ticketing making it easier to travel by public transport and thus more attractive.
Improve access to the public transport network, particularly for the first and last miles of journeys.	It is anticipated that integrating ticketing would do little to improve access to the network.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	Small positive impact on this objective by creating a public transport network that is easier to use.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Improving the integration of ticketing between public transport modes makes it easier to travel sustainably and encourages modal shift from the car to public transport.
Delivery of a transport network that supports healthy lifestyles.	By making public transport more attractive, this may encourage people to see public transport as a viable alternative for their journeys and they may walk or cycle to the stop / station.
Delivery of a transport network that enhances local air quality.	Small positive impact on local air quality because the option encourages modal shift from the car to public transport.
Development of an integrated transport network, including co-ordination between transport modes.	The need for multiple tickets was raised during the consultation process so integrating ticketing addresses this barrier.

Provision of a transport network that delivers safety and security across all modes of transport.	Negligible impact on safety and security.	
Rationale for Selection or Rejection of Proposal:	The option aims to improve the integration of ticketing to make public transport more attractive and encourage modal shift.	
Implementability Appraisal		
Technical	This option would use existing technologies.	
Operational	This option would require a level of regular maintenance and management.	
Financial	This option is expected to have a medium – high capital cost.	
Public	There was widespread support for greater integration of ticketing at the consultation event.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	1	Integrating ticketing seeks to encourage public transport use so the environmental impact is expected to be positive.
Safety	0	Negligible impact on safety.
Economy	1	The option aims to encourage modal shift and thus generate revenue for public transport operators.
Integration	2	Transport - Positive impact on integration between modes and across neighbouring authorities. Land use – Negligible impact. Policy - Negative impact on SPT regional ambitions as it would be complex to integrate an EDC and SPT system.
Accessibility & Social Inclusion	0	Negligible impact on accessibility and social inclusion.

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 6	Name of Planner:	Katrina Keddie
Proposal Description:	Enhanced walking and cycling paths and links	Estimated Total Public Sector Funding Requirement:	Capital costs: Medium
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

	persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.
Transport Planning Objectives	
Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	The option encourages the use of active travel modes for all journeys and modal shift should be achieved across a wide spectrum of times and journey purposes.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Enhancing walking and cycling routes to rail stations, town centres and key local trip attractors would contribute considerably to this objective. This would encourage those living within walking and cycling vicinity of rail stations not to use their car.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	Improving active travel links in the study area would enhance access to local services and facilities without the use of the car. Furthermore, ensuring these links are connected, where relevant, to neighbouring authorities, particularly Glasgow City Council where there are large commuter outflows would support enhanced access.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Enhancing active travel links throughout the corridor may encourage residents to access local services, particularly retail, rather than leaving the area by car. Furthermore, Milngavie is the starting point of the iconic West Highland Way and enhancing the active travel image of the area will support the economic benefit of this.
Delivery of a transport network that supports healthy lifestyles.	Improving the quality of active travel measures to encourage uptake supports healthy lifestyles.
Delivery of a transport network that enhances local air quality.	Encouraging the uptake of active travel modes has a notable impact on this objective as it would directly reduce emissions compared with the private car or public transport.
Development of an integrated transport network, including co-ordination between transport modes.	This option would have a notable impact on integration between active travel and public transport modes, particularly the development of high quality paths which converge on key destinations.

Provision of a transport network that delivers safety and security across all modes of transport.	This option ensures walking and cycling paths are of a high standard, for example, with adequate lighting, a suitable surface and segregated where applicable.	
Rationale for Selection or Rejection of Proposal:	The option aims to improve the quality of walking and cycling paths to encourage the uptake of active travel.	
Implementability Appraisal		
Technical	No technical challenges are envisaged with implementing this option but there may be challenges associated with constrained land and maintenance.	
Operational	<p>The primary operational challenge is the maintenance requirements. It is worth noting that at points of conflict between different modes (i.e. at road junctions) prioritising walking and cycling may reduce network efficiency.</p> <p>It is essential facilities are kept in good condition to ensure they remain attractive and encourage use, for example, to avoid broken footways, substandard lighting and potholes. Poor road surfacing was raised during the consultation process as a barrier to cyclists.</p> <p>Finally, remote walking and cycling paths may require enforcement of anti-social measures because anti-social behaviour can be perceived as a barrier to walking and cycling.</p>	
Financial	This option is expected to have a medium capital cost.	
Public	Generally, support is expected for this option but there may be specific elements in local areas which draw opposition, for example, loss of parking for a cycle lane. Public perception of this option will vary depending on the extent and nature of the enhanced facilities. There is likely to be concern increased cycling may cause difficulties in area with high pedestrian movements, particularly Milngavie Town Centre, therefore, segregation of pedestrians and cyclists may be required.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	2	Improving the walking and cycling network is likely to have a minor positive impact as it encourages the uptake of active travel modes rather than motorised transport.
Safety	2	Improving the quality of walking and cycling paths, for example with sufficient lighting, would also improve the safety of those using them. However, remote footpaths can attract anti-social issues which have a negative impact on perceived and actual safety. Street lighting levels must be kept to a good standard as poor lighting is seen as a barrier to active travel, particularly during winter months.
Economy	1	This option seeks to encourage modal shift to active travel modes, therefore, it is

		expected to have a smaller impact compared with public transport improvements. Enhancing the perception of walking and cycling may help promote Milngavie Town Centre to those starting the West Highland Way.
Integration	2	<p>Transport - Enhancing walking and cycling would improve the integration with other modes of transport.</p> <p>Land Use- Improving walking and cycling provisions would improve connections between land uses.</p> <p>Policy - Measures to improve walking and cycling are a recurrent theme in policy documents so this option fulfils this criteria.</p>
Accessibility & Social Inclusion	3	Improving walking and cycling provisions presents people with greater travel choices and would have a positive impact on accessibility and social inclusion.

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 7	Name of Planner:	Katrina Keddie
Proposal Description:	Secure cycle storage	Estimated Total Public Sector Funding Requirement:	Capital costs: Low
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

	persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.
Transport Planning Objectives	
Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	Encourages cycling, rather than travel by private car, to train stations and town centres.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Provision of secure cycle storage facilities at rail and bus stations improves access to the public transport network by bicycle.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	Negligible impact on supporting enhanced access to employment, social and leisure opportunities.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Providing secure cycle storage at rail stations and new developments encourages greater uptake of sustainable travel, thus contributing positively to the objective.
Delivery of a transport network that supports healthy lifestyles.	Improving the cycle storage facilities seeks to encourage uptake of cycling and therefore supports healthy lifestyles.
Delivery of a transport network that enhances local air quality.	Encouraging the uptake of cycling has a notable impact on this objective as it would directly reduce emissions.
Development of an integrated transport network, including co-ordination between transport modes.	This option would have a significant impact on the integration between cycling and rail travel.
Provision of a transport network that delivers safety and security across all modes of transport.	The security of cycle parking at stations was raised during the consultation process and this option seeks to address this.

Rationale for Selection or Rejection of Proposal:		The option aims to provide secure cycle storage facilities to encourage greater uptake of cycling.
Implementability Appraisal		
Technical	No technical obstacles are expected with this option.	
Operational	Occasional maintenance cost to ensure they remain fit for purpose and attractive.	
Financial	This option is expected to have a low capital cost.	
Public	There was support for improved cycle storage facilities at the consultation event. There is unlikely to be opposition to increased cycle parking unless it causes significant increases in cyclist numbers thus conflicting with pedestrians.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	1	Improving cycling facilities is expected to have a small positive impact as it encourages cycling rather than motorised transport.
Safety	1	A lack of secure cycle storage was an issue raised during the consultation process so providing secure cycle storage facilities would address this particular aspect of security.
Economy	0	Provision of secure cycle storage facilities seeks to encourage modal shift to cycling, therefore, it is expected to have a smaller impact compared with public transport improvements.
Integration	2	Transport - Enhancing cycling storage would improve the integration with other modes of transport. Land Use – This option would support measures to improve cycling connectivity between land uses. Policy - Measures to improve cycling are a recurrent theme in policy documents so this option fulfils this criteria.
Accessibility & Social Inclusion	1	Improving cycle storage makes cycling more attractive and therefore offers greater travel choices and would have a positive impact on accessibility and social inclusion.

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 8	Name of Planner:	Katrina Keddie
Proposal Description:	Bus Service Improvements	Estimated Total Public Sector Funding Requirement:	Capital costs: Medium-High
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.

Transport Planning Objectives

Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	The option would enhance service provision with the aim to make bus travel more attractive, thus reducing the need for car usage. The effect on commuting modal shift may be limited by the journey time delay experienced outside the EDC area and relatively long travel time compared with rail.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Providing a new bus service which connects residential areas to rail stations and town centres would undoubtedly improve access to the public transport by providing greater penetration of the bus network in the study area. Similarly, increasing the frequency of existing bus services would also contribute to this as the bus becomes a more viable alternative.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	This option would have a notable impact on this objective through the provision of new bus services and increasing the frequency of existing services. These improvements would provide greater access, particularly for those without a car, to the public transport network and therefore access to employment and leisure opportunities. Furthermore, ensuring links are connected to neighbouring authorities, [particularly Glasgow City Council where there are large commuter out flows to, would support enhanced access.
Improve bus journey times and journey time reliability on the A81 Corridor.	Increasing the frequency of existing services should improve bus journey times on the network as the waiting time between services is reduced.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Providing more bus services, particularly to town centres and key developments, supports local development and encourages travel within East Dunbartonshire.
Delivery of a transport network that supports healthy lifestyles.	Greater bus provisions may encourage people to travel by bus and therefore walk or cycle to / from the bus stop / station.

Delivery of a transport network that enhances local air quality.	Positive impact as it encourages modal shift from the car to bus by providing a more frequent service.	
Development of an integrated transport network, including co-ordination between transport modes.	This option would reduce interchange time which will improve integration, making sustainable travel more attractive.	
Provision of a transport network that delivers safety and security across all modes of transport.	Negligible impact on safety and security.	
Rationale for Selection or Rejection of Proposal:	The option aims to improve bus provisions with regards to coverage and service frequency to encourage greater uptake of bus travel.	
Implementability Appraisal		
Technical	No technical obstacles are envisioned.	
Operational	To ensure this option is commercially viable, patronage levels need to be developed and sustained. Throughout the life of the option there will be maintenance costs associated with infrastructure and bus fleet. If the bus services improvements include an entirely new route, this may require the recruitment of staff.	
Financial	This option is expected to have a medium-high capital cost.	
Public	Stakeholders raised concerns about bus service reductions across the area and the lack of penetration into housing estates, therefore, improvements to this situation are likely to be welcomed. This option at present may only serve a smaller segment of the market and rely on public sector funding to generate a critical mass with regards to patronage.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	0	Greater bus provisions may result in an increase in 'vibration' due to an increase in airborne resonance because of low frequency noise created by buses.
Safety	0	Negligible impact on this objective.
Economy	1	Creating a more attractive bus network would encourage modal shift and therefore generate revenue for public transport operators.
Integration	1	This option should have an impact on the integration of the bus network with other forms of transport and locations by improving the frequency of existing bus services

		and providing new services.
Accessibility & Social Inclusion	2	This option is expected to have a considerable positive impact by providing a new bus service connecting residential areas to town centres, services and rail stations as well as increasing the frequency of existing services.

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 9	Name of Planner:	Katrina Keddie
Proposal Description:	Junction Improvements	Estimated Total Public Sector Funding Requirement:	Capital costs: Medium
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.

Transport Planning Objectives

Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	This option is unlikely to have a significant impact on this objective but there would be scope to improve transit through the junction for buses, cycles and pedestrians. Furthermore, improving traffic movements may encourage more car trips due to reduced journey times.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Although this option should make it quicker for vehicles through these particularly sections of road, it is unlikely to have a direct influence on access to the public transport network.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	Improving traffic flow at this junction is anticipated to have a minimal impact on this objective as it does not directly influence access to destinations.
Improve bus journey times and journey time reliability on the A81 Corridor.	The impact on bus journey times and reliability is not expected to be significant because the option would only improve transit through junctions. Furthermore, most delay to bus services is experienced outside EDC and occurs within the Glasgow City Council boundary.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Reduction of delay and congestion at key bottlenecks will improve journey times within the local area and the attractiveness of Bearsden and Milngavie town centres. Furthermore, it will facilitate more efficient deliveries and servicing of local commercial and retail businesses.
Delivery of a transport network that supports healthy lifestyles.	Negligible impact on this objective.
Delivery of a transport network that enhances local air quality.	Although this would avoid stationary queuing traffic, the benefit to local air quality is expected to be minimal.
Development of an integrated transport network, including co-ordination between transport modes.	Negligible impact on this objective.

Provision of a transport network that delivers safety and security across all modes of transport.	Negligible impact on safety and security.	
Rationale for Selection or Rejection of Proposal:	The option aims to relieve congestion at pinch points in the network.	
Implementability Appraisal		
Technical	The most significant technical challenge with this option is designing an efficient scheme and this may require transport modelling to do so. With regards to implementation, it is anticipated this would take place within the cartilage of the existing public road network. A specific constraint at Boclair Road is the presence of mature protected trees which effectively prevents any alterations being made to the road.	
Operational	Operationally, any significant junction alteration will need to be assessed, probably with a transport model to ensure that it improves traffic flow and the network operates as efficiently as possible.	
Financial	This option is expected to have a medium capital cost.	
Public	The evidence review found car ownership is very high in the area and improvements to junction operation / traffic movements are expected to be supported by a large portion of the local population.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	0	Improving the junction would create smoother traffic flow and reduce queuing which could lead to the slight improvement of air quality but this is expected to be negligible.
Safety	0	Reducing queuing traffic at this junction is likely to have a minor benefit on safety due to the reduction of accidents associated with queuing traffic. Improvement of traffic flows may increase vehicular speeds on the A81 but this is considered to be negligible.
Economy	1	This option is unlikely to have significant benefit to wider economic activity but it would improve traffic flow at this point which should generate a travel time saving.
Integration	0	Negligible impact on integration.
Accessibility & Social Inclusion	0	This option primarily benefits car owners so care would have to be taken to ensure it does not exacerbate social exclusion problems by giving a further advantage of car owners.

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 10	Name of Planner:	Katrina Keddie
Proposal Description:	Variable Message Signs (VMS)	Estimated Total Public Sector Funding Requirement:	Capital costs: Low - Medium
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

	persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.
Transport Planning Objectives	
Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	VMS could encourage modal shift by indicating the relative merits of public transport over private car use in terms of journey times or other measures and thus have a positive impact. However, the extent of the impact is limited.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Although this option may direct people to public transport stations, it is unlikely to have a direct influence on access to the public transport network.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	VMS could direct traffic to social and leisure events which would support enhanced access but this impact is expected to be minimal.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Negligible impact on local economic development / sustainable economic growth.
Delivery of a transport network that supports healthy lifestyles.	Negligible impact on supporting healthy lifestyles.
Delivery of a transport network that enhances local air quality.	Negligible impact on enhancing local air quality.
Development of an integrated transport network, including co-ordination between transport modes.	VMS could advise road users of any issues on the network and provide directions to public transport stations as well as advising on the departure time for the next train / bus service.

Provision of a transport network that delivers safety and security across all modes of transport.	VMS could inform road users of accidents and incidents on the network to avoid further accidents. Furthermore, signs could also provide weather updates and advise accordingly.	
Rationale for Selection or Rejection of Proposal:	The option aims to provide more information to road users to improve safety, encourage public transport use and enhance access.	
Implementability Appraisal		
Technical	No technical obstacles to this option are expected as it uses existing technologies.	
Operational	Maintenance regime would be required and officers will need to be trained to operate and manage the system.	
Financial	This option is expected to have a low-medium capital cost.	
Public	VMS is generally popular with the public, subject to the messages being displayed.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	1	Increasing awareness of the relative benefits of other modes of travel may help to encourage modal shift and smarter routing of traffic may cut down on vehicle mileage. This option is expected to have a minor positive impact.
Safety	1	This would have the potential for flexible messaging and could warn drivers of accidents or other risks/hazards and so improve levels of safety. Therefore, it is expected this would have a minor positive impact. If incorrectly located, VMS could distract drivers but the risk of this is considered negligible.
Economy	0	This option is unlikely to have a significant benefit to wider economic activity but VMS could improve traffic flow in the area which would generate a travel time saving.
Integration	0	Negligible impact on this objective.
Accessibility & Social Inclusion	0	Provision of more information is expected to have a positive impact on accessibility.

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Option 11	Name of Planner:	Katrina Keddie
Proposal Description:	Road options to enforce / reduce speeds and enhance appeal of sustainable travel	Estimated Total Public Sector Funding Requirement:	Capital costs: Low - Medium
			<i>Annual revenue support N/A</i>
			<i>Present Value of Cost to Govt. N/A</i>
Funding Sought From: (if applicable)	N/A	Amount of Application:	<i>Sum N/A</i>
Background Information			
Geographic Context	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed</p>		

	persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.
Transport Planning Objectives	
Objective:	Performance against transport planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	The option would have a small positive impact as it aims to make sustainable travel more appealing.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Although the scheme will enhance the experience of travelling to public transport by active travel modes, it will not improve access to the network.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	Negligible impact on enhancing access to employment, social and leisure opportunities.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Place making initiatives enhance the appeal of sustainable travel by creating a 'sense of place' which supports local development and sustainable economic growth. Reduction of vehicle speeds may encourage more people to walk or cycle for their journeys.
Delivery of a transport network that supports healthy lifestyles.	By creating a sense of place and improving the safety of walking and cycling as well as reducing vehicular speeds this may encourage more people to walk or cycle for their journeys thus contributing to the objective.
Delivery of a transport network that enhances local air quality.	Negligible impact on enhancing local air quality.
Development of an integrated transport network, including co-ordination between transport modes.	Negligible impact on this objective.

Provision of a transport network that delivers safety and security across all modes of transport.	Safety for all road users will be improved because accidents should be reduced and if they do occur, they will be less severe.	
Rationale for Selection or Rejection of Proposal:	The option aims to enforce / reduce vehicular speeds and improve the 'sense of place' to encourage greater uptake of sustainable travel.	
Implementability Appraisal		
Technical	No technical obstacles are anticipated with this option. However, there may be challenges associated with constrained land and maintenance.	
Operational	Ongoing maintenance of infrastructure will be required. Enforcement of regulations may be required which puts a burden on the Police service.	
Financial	This option is expected to have a low - medium capital cost.	
Public	For any speed reduction techniques, it is anticipated they will polarise public opinion and would be subject to public consultation, measures on the A81 will be no different. Horizontal measures tend to be more publicly acceptable and for this classification of road, vertical measures are not suitable so horizontal measures would be used.	
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment	1	Measures which create a better 'sense of place' should improve the environment and have a positive impact.
Safety	1	This option specifically targets improving safety (actual and perceived) and is expected to have a moderate positive impact.
Economy	0	Negligible impact on the economy.
Integration	0	Negligible impact on the three aspects of integration.
Accessibility & Social Inclusion	0	Negligible impact on accessibility and social inclusion.

Appendix D – AST 2 Tables

Part 2 Appraisal Summary Table

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Package 1	Name of Planner:	Alison Lawrence
Proposal Description:	Do Minimum	Total Public Sector Funding Requirement:	Capital costs/grant (undiscounted): £1,455,000
			Annual revenue support: £63,500
			Present Value of Cost to Govt: TBC
Funding Sought From: (if applicable)	N/A	Amount of Application:	N/A
Background Information			
Geographic Context:	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context:	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context:	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly</p>		

	wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.
Planning Objectives	
Objective:	Performance against planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	Positive impact on this objective by encouraging greater uptake of walking, cycling and public transport use.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Walking and cycling initiatives will improve access by active travel modes to the public transport network.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	The do minimum measures would have a small positive impact on this objective.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Reducing the occurrence of rail users parking in Milngavie Town Centre makes it easier for shoppers to visit Milngavie and thus supports local economic development. Meanwhile, improvements associated with the Kilmardinny development support sustainable travel to / from the development.
Delivery of a transport network that supports healthy lifestyles.	Do minimum measures would contribute to healthy lifestyles as a number of schemes specifically consider improving walking and cycling.
Delivery of a transport network that enhances local air quality.	Positive impact by encouraging walking, cycling and public transport use and therefore modal shift from the car.

Development of an integrated transport network, including co-ordination between transport modes	The Kessington Hub specifically seeks to promote integration between walking, cycling and public transport.		
Provision of a transport network that delivers safety and security across all modes of transport.	Negligible impact on safety and security.		
Rationale for Selection or Rejection of Proposal:	Measures proposed in the Do Minimum are already committed schemes.		
Implementability Appraisal			
Technical:			
Operational:			
Financial:	The capital costs are already committed for the Do Minimum.		
Public:	The consultation process generally found stakeholders were amenable to measures which improve walking, cycling and public transport.		
Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-criterion	Qualitative Information	Quantitative Information	Significance of Impact
Noise and Vibration	The package includes measures to promote modal shift, a reduction in traffic levels may result in a reduction in ambient noise.		Negligible
Global Air Quality – CO ₂	Given the scale of the study area, global air quality is not expected to be		Negligible

	significantly impacted upon.		
Local Air Quality – PM ₁₀ and NO ₂	Local air quality is likely to improve if modal shift from the private car to sustainable modes of transport occurs.		Negligible – minor positive
Water Quality, Drainage and Flood Defence	There is unlikely to be an impact on the water environment because the schemes include little physical development. It has been assumed that the committed schemes incorporate adequate mitigation measures to reduce negative impacts and enhance positive effects.		Negligible
Geology	Negligible impact on geology.		Negligible
Biodiversity	Negligible impact on biodiversity.		Negligible
Visual Amenity	The components of this package do not include significant physical changes to the environment and therefore are not expected to have a significant impact on visual amenity. However, the parking charging regime is likely to reduce visual clutter of inappropriate parking.		Negligible
Agriculture and Soils	This would not result in a significant impact on agriculture or soils as there would be no significant land take associated within the immediate study area.		Negligible
Cultural Heritage	The Do Minimum measures do not include significant physical changes to the environment and, therefore, are unlikely to result in impacts on unknown archaeology. However, measures to promote sustainable travel could prevent unnecessary car use and assist in		Negligible

	reducing vibration damage to historic buildings / monuments.		
Landscape	Not determined		
Physical Fitness	Not determined		
Monetised summary			
Monetary Impact Ratio			
Safety			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Accidents	Change in Annual Personal Injury Accidents		
	Change in Balance of Severity	Danger to pedestrians, cyclists and other drivers is mitigated through the enforcement and implementation of a segregated cycle route. Danger to road users is mitigated by general maintenance, signing and lining.	Negligible
	Total Discounted Savings	Not determined	
Security		Issues relating to security are considered negligible although actual and perceived personal security may be improved by general maintenance of street lighting and vegetation to minimise dark areas.	
Monetised summary			

Monetary Impact Ratio							
Economy (Transport Economic Efficiency)							
Sub-criterion	Item	Qualitative Information	Quantitative Information				
User Benefits	Travel Time	The Do Minimum schemes are not expected to have significant benefits with regards to journey time. However, the cycle scheme will improve accessibility for cyclists and enhance the cycle journey along the A81.					
	Travel Time savings by size	Not determined	% of total monetised savings (£)				
			< -5 mins	-5 to -2 mins	>-2 to 0 mins	0 to <+2 mins	+2 to +5 mins
	User Charges	Not determined					
	Vehicle Operating Costs	Not determined					
Quality / Reliability Benefits	Not determined						
Private Sector Operator Impacts	Investment Costs	£1,455,000 (costs associated with localised improvements at Kilmardinny, Kessington Travel Hub and cycle corridor)					
	Operating & Maintenance Costs	TBC					

	Revenues	£63,500	
	Grant/Subsidy payments	N/A	
Monetised summary		Not determined	
Monetary Impact Ratio			

Economy (Wider Economic Benefits)			
Sub-criterion	Item	Qualitative information	Quantitative information
Wider Economic Benefits	Agglomeration economies (WB1)	Not determined	
	Increased output in perfectly competitive markets (WB3)	Not determined	
	Wider benefits arising from improved labour supply (WB4)	Not determined	
Monetised summary			
Monetary Impact Ratio			

Economy (Economic Activity and Location Impacts)			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Economic Activity and Location Impacts	Local Economic Impacts	Not determined	
	National Economic Impacts	Not determined	
	Distributional Impacts	Not determined	
Integration			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Transport Interchanges	Services & Ticketing		
	Infrastructure & Information	The implementation of travel planning and walking / cycling measures should achieve marginal improvements in integration. The segregated cycle route (The "Bearsway") will improve cycle links throughout the corridor.	Neutral to moderate positive

Land-use Transport Integration		The scheme will have a neutral impact on land-use integration through the construction of committed schemes.	
Policy Integration		This package could have a minor / negligible impact on policy integration through the implementation of measures such as travel plans, segregated cycleway and sustainable travel policies which will encourage modal shift.	Negligible to minor positive
Accessibility & Social Inclusion			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Community Accessibility	Public Transport Network Coverage	Not determined	
	Access to Other Local Services	Not determined	
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	Not determined	
	Distribution/Spatial Impacts by Area	Not determined	

Part 2 Appraisal Summary Table

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Package 2	Name of Planner:	Alison Lawrence
Proposal Description:	Active travel modes	Total Public Sector Funding Requirement:	Capital costs/grant (undiscounted): £1,403,200
			Annual revenue support: £12,500
			Present Value of Cost to Govt: TBC
Funding Sought From: (if applicable)	N/A	Amount of Application:	N/A
Background Information			
Geographic Context:	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context:	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context:	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above</p>		

	average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.
Planning Objectives	
Objective:	Performance against planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	The package encourages the use of active travel modes, rather than the private car, for all journeys. Modal shift should be achieved across a variety of journey purposes, including the commute.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Enhancing active travel routes as well as installing cycle storage facilities will contribute considerably to this objective.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	Enhancing active travel routes within the study area will improve access to local services without a reliance on the private car. Furthermore, ensuring these links are connected to neighbouring authorities, particularly Glasgow City Council, would support enhanced access.
Improve bus journey times and journey time reliability on the A81 Corridor.	Negligible impact on improving bus journey times and journey time reliability.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Improvements to the active travel network may encourage residents to access local services, rather than leaving the area by car. Furthermore, Milngavie is the starting point of the West Highland Way and enhancing the active travel image of the area will support the economic benefit of this.
Delivery of a transport network that supports healthy lifestyles.	Improving the quality of active travel measures to encourage uptake supports healthy lifestyles.
Delivery of a transport network that enhances local air quality.	Encouraging the uptake of active travel modes has a notable impact on this objective as it would directly reduce emissions compared with the private car or public transport.
Development of an integrated transport network, including co-ordination between transport modes	This package would have a notable impact on integration between active travel and public transport modes.

Provision of a transport network that delivers safety and security across all modes of transport.	The security of cycle parking at stations was raised during the consultation process and installing secure storage facilities seeks to address this. With regards to walking and cycling paths, the package seeks to ensure these are of a high standard, for example, with adequate lighting, a suitable surface and segregated where possible.		
Rationale for Selection or Rejection of Proposal:	The package comprises schemes that were found to support the Transport Planning Objectives at STAG 1 and has been taken forward for the STAG 2 assessment.		
Implementability Appraisal			
Technical:	No technical challenges are envisaged with implementing this option but there may be challenges associated with constrained land and maintenance.		
Operational:	<p>The primary operational challenge is the maintenance requirements. It is worth noting that at points of conflict between different modes (i.e. at road junctions) prioritising walking and cycling may reduce network efficiency.</p> <p>It is essential facilities are kept in good condition to ensure they remain attractive and encourage use. For example, poor road surfacing was raised during the consultation process as a barrier to cyclists.</p> <p>Finally, remote walking and cycling paths may require enforcement of anti-social measures because anti-social behaviour can be perceived as a barrier to walking and cycling.</p>		
Financial:	The capital costs are comparatively low for the component schemes and funding requirement should not be prohibitive.		
Public:	Generally there was support for the component schemes of this package, but public perception will depend on the extent and nature of enhanced facilities. There may be concern that increased cycling may cause conflict in areas with high pedestrian movements, such as Milngavie Town Centre.		
Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-criterion	Qualitative Information	Quantitative Information	Significance of Impact

Noise and Vibration	It is unlikely this package would have any significant impact, positive or negative, on noise and vibration. Measures to encourage modal shift may result in a marginal reduction, however this is considered negligible. There may be a temporary negative impact during construction of some components.		Negligible
Global Air Quality – CO ₂	Given the scale of the study area and the level to which any modal shift will be achieved from this package, global air quality is not expected to be significantly impacted upon.		Negligible
Local Air Quality – PM ₁₀ and NO ₂	Air quality is likely to improve assuming that the number of journeys made by vehicles reduces, or there is a promotion of other sustainable modes of transport as a result of greater walking and cycling accessibility.		Minor positive
Water Quality, Drainage and Flood Defence	It is unlikely that improved walking and cycling networks would improve or deteriorate the water environment. However, it is worth noting the path from Kilmardinny to Milngavie Rail Station passes through a flood risk area.		Negligible
Geology	The promotion of modal shift to active travel is likely to improve the biodiversity of the study area through the improvement of air quality. The extent and magnitude of these effects would be greater should the intervention relate to an area-wide initiative.		Minor positive
Biodiversity	This package is not anticipated to have a negative impact on biodiversity. Any improvements in local air quality, due to modal shift to active travel modes, are likely to benefit biodiversity. Careful design will minimise the impact on biodiversity when developing a network of walking and cycling paths. The path between Kilmardinny and Milngavie Rail Station will be within undeveloped green land so could have a negative impact. Whilst lighting paths is		Negligible

	beneficial for safety and security, this may disturb the surrounding habitat areas.		
Visual Amenity	<p>A minor negative impact on visual amenity is anticipated. Developing a network of walking and cycling paths could have a minor impact, particularly where they are constructed through existing green areas. However, facilities are expected to be within existing road / footway environments so this should be minimal. Furthermore, enhancements to walking / cycling and public realm can improve the visual amenity when well designed.</p> <p>Installing secure cycle storage facilities could have a minor negative impact visually; however, this can be mitigated by enclosing the storage facilities within a building or bespoke storage structure.</p> <p>Construction of the majority of components within this package would have a temporary negative impact on visual amenity.</p>		Minor negative
Agriculture and Soils	No impacts (positive or negative) are expected on agriculture and soils.		Negligible
Cultural Heritage	<p>A negligible to minor negative impact is anticipated from this package.</p> <p>Developing the network of active travel paths and associated street furniture could have a minor impact on the visual amenity, particularly in town centres and Category B listed buildings. This impact should be minimised as it would be located within the existing built environment.</p> <p>Cycle storage facilities within town centres and at rail stations can add to clutter and reduce visual amenity but designing a bespoke storage facility can minimise this impact.</p>	Category B listed buildings: Milngavie Railway Station and Gavin's Mill	Negligible to minor negative

Landscape	Not determined		
Physical Fitness	Not determined		
Monetised summary	Not determined		
Monetary Impact Ratio	Not determined		
Safety			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Accidents	Change in Annual Personal Injury Accidents	Enhancing walking and cycling measures could reduce the number of road casualties by removing cars from the road network, but this impact will depend on the extent of modal shift.	
	Change in Balance of Severity	A key issue to consider will be potential conflict between cyclists and pedestrians, especially in town centres.	
	Total Discounted Savings	Not determined	Not determined

Security		<p>The installation of high quality secure cycle storage should enhance actual and perceived security risks.</p> <p>With regards to walking and cycling paths, the specific details are yet to be determined. However, CCTV systems, street lighting and maintaining vegetation can all enhance security. It is particularly important to consider those paths which are remote from the road network.</p>	Minor positive									
Monetised summary		Not determined										
Monetary Impact Ratio		Not determined										
Economy (Transport Economic Efficiency)												
Sub-criterion	Item	Qualitative Information	Quantitative Information									
User Benefits	Travel Time	Direct journey time savings are limited but as this package improves accessibility to the public transport network it is expected to reduce the generalised cost of travel. The package seeks to encourage modal shift and therefore could reduce the number of car trips which may reduce journey times relative to the Do Minimum. However, this benefit will be limited due to the need for additional crossing facilities.										
	Travel Time savings by size	Not determined.	% of total monetised savings (£)									
			<table border="1"> <tr> <td>< -5 mins</td> <td>-5 to -2 mins</td> <td>>-2 to 0 mins</td> <td>0 to <+2 mins</td> <td>+2 to +5 mins</td> <td>>5 mins</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	< -5 mins	-5 to -2 mins	>-2 to 0 mins	0 to <+2 mins	+2 to +5 mins	>5 mins			
< -5 mins	-5 to -2 mins	>-2 to 0 mins	0 to <+2 mins	+2 to +5 mins	>5 mins							

	User Charges	Not applicable for this package.	
	Vehicle Operating Costs	Not applicable for this package.	
	Quality / Reliability Benefits	Not applicable for this package.	
Private Sector Operator Impacts	Investment Costs	£1,403,200 (capital cost for walking and cycling schemes)	
	Operating & Maintenance Costs	TBC	
	Revenues	£12,500	
	Grant/Subsidy payments	N/A	
Monetised summary			
Monetary Impact Ratio			

Economy (Wider Economic Benefits)			
Sub-criterion	Item	Qualitative information	Quantitative information
Wider Economic Benefits	Agglomeration economies (WB1)	Not determined	
	Increased output in perfectly competitive markets (WB3)	Not determined	
	Wider benefits arising from improved labour supply (WB4)	Not determined	
Monetised summary			
Monetary Impact Ratio			
Economy (Economic Activity and Location Impacts)			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Economic Activity and Location Impacts	Local Economic Impacts	Not determined	Not determined
	National Economic Impacts	Not determined	Not determined
	Distributional Impacts	Not determined	Not determined

Integration			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Transport Interchanges	Services & Ticketing	Not applicable for this package	
	Infrastructure & Information	This package seeks to improve access from residential areas to the public transport network and local areas. For example, installing secure cycle storage at rail stations improves integration between cycling and rail travel.	Positive
Land-use Transport Integration		As the package facilitates safer and more convenient access between residential areas, transport services, local services and employment opportunities, the impact is expected to be positive.	Positive
Policy Integration		<p>This package promotes active travel which will encourage modal shift and assist in achieving a healthy, prosperous and inclusive society.</p> <p>All walking and cycling measures will consider the Equality Act during design.</p>	
Accessibility & Social Inclusion			

Sub-criterion	Item	Qualitative Information	Quantitative Information
Community Accessibility	Public Transport Network Coverage	Enhanced walking and cycling links between residential areas and rail stations will increase the level of accessibility to rail services and reduce depending on the car.	Positive
	Access to Other Local Services	Implementing new walking and cycling links from residential areas to town centres, local services and rail stations will improve access.	Positive
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	The package aims to provide alternatives to the private car for local journeys as well as enhancing the walking and cycling environment.	
	Distribution/Spatial Impacts by Area	These benefits should radiate out from Bearsden and Milngavie town centres.	

Part 2 Appraisal Summary Table

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Package 3	Name of Planner:	Alison Lawrence
Proposal Description:	Public transport and access	Total Public Sector Funding Requirement:	Capital costs/grant (undiscounted): £7,914,364
			Annual revenue support: TBC
			Present Value of Cost to Govt: TBC
Funding Sought From: (if applicable)	N/A	Amount of Application:	N/A
Background Information			
Geographic Context:	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context:	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context:	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above</p>		

	average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.
Planning Objectives	
Objective:	Performance against planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	The package enhances public transport provision in the area. With regards to rail, Allander station would improve access to a frequent rail service for a large section of the community that is remote from the rail network. Whilst bus services would also become more attractive, for example, through greater information provision, enhanced passenger facilities and bus priority. However, the impact on commuting for bus travel will be limited due to delays experienced outside the EDC area and relatively long travel time compared with rail.
Improve access to the public transport network, particularly for the first and last miles of journeys.	A new rail station addresses the identified accessibility gap whilst providing parking would reduce parking constraints at existing stations. Real time passenger information would improve access to the network whilst a new bus service which connects residential areas to rail stations and town centres has a notable impact on access.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	The new station at Allander will have a significant impact and will improve sustainable transport links from the area to employment, social and leisure opportunities. Similarly, all measures to improve bus provision will provide greater access, particularly for those without a car, to employment, social and leisure opportunities.
Improve bus journey times and journey time reliability on the A81 Corridor.	QBC measures will improve bus journey times and reliability through bus lanes, bus priority at pinch points and bus detection within SCOOT. Furthermore, increasing the frequency of existing services should improve bus journey times on the network as the waiting time between services is reduced.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Improvements to bus and rail services will contribute to sustainable economic growth. Enhancing the quality of bus travel and facilities as well as the number of bus services supports local development and encourages bus travel within East Dunbartonshire. Allander station may encourage residents to travel outside the local area for leisure and shopping, potentially limiting the benefit to the local economy.

Delivery of a transport network that supports healthy lifestyles.	Improving the quality of public transport in the local area may encourage people to travel by bus or rail and therefore walk or cycle to this service. If Allander station is built with 400 parking spaces, the impact on health is likely to be smaller than a station with 150 parking spaces as it may encourage more people to drive.
Delivery of a transport network that enhances local air quality.	Encouraging modal shift from the car to bus and rail will enhance local air quality. All components of this package seek to make public transport more attractive and encourage car users to change their travel.
Development of an integrated transport network, including co-ordination between transport modes	This package contributes to an integration transport network; real time information gives passengers greater control over their journey whilst improvements to bus services could reduce interchange time. Design of the new rail station with parking at Allander would ensure the station is well-integrated with the surrounding area.
Provision of a transport network that delivers safety and security across all modes of transport.	Negligible impact on safety and security.
Rationale for Selection or Rejection of Proposal:	The package comprises schemes that were found to support the Transport Planning Objectives of STAG 1 and has been taken forward for further assessment at STAG 2.
Implementability Appraisal	
Technical:	It should be technically feasible to deliver this package, for example, the additional land required for Allander is already protected in the EDC Local Development Plan and Kilmardinny masterplan. However, the construction of Allander rail station is discussed in greater detail within the Feasibility Report.
Operational:	<p>The new station at Allander is the main operational challenge within this package. To operate a reliable rail service, an adjustment of two to three minutes is need to the train timetable but more detailed work is required with Network Rail to confirm the feasibility and acceptability of this. The new station would also need to be updated on rail ticketing systems, rail maps, rail signalling systems, timetables which will incur a significant cost.</p> <p>All schemes within this package will require maintenance to some extent and this will need to be considered.</p>

Financial:	The funding requirement for Allander rail station is the component within this package most likely to prove challenging.		
Public:	<p>With regards to the rail station at Allander, there was widespread support during the consultation process and it is likely this scheme would prove popular. However, whilst there is currently only one neighbouring property, once the Kilmardinny development is built, there may be some objections.</p> <p>With regards to bus provision, stakeholders highlighted concerns about bus service reductions in the area and lack of coverage so improvements are likely to be welcomed.</p>		
Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-criterion	Qualitative Information	Quantitative Information	Significance of Impact
Noise and Vibration	<p>The components of this package are unlikely to have an impact on noise and vibration. Any increase in vibration associated with a greater number and frequency of bus services is likely to be counterbalanced by a modal shift away from car use.</p> <p>Airborne resonance caused by buses can cause badly fitted windows and loose ornaments to vibrate which is often interpreted by residents as vibration; although annoying it will not cause damage to property.</p> <p>There may be some negative impacts associated with the new rail station at Allander. Short term impacts are likely during construction whilst in the long term, a positive impact would require a significant reduction in traffic flow.</p>	<p>A 25% decrease in traffic flow would reduce the resultant noise level by 1dB (A), which is unlikely to be perceptible; a 3dB(A) change is often needed to be perceptible to the human ear.</p>	Minor negative
Global Air Quality – CO ₂	Given the scale of the study area, global air quality is not expected to be significantly impacted upon.		Negligible

<p>Local Air Quality – PM₁₀ and NO₂</p>	<p>The new rail station at Allander is expected to have a negligible impact on air quality, although it would have a detrimental impact during construction.</p> <p>If improvements to bus provisions results in modal shift, the reduction in private cars using the route will cut emissions and improve local air quality. The magnitude of improvement will therefore depend on the scale of modal shift achieved.</p>		<p>Negligible</p>
<p>Water Quality, Drainage and Flood Defence</p>	<p>The associated parking with Allander Rail station may result in Allander Water being subject to increased levels of pollutants from fuels leaked from vehicles. Furthermore, the areas adjacent to Allander Water and Manse Burn are also at high risk of flooding and should be avoided when considering the location of the car parking.</p> <p>During construction of the station and parking, there is potential for pollutants and sediments to enter surface waters and reduce water quality of Allander Water, Craighdu Burn and tributaries. However, the temporary and permanent effect of this is likely to be negligible to minor negative.</p> <p>Those components associated with bus provisions are unlikely to have any impact on the water environment.</p>		<p>Negligible to minor negative (with implementation of adequate mitigation)</p>
<p>Geology</p>	<p>Allander station will use new land and disused land, disposing of material from the site will require appropriate handling and disposal.</p> <p>Construction activities could also generate waste and there is the potential for contaminants to enter groundwater. Therefore,</p>		<p>Neutral to minor negative</p>

	<p>a neutral to minor negative impact is predicted.</p> <p>Construction of the station will have a permanent, but not significant, effect on the geology due to the excavation, extraction of material and/or development of the foundations for the structures.</p>		
Biodiversity	<p>The development of Allander rail station and associated parking will take place on green field land, which is likely to be a potential habitat for European species, particularly adjacent to the existing railway line. Therefore, it is recommended that any subsequent study would require a full environmental study to be undertaken.</p> <p>The bus options associated with this package are not expected to have an impact on biodiversity as they are located with the existing road environment.</p>		Negative
Visual Amenity	<p>The visual amenity impact of this package is likely to be minor negative.</p> <p>The bus measures are expected to have a negligible impact as the A81 is already a key route for bus services.</p> <p>Construction of Allander station could result in temporary negative impacts on visual amenity but if the works coincided with the wider development of the site this would reduce the impact. The new station is likely to have some negative permanent impacts as it uses previously undeveloped land but this impact could be mitigated through landscaping.</p>		Minor negative
Agriculture and Soils	<p>Construction of Allander station will require soil to be excavated to undertake earthworks and establish foundations. The risk of ground contamination during construction is also a risk.</p>		Negligible to minor negative

	<p>Furthermore, in order to accommodate the station permanent land take will be required which reduces the land available for its previous use (open ground, agriculture).</p> <p>The other components of the scheme are not expected to impact agriculture and soils.</p>		
Cultural Heritage	<p>Constructing a new rail station with car parking is unlikely to impact on historic buildings or monuments. However, unknown buried archaeology could be impacted during construction.</p> <p>Quality bus measures and public transport improvements could have a minor impact on listed buildings. This will occur if there is an increase in the number of bus services passing historic buildings or the additional street furniture around the buildings.</p> <p>The longer term aim of the package is to reduce traffic along the A81 which should reduce the levels of pollution and vibration around listed buildings.</p>		Negligible to minor negative
Landscape	Not determined		
Physical Fitness	Not determined		
Monetised summary			
Monetary Impact Ratio			
Safety			
Sub-criterion	Item	Qualitative Information	Quantitative Information

Accidents	Change in Annual Personal Injury Accidents	Not determined	
	Change in Balance of Severity	<p>Whilst Allander rail station will attract some new vehicular trips onto the local network, the station should reduce the impact of the Kilmardinny development on the road network. Furthermore, the access road from the A81 to the station is to be upgraded to facilitate efficient traffic flow from the development / rail station on to the A81. This will minimise safety concerns regarding queuing vehicles and conflict.</p> <p>The impact of bus options within the package will depend on the amount of modal shift generated from private modes. Removing cars from the network should reduce the number of casualties.</p>	Negligible to minor positive
	Total Discounted Savings	Not determined	Not determined
Security		<p>This package includes a number of bus improvement measures which are anticipated to have a neutral impact on security.</p> <p>Allander rail station and associated parking is considered to have a negligible impact on security as the facility will be lit and have CCTV surveillance as well as informal surveillance from residential properties and Allander Sports centre.</p>	Negligible

Monetised summary		Not determined						
Monetary Impact Ratio		Not determined						
Economy (Transport Economic Efficiency)								
Sub-criterion	Item	Qualitative Information	Quantitative Information					
User Benefits	Travel Time	Journey time benefits are expected to be positive, primarily due to Allander rail station. However, these benefits are dependent on the timetable changes required not adversely affecting the wider rail network.						
	Travel Time savings by size	Not determined.	% of total monetised savings (£)					
			< -5 mins	-5 to -2 mins	>-2 to 0 mins	0 to <+2 mins	+2 to +5 mins	>5 mins
	User Charges	Not determined.						
	Vehicle Operating Costs	Not determined.						
	Quality / Reliability Benefits	Not determined.						
Private Sector Operator Impacts	Investment Costs	£7,914,364						
	Operating & Maintenance Costs	TBC						

	Revenues	N/A	
	Grant/Subsidy payments	N/A	
Monetised summary			
Monetary Impact Ratio			

Economy (Wider Economic Benefits)			
Sub-criterion	Item	Qualitative information	Quantitative information
Wider Economic Benefits	Agglomeration economies (WB1)	Not determined	
	Increased output in perfectly competitive markets (WB3)	Not determined	
	Wider benefits arising from improved labour supply (WB4)	Not determined	
Monetised summary		Not determined	
Monetary Impact Ratio		Not determined	
Economy (Economic Activity and Location Impacts)			

Sub-criterion	Item	Qualitative Information	Quantitative Information
Economic Activity and Location Impacts	Local Economic Impacts	Not determined	Not determined
	National Economic Impacts	Not determined	Not determined
	Distributional Impacts	Not determined	Not determined
Integration			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Transport Interchanges	Services & Ticketing	Bus feeder services would be timetabled to dovetail with existing rail services thus improving rail and bus integration.	Positive impact
	Infrastructure & Information	<p>The new rail station at Allander includes parking which encourages people to Park & Ride. Without new bus services being introduced, there would be no integration between the station and bus.</p> <p>Improving the information and signalling technology on the route will improve integration between modes.</p>	Positive impact

<p>Land-use Transport Integration</p>		<p>Allander rail station would encourage more sustainable travel to Glasgow from the Kilmardinny development. The station would be within a ten minute walk of most Kilmardinny properties as well as a number of other properties. As the station includes parking this better enables car users to access the rail network and therefore has a moderate positive impact on access to a variety of land uses.</p> <p>QBC measures have a negligible impact on land use integration but improving facilities and journey time reliability may have a minor benefit.</p> <p>A new shuttle bus which interchanges with rail / bus services and accesses new areas, some of which have no public transport links within a ten minute walk, enhances integration.</p>	<p>Positive impact</p>
<p>Policy Integration</p>		<p>This package encourages modal shift through QBC measures, new rail station and new bus services.</p> <p>The new station at Allander will be fully compliant with the Equality Act 2010 and provide easy access to wheelchairs and push chairs.</p> <p>All bus measures would be designed to consider the Equality Act.</p> <p>The package also has a positive</p>	

		impact on improving access to services, for all, via the public transport network.	
Accessibility & Social Inclusion			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Community Accessibility	Public Transport Network Coverage	The package aims to increase accessibility to public transport. QBC and bus feeder measures ensure this includes accessibility for those without a private car. Allander rail station would address the accessibility gap identified during the evidence review.	Positive
	Access to Other Local Services	QBC and enhance bus service options, particularly the introduction of shuttle services and bus priority, will also be of benefit in improving access to local services.	Positive
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	The package seeks to tackle the problem of private car use by encouraging modal shift to public transport and active travel modes. While this will enhance the level of accessibility for those without the use of a car, existing car users will also be encouraged to use other modes.	

	Distribution/Spatial Impacts by Area	<p>Allander rail station would be a notable benefit to residential developments within and around the Kilmardinny development.</p> <p>Bus feeder services would provide an enhanced level of accessibility for residents with bus priority improving journey times and reliability within the study area.</p>	
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Part 2 Appraisal Summary Table

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)		East Dunbartonshire Council, Southbank Marina, 12 Strathkelvin Place, Kirkintilloch, G66 1TJ AECOM, 225 Bath Street, Glasgow, G2 4GZ	
Proposal Name:	Package 4	Name of Planner:	Alison Lawrence
Proposal Description:	Road	Total Public Sector Funding Requirement:	Capital costs/grant (undiscounted): £813,600
			Annual revenue support: TBC
			Present Value of Cost to Govt: TBC
Funding Sought From: (if applicable)	N/A	Amount of Application:	N/A
Background Information			
Geographic Context:	<p>East Dunbartonshire is one of the smallest local authorities in Scotland, in terms of population and geography, with an area covering approximately 17,000ha. East Dunbartonshire is located to the north of the city of Glasgow and which its towns and villages serve as a dormitory settlement. The largest of these settlements are Bearsden, Bishopbriggs, Kirkintilloch and Milngavie.</p> <p>The focus of this study is the A81 Corridor through Milngavie and Bearsden. The A81 is one of Glasgow's' key radial corridors, and is the main route by bus and car from the study area into the city centre.</p>		
Social Context:	<p>Analysis of the 2012 Scottish Index of Multiple Deprivation shows very few areas within the study area are deprived. Rather, most of the study area has been classified as having the lowest levels of deprivation in Scotland. Residents in the study area are highly educated in comparison to all residents in East Dunbartonshire and Glasgow. To illustrate, 45% of residents aged 16 - 74 have attained a Level 4 equivalent qualification and this level of attainment is 10% higher than for the Council area and 19% higher than Glasgow. With regards to car ownership, 87% of households in the study area own at least one car compared with just under half (49%) of households in Glasgow.</p>		
Economic Context:	<p>Unemployment within the study area was measured to be 2.4% (2011). Whereas unemployment was measured to be much higher in East Dunbartonshire at 5.0% and more than four times as high in Glasgow (10.0%). Employment within the study area is skewed towards highly skilled occupations and industries and more than two fifths (43%) of all employed persons are employed in either managerial or professional positions compared with 25% in Glasgow. Workers within the East Dunbartonshire Council area enjoy above</p>		

	average level of wages. Based on the 2013 Annual Survey of Hours and Earnings, the average gross weekly wage for workers residing in East Dunbartonshire was £475.50 gross per week, compared with £403.30 in Glasgow.
Planning Objectives	
Objective:	Performance against planning objective:
Promote modal shift to sustainable transport for trips, particularly commuting, from or to the study area.	The package is unlikely to have a significant impact on this objective. Reducing vehicular speeds should make sustainable travel more appealing whilst the road options may include the opportunity to improve transit through junctions for buses, cycles and pedestrians.
Improve access to the public transport network, particularly for the first and last miles of journeys.	Access to the public transport network will not be improved through this package although it may become quicker for vehicles to travel through particular sections of the road following junction improvements.
Provision of a transport network that supports enhanced access to employment, social and leisure opportunities.	Negligible impact on enhanced access although improving traffic flow at junctions may have a minor impact.
Improve bus journey times and journey time reliability on the A81 Corridor.	Junction improvements will ease transit through junctions but the impact on bus journey times and reliability is not expected to be significant. Furthermore, most delay to bus services is experienced outside EDC and occurs within the Glasgow City Council boundary.
Development of a transport network that facilitates and complements local economic development, contributing towards the sustainable economic growth of the study area.	Reducing delay and congestion at key bottlenecks will improve journey times and enhance the appeal of Bearsden and Milngavie town centres. In addition, this will also benefit deliveries and servicing of local businesses. Place making initiatives seek to enhance the appeal of sustainable travel and encourage more people to walk or cycle.
Delivery of a transport network that supports healthy lifestyles.	Creating a 'sense of place' and improving the safety of walking and cycling as well as vehicular speeds may encourage more people to walk or cycle for their journeys.
Delivery of a transport network that enhances local air quality.	Negligible impact on enhancing local air quality.

Development of an integrated transport network, including co-ordination between transport modes	Negligible impact on this objective.		
Provision of a transport network that delivers safety and security across all modes of transport.	Safety for all road users will be improved because accidents should be reduced, and if they do occur, these will be less severe.		
Rationale for Selection or Rejection of Proposal:	The package is comprised of schemes that were found to support the Transport Planning Objectives of STAG 1 and has been taken forward for further assessment in STAG 2.		
Implementability Appraisal			
Technical:	The main technical challenge will be designing junction improvements and this is likely to require transport modelling to do so.		
Operational:	To ensure junction improvements operate as efficiently as possible in the road network, proposed improvements will need to be assessed. Ongoing maintenance of infrastructure will be required for placemaking initiatives.		
Financial:	The package has a medium capital cost.		
Public:	Measures to reduce speeds are likely to polarise public opinion. However, junction improvements are expected to be widely supported, particularly as the area has a high level of car ownership.		
Environment			
Mitigation Options Included: (Costs & Benefits)			
Sub-criterion	Qualitative Information	Quantitative Information	Significance of Impact
Noise and Vibration	Measures to reduce the speed of traffic may have a marginal reduction in noise and vibration whilst junction improvements may result in minor increases. Locally, the gyratory option		Negligible to minor negative

	may have a negative effect on noise and vibration, particularly on Roman Drive and Roman Road where traffic levels will increase.		
Global Air Quality – CO ₂	Given the scale of the study area, global air quality is not expected to be significantly impacted upon.		Negligible
Local Air Quality – PM ₁₀ and NO ₂	There is concern that this option may transfer air quality issues onto the other roads in the gyratory systems, Roman Drive and Roman Road. The creation of a gyratory will result in more traffic using Roman Drive and Roman Road, potentially reducing the air quality on those roads. This package is expected to have a negligible to negative impact on air quality. Successful placemaking initiatives may result in increased visitor numbers, which could result in greater vehicular emissions but the impact on air quality is expected to be minimal.	Roman Drive and Roman Road Junction is approximately 520m east of the Bearsden Air Quality Management Zone	Negligible to negative
Water Quality, Drainage and Flood Defence	It is unlikely that the water environment will be significantly impacted due to this package. Placemaking schemes, such as river clean-ups, could improve this however.		Negligible to minor positive
Geology	Negligible impact on geology.		Negligible
Biodiversity	Implementing the gyratory could have a biodiversity impact. If traffic flow improves through the junction, this will benefit air quality which in turn should improve biodiversity. Assuming additional land is not required to accommodate the gyratory, a positive impact on biodiversity is expected. Furthermore, as no widening of Boclair Road is required, no trees will need to be removed. The other components of this package could potentially have a small positive impact; placemaking initiatives could include measures		Negligible to minor positive

	to improve and/or increase habitat areas.		
Visual Amenity	As the package does not include measures to create road space, it is unlikely to significantly disrupt the visual amenity. However, during construction there may be some negative impacts whilst the need for signalised junctions will have a minor impact.		Negligible
Agriculture and Soils	No impacts (positive or negative) are expected on agriculture and soils as no components of this package are likely to have an impact during construction or whilst operational with the mitigation measures considered.		Negligible
Cultural Heritage	<p>Developing a gyratory system at Bocclair Road may have an impact on two listed buildings (Bearsden Council Chambers and Registrar's Office). Construction works may generate vibrations which could have a negative impact but in the longer term smoother traffic flow through the junction may reduce vibrations. Appropriate design of improvements is likely to reduce any impacts to be negligible.</p> <p>All components of the scheme are on developed land; therefore, it is unlikely there will be a negative impact on unknown archaeology.</p> <p>Reducing vehicular speeds with localised measures to improve public amenity should reduce noise and vibration from high vehicle speeds and the consequence of this on historic buildings.</p>	<p>Bearsden Council Chambers (Category B)</p> <p>Registrar's Office (Category C)</p>	Negligible to minor negative
Landscape	Not determined		
Physical Fitness	Not determined		
Monetised summary			

Monetary Impact Ratio			
Safety			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Accidents	Change in Annual Personal Injury Accidents	Not determined	
	Change in Balance of Severity	<p>The gyratory system will require detailed modelling to assess the impact on traffic movements and driver behaviour which in turn will influence the impact on safety. At this stage, the scheme is expected to have a negative to significant negative impact on accident levels.</p> <p>The other components of this road package aim to slow traffic so should have a positive impact on accident risk.</p>	
	Total Discounted Savings	Not determined	Not determined
Security		Negligible impact on personal security.	Negligible
Monetised summary		Not determined	
Monetary Impact Ratio		Not determined	
Economy (Transport Economic Efficiency)			
Sub-criterion	Item	Qualitative Information	Quantitative Information

User Benefits	Travel Time	<p>The gyratory system is the component within this package likely to have the greatest impact on travel time. Journey time savings for car journeys are expected to be negligible, whilst there may be minor improvements in public transport journey times. Transport modelling and assessment is required to fully understand the impact.</p> <p>Other schemes within package seek to reduce vehicular speeds as these will be localised the impact on A81 journey times will be minimal.</p>						
	Travel Time savings by size	Not determined.	% of total monetised savings (£)					
			< -5 mins	-5 to -2 mins	>-2 to 0 mins	0 to <+2 mins	+2 to +5 mins	>5 mins
	User Charges	Not determined.						
	Vehicle Operating Costs	Not determined.						
Quality / Reliability Benefits	Not determined.							
Private Sector Operator Impacts	Investment Costs	£813,600						
	Operating & Maintenance Costs	TBC						

	Revenues	N/A	
	Grant/Subsidy payments	N/A	
Monetised summary			
Monetary Impact Ratio			

Economy (Wider Economic Benefits)			
Sub-criterion	Item	Qualitative information	Quantitative information
Wider Economic Benefits	Agglomeration economies (WB1)	Not determined	
	Increased output in perfectly competitive markets (WB3)	Not determined	

	Wider benefits arising from improved labour supply (WB4)	Not determined	
Monetised summary			
Monetary Impact Ratio			
Economy (Economic Activity and Location Impacts)			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Economic Activity and Location Impacts	Local Economic Impacts	Not determined	
	National Economic Impacts	Not determined	
	Distributional Impacts	Not determined	
Integration			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Transport Interchanges	Services & Ticketing	Not applicable for this package	
	Infrastructure & Information	This package is unlikely to have an impact on transport integration but reducing vehicular speeds and placemaking initiatives may encourage more people to walk or cycle to bus and rail stations.	Negligible

Land-use Transport Integration		Improving traffic flow through the corridor may have a minor impact on land use integration but this would be counterbalanced by the speed reduction option.	Negligible
Policy Integration		This package has a neutral impact on the public transport network as it contains only road measures.	
Accessibility & Social Inclusion			
Sub-criterion	Item	Qualitative Information	Quantitative Information
Community Accessibility	Public Transport Network Coverage	Focus for this package is road measures so the impact is expected to be neutral.	Neutral
	Access to Other Local Services	<i>Road improvements are likely to be of more benefit to those accessing services located outside the study area</i>	Neutral
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	Package focuses on private car users rather than other mode users.	

	Distribution/Spatial Impacts by Area	Junction improvements proposed are located at Boclair Road therefore the benefits are primarily location specific. Similarly, reducing speeds will be of benefit to specific accident 'hotspot' areas along the A81.	
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Appendix E – Cost Assumptions

Package	Option	Quantities	Cost
2 - Active Travel Options	Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station	800m cycle route @£5 per metre, 10 signs @ £250 per sign	£ 6,500.00
	Completion of the cycle link between Mains Estate and Allander Leisure Centre	3500m Cycle Route @ £5 per metre, 60 signs @ £250 per sign and post	£ 32,500.00
	Secure cycle storage facilities built at rail stations and in town centres	40 space canterbury shelters = £6,000 @ 10 locations	£ 60,000.00
	Development of a local network of walking and cycling paths which serve desire lines and converge on town centres, and stations	Five 1500m @ £50 per metre	£ 375,000.00
	Development of a high quality path which links the Kilmardinny development and Milngavie station	1000m Path Construction @ £350 per metre, 1 Signalised Crossing @ £50,000, 20 signs @ £250 per sign and post, and street lighting @ £90,000 per km	£ 500,000.00
3 - Public Transport and Access	Provision of a rail station and associated parking (circa 150 spaces) - Single Track Option	Based on cost schedule Appendix B = £4,085,114	£ 4,085,114.00
	Provision of a rail station and associated parking (circa 150 spaces) - Double Track Option	Atkins Kilmardinny Study (2003) @ £14,940,000, factored to 2014 prices.	£ 19,255,680.00
	Bus priority / congestion bypasses at key points on the network	New bus lane approximately 500m long @ £270 per metre	£ 137,500.00

Package	Option	Quantities	Cost
	Installation of RTPI at Bus Stops	Based on system comprising 18 x Standard 17" screen and 6 x 40" screen, installation and running costs based on recent project work	£ 250,000.00
	Improvements to bus stops and shelters	Assume £10,000 per stop @ 22 bus stops	£ 220,000.00
	Bus detection included within SCOOT	Upgrade existing system	£ 2,000.00
	New shuttle bus connecting residential areas to stations	20 new bus stops at £10,000 and 1st year operating @ £530,400	£ 730,400.00
4 - Roads	Implementation of a gyratory at the A81/ Roman Rd / Roman Drive junction (inc. ban of right turn from Boclair Rd)	Two new signalised junctions @ £150,000 per junction, Two sets of junction alterations @£50,000 per junction, Signal adjustments at Boclair Road say £10,000, design fees and configuration £20,000, lining and signing say £5,000	£ 435,000.00
	Carriageway marking / localised narrowing	100m of footway widening @ £250 per metre	£ 25,000.00
	Place making initiatives to enhance town centre environments	1 x small scale streetscape scheme £90,000	£ 90,000.00

All costs are 2014 prices and based on recent project scheme rates.

Appendix F – Policy Assessment Framework

Appendix F - Policy Assessment Framework

A review of the packages was undertaken within the Policy Assessment Framework tool, which was developed by Transport Scotland. This is shown in the table below.

NTS High Level Strategic Outcomes						
Lower Level Policy Objective		Question to be scored	Package 2 - Active Travel	Package 3 - Public Transport and Access	Package 4 - Roads	Package 5 - Combined
Promote Economic Growth						
1	Promote 'competitive' inter-urban journey times.	To what extent does the intervention reduce inter-urban journey times?	Neutral	Moderate Positive	Neutral	Moderate Positive
2	Reduce inter-urban journey time on public transport.	To what extent does the intervention reduce inter-urban journey time on public transport.	Neutral	Moderate Positive	Neutral	Moderate Positive
3	Reduce the proportion of driver journeys delayed due to traffic.	To what extent does the intervention reduce the proportion of driver journeys delayed due to traffic?	Slight Positive	Slight Positive	Slight Negative	Slight Positive
4	Maximise the labour catchment area in city regions	To what extent does the intervention help maximise the labour catchment area in city regions where economic evidence demonstrates that this is required?	Neutral	Slight Positive	Neutral	Slight Positive

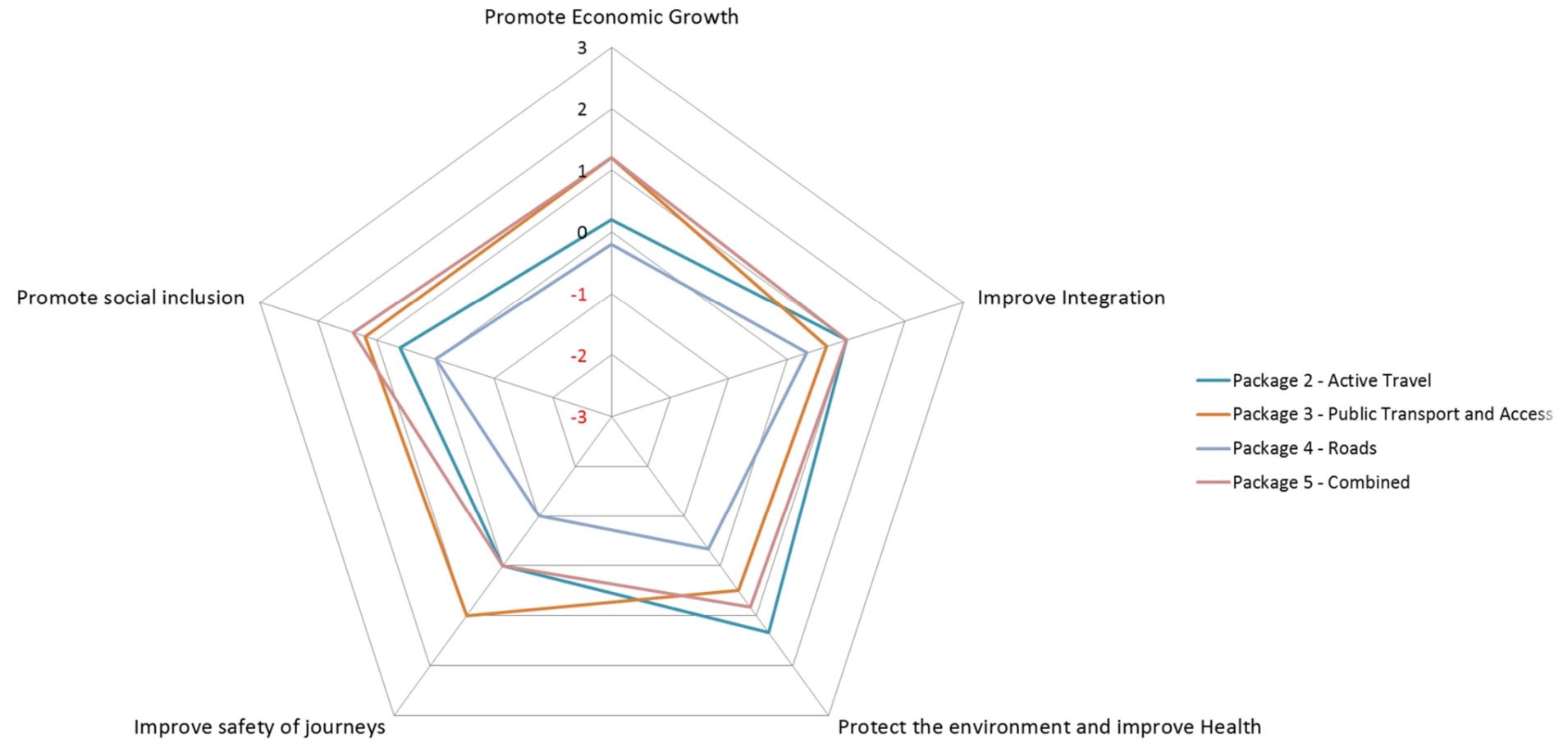
5	Support the development and implementation of relevant proposed national developments identified in the National Planning Framework	To what extent does the intervention support the development and implementation of relevant proposed national developments identified in the National Planning Framework?	Neutral	Neutral	Neutral	Neutral
Improve Integration						
6	Promote seamless travel	To what extent does the intervention improve the integration of journeys made by public transport or via Park and Ride by reducing interchanges and interchange times?	Slight Positive	Slight Positive	Neutral	Slight Positive
7	Policy integration	To what extent does the intervention support or constrain the potential achievement of policy objectives within other sectors or delivery agencies?	Neutral	Neutral	Neutral	Neutral
8	Access to amenities and services	To what extent does the intervention improve accessibility?	Moderate Positive	Slight Positive	Slight Positive	Moderate Positive
Protect the environment and improve Health						
9	Reduce CO2 emissions per person	To what extent does the intervention reduce CO2 emissions per person?	Slight Positive	Slight Positive	Neutral	Slight Positive
10	Meet the targets set out in the Climate Change	To what extent does the intervention help meet the targets set out in the	Slight Positive	Slight Positive	Neutral	Slight Positive

	(Scotland) Act 2010	Climate Change (Scotland) Act 2010				
11	Improve air quality	To what extent does the intervention affect air quality? Is the intervention located in an Air Quality Management Area?	Slight Positive	Neutral	Slight Negative	Slight Positive
12	Improve health	To what extent does the intervention enable the population of Scotland to live longer healthier lives?	Strongly Positive	Neutral	Neutral	Slight Positive
13	Well designed, sustainable places	To what extent does the intervention improve landscape, streetscape and the local environment?	Slight Positive	Neutral	Slight Negative	Neutral
14	Reduce the overall ecological footprint	To what extent does this intervention reduce overall ecological footprint?	Slight Positive	Slight Positive	Neutral	Slight Positive
Improve safety of journeys						
15	Promote continuing reduction in accident rates and severity rates across the strategic transport network recognising the need to continue the work of the Strategic Road Safety Plan through the STPR period.	To what extent does the intervention promote continuing reduction in accident rates and severity rates across the strategic transport network?	Neutral	Slight Positive	Slight Negative	Neutral

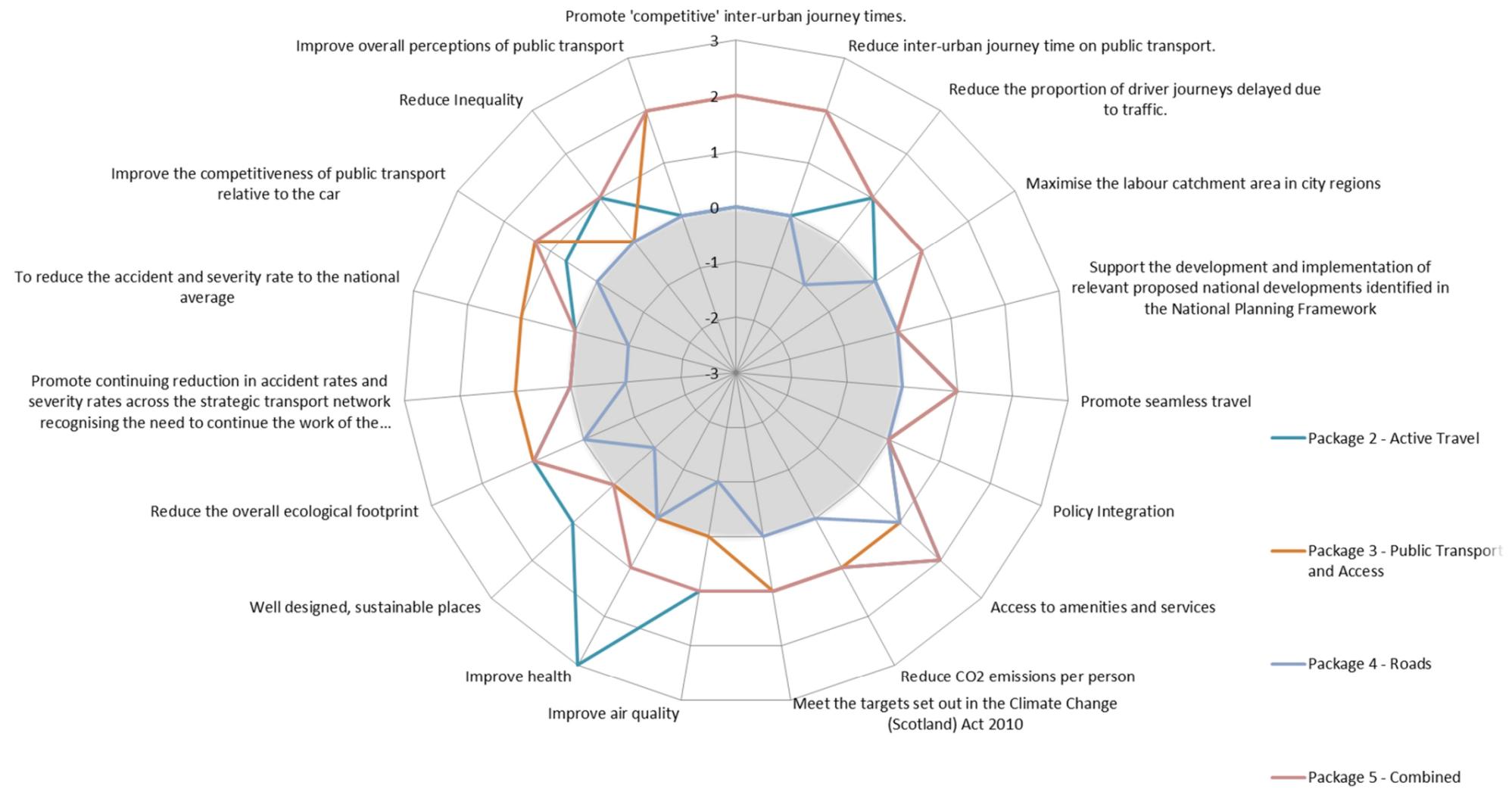
16	To reduce the accident and severity rate to the national average	Does the intervention have the potential to reduce accident rates?	Neutral	Slight Positive	Slight Negative	Neutral
Promote social inclusion						
17	Improve the competitiveness of public transport relative to the car	To what extent does the intervention improve the competitiveness of public transport relative to the car?	Slight Positive	Moderate Positive	Neutral	Moderate Positive
18		To what extent does the intervention improve the choice of modes or routes facing public transport users?	Slight Positive	Slight Positive	Neutral	Slight Positive
19		To what extent does the intervention reduce the relative costs of public transport?	Neutral	Slight Positive	Neutral	Slight Positive
20	Reduce Inequality	To what extent does the intervention tackle the significant inequalities in Scottish society?	Slight Positive	Neutral	Neutral	Slight Positive
21	Improve overall perceptions of public transport	To what extent does the intervention Improve overall perceptions of public transport	Neutral	Moderate Positive	Neutral	Moderate Positive

The figures below summaries the performance of the options against National Policy Objectives, both High Level and Secondary Level policies as well as high level risks.

Performance Against NTS High Level Policy Objectives



Performance Against NTS Low Level Policy Objectives



Deliverability and Risks

