

East Dunbartonshire Council A81 Corridor Study

Strategic Environmental Assessment - Environmental Report



Prepared by:

Tom Cramond
Consultant



Checked by:

Charlotte Clinton
Principal Consultant



Approved by:

Charlotte Clinton
Principal Consultant

Rev No	Comments	Checked by	Approved by	Date
		CC		06/01/15
1		CC	CC	07/01/15

1 Tanfield, Edinburgh, EH3 5DA
Telephone: 0131 301 8600 Website: <http://www.aecom.com>

Job No 60332121

Reference A81 SEA

Date Created January 201

This document has been prepared by AECOM Limited for the sole use of our client (the "Client") and in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM Limited and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM Limited, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM Limited.

p:\ukmcr1-ie\proposal\3512\A81\sea env. report\A81 sea_environmental report_master v1_cc.doc

Table of Contents

Non-Technical Summary	2
1 Introduction	5
2 A81 Corridor Study	7
3 Policy Context	11
4 SEA Assessment Methods	14
5 Environmental Baseline	18
6 Assessment	28
7 Cumulative Effects Assessment	42
8 Study & Project Level Mitigation	45
9 Monitoring Framework	52
10 Conclusions	56
Appendix A – Summary of Relevant Plans, Programmes & Strategies	58
Appendix B – Baseline Data Sources	84
Appendix C – Assessment Summary Tables	86

East Dunbartonshire Council A81 Corridor Study

ENVIRONMENTAL REPORT

Non-Technical Summary

Introduction

East Dunbartonshire Council (EDC) in partnership with the Strathclyde Partnership for Transport (SPT) have proposed a number of transport interventions aimed at the alleviation of current and predicted pressures from forecast travel demands on the A81 corridor within East Dunbartonshire. These interventions have been grouped into various Options, which are:

- Increased Car Parking at Bearsden and Westerton Rail Stations;
- Rail Park & Ride at Allander;
- Quality Bus Corridor;
- Improve Ticketing;
- Enhanced Walking and Cycling;
- Bus Service Improvements;
- Junction Improvements;
- Variable Message Signs; and
- Highway Options.

In accordance with Environmental Assessment (Scotland) Act 2005 and The Environmental Assessment of Plans and Programmes Regulations 2004 an assessment of these potential Options has been undertaken on their potential effects on the environment.

This Summary provides an overview of the approach and the results of Strategic Environmental Assessment (SEA) of the proposed transport options for the A81 Corridor.

Outline of the Plan

As the local planning authority and the Regional Transport Partnership for East Dunbartonshire, EDC and SPT are responsible for the planning and delivery of transport solutions within the Council's area. Within this role EDC and SPT have developed the A81 Corridor Study ('the Plan'). The purpose of the Plan is to evaluate the current transport situation along the A81 corridor between Milngavie, Bearsden and the boundary with Glasgow City Council with the aim of providing recommendations and options for improvement.

The Plan sets out nine strategic objectives that aim to alleviate the current and predicted pressures on the A81. The Plan considers all transport modes, and various means of intervention in order to establish a preferred Option(s), which will be recommended to best deliver the objectives of the Plan.

Method of Assessment

The assessment was undertaken in three stages: the assessment of alternatives; the assessment of each Option identified in the Plan; and the assessment of the cumulative effects of the Plan. The assessment of alternatives considers the effects on the environment should the Plan not be implemented as an alternative to the Plan, this is described as the 'do minimum' option within the Environmental Report (ER). The do-minimum option includes the current transportation baseline as well as any schemes or developments which have already been committed to but not necessarily developed.

The assessment of each Option proposed within the Plan aims to identify potentially significant effects of the Options on the SEA topics (air quality, biodiversity, cultural heritage etc). Effects can be either positive or negative. When defining

significance, this is dependent on the sensitivity of the receptor, and the magnitude of the effect. The assessment of cumulative effects considers all Options proposed within the Plan and what effects they may have on the SEA topics.

Summary of Results

Do Minimum – Overall it is unlikely that there will be any effect on the environment as a result of the Do Minimum approach. There is potential for a slight beneficial effect to health and material assets as a result of the introduction of a sustainable transport link as part of the approach, however this will be minimal.

Increased Car Parking at Bearsden and Westerton Rail Stations – Increased car parking provision has the potential to significantly affect cultural heritage sites within the surrounding areas of the existing rail stations. The Antoine Wall World Heritage Site (WHS) and associated features extend through the town centre; the introduction of increased car parking has the potential to impact on the setting of these assets, as such negative impacts are likely. Increasing car parking provisions does however have the potential to impose positive impacts on health, air quality and climate change as a result of reducing car use and promoting public transport.

Rail Park and Ride at Allander – The introduction of the Rail Park and Ride at Allander has the potential to significantly affect cultural heritage sites within the surrounding area. The Antoine Wall World Heritage Site (WHS) and associated features extend through the town centre; the introduction of increased car parking has the potential to impact on the setting of these sites, as such a negative impact is likely. Provision for a Park and Ride scheme does however have the potential to impose positive impacts on health, air quality and climate change as a result of reducing car use and promoting public transport.

Quality Bus Corridor – Improving the quality of the Bus Corridor does not require any new development and therefore is unlikely to affect the environment significantly. There is likely to be some beneficial effects to air quality, health and climatic factors due to the improved bus traffic flow and subsequently other traffic movement using the route.

Improve Ticketing – Proposals for improved ticketing will not result in any significant effects to the environment, however overall improvements to service will likely cause beneficial effects to health, air quality and climate change should a greater number of individuals use these services; however any effect will be minimal.

Enhanced Walking and Cycling – Improving walking and cycling links will likely benefit the population by providing further infrastructure that promotes an active population, in turn this is likely to benefit the health of users. The use of vehicles is likely to decrease potentially benefitting climate change; however any effect is likely to be minimal and not significant.

Bus Service Improvement – Improvement to the bus service is proposed to improve public transport frequency. As no new development is required potential environmental effects are likely to be not significant. Although minimal, there may be potential beneficial effects to air quality and subsequently health and climate change as a result of increased public transport use and a decrease in private vehicular transport.

Junction Improvements – Junction Improvements involve the proposals to introduce a Gyratory system at the A81/Roman Road/Roman Drive junction. This Option may result in adverse effects to the surrounding cultural heritage sites, the setting of which could be effected by the introduction of new junction infrastructure. The Gyratory system will likely improve traffic flow and therefore decrease congestion benefitting, air quality, health and climate change, however any effect is likely to be minimal and non-significant.

Variable Message Signs – The introduction of message signs has the potential to result in adverse effects on cultural heritage sites and townscape/ landscape and visual amenity receptors. These effects and their significance are dependent on the scale and location of the VMS and their proximity to sensitive receptors.

Highway Options – The marking of roads and placemaking initiatives within the town centre is unlikely to result in any significant effect on the surrounding environment. Improved highway direction and flow however could benefit the population satisfaction and also contribute to a reduction in speed and therefore increased safety of the area. The placemaking initiatives offer the opportunity for the improvement of a variety of environmental aspects within the town centre depending on the scheme and its success.

Summary of Predicted Environmental Effects*									
Option	SEA Topics**								
	Bio	Water	Soil	Culture	L&V	Health	Air	Climate	Material
Do Minimum	<>	O	O	<>	O	✓	<>	<>	✓
Increased Car Parking at Bearsden and Westerton Rail Stations	<>	O	O	xx	x	✓	✓	✓	<>
Rail Park & Ride at Allander	x	x	<>	xx	x	✓	✓	<>	O
Quality Bus Corridor	O - ✓	O	O	O - x	<>	<> - ✓	✓	<> - ✓	<>
Improve Ticketing	<> - ✓	O	O	O	O	✓	✓	✓	<> - ✓
Enhanced Walking and Cycling	✓	O	O	O	<>	✓	✓	✓	O
Bus Service Improvements	<>	O	O	<>	<>	✓	<>	<>	✓
Junction Improvements	<>	O	O	x	O	<>	<>	O	O
Variable Message Signs	O	O	O	<> to x	<> to x	<> -	<>	O	O
Highway Options	?	?	O	?	O	<>	?	O	O

* Key: xx = potentially significant negative effect; x = potential negative effect; <> = negligible effect; O = neutral or no effect; ✓ = potential positive effect; ✓✓ = potentially significant positive effect; ? = unknown.

** Bio = Biodiversity; Water = Water Quality; Soil = Soil; Culture = Cultural Heritage; L&V = Landscape and Visual Amenity; Pop. = Population & Human Health; Air = Air Quality; Climate = Climatic Factors; Mat. = Material Assets.

1 Introduction

1.1 Introduction

This Environmental Report (ER) presents the results of the Strategic Environmental Assessment of the A81 Corridor Study which has been prepared on behalf of East Dunbartonshire Council (EDC) and Strathclyde Partnership for Transport (SPT).

In accordance with European Directive 2001/42/EC 'the assessment of certain plans and programmes on the environment', the Environmental Report presents the results of the Strategic Environmental Assessment (SEA) of the A81 Corridor Study ('the Plan'). The Plan promotes the enhancement of the transport corridor between Milngavie and Bearsden through more sustainable and more accessible means of travel, and to provide greater linkage between this area and key economic centres in the surrounding area including Edinburgh and Glasgow.

1.2 Background to the A81 Corridor Study

In 2008 AECOM (formerly Faber Maunsell) were commissioned by EDC to establish a range of options targeted at improving the transport conditions on the A81 Corridor and assess these options in accordance with the Scottish Executive's Scottish Transport Appraisal Guidance (STAG).

Remuneration for employment opportunities within the local authority area is generally poor and as such the area's affluence is dependent on out-commuting. The strong functional relationship between the settlements located within the study area and the city of Glasgow results in significant pressures on transport links along the A81 Corridor. The rail line provides a high quality service, but the uptake of bus services, walking and cycling is relatively low.

EDC in partnership with the Strathclyde Partnership for Transport (SPT) have commissioned AECOM to revise the options developed from 2008 bringing them up to date with current and predicted pressures from forecast travel demands (as informed by current developments and those anticipated through the adoption of East Dunbartonshire Local Development Plan 2).

The aims of the study are to:

- Research and identify the problems and constraints for transport and travel in identified geographical areas;
- Set objectives for transport and travel relating to the Plan, LTS and geographical areas identified; and
- Generate, sift and develop transport interventions.

1.3 Strategic Environmental Assessment

Strategic Environmental Assessment (SEA) is the systematic process for considering and assessing the significant environmental impacts arising from strategic actions produced by public bodies. The SEA process applies to policies, plans, programmes and strategies; including updates and alterations to existing actions. This ER has been prepared for the East Dunbartonshire Council A81 Corridor Study (hereafter referred to as "the Plan") in accordance with the SEA Directive 2001/42/EC and Environmental Assessment (Scotland) Act 2005 and The Environmental Assessment of Plans and Programmes Regulations 2004.

The objectives of the SEA Directive, as set out in Article 1, are *"to provide a high level of protection to the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development"*.

1.4 Content of the Environmental Report

The remainder of this ER is structured as follows:

Chapter 2 summarises the **A81 Corridor Study** including a description of the Study Area and the objectives of the Study. This Chapter also outlines the Options proposed as part of the Plan as well as the projected scenario, should the Study not progress.

Chapter 3 and Appendix A provide a **summary of relevant plans, programmes and strategies** that are likely to influence the Plan.

Chapter 4 sets out the **methods** for assessing effects including the consideration of alternatives.

Chapter 5 provides a summary of **baseline** conditions in the SEA study area.

Chapter 6 provide **assessments** of the proposed Options considered within the Study, including the consideration of **alternatives**.

Chapter 7 contains the outcomes from **cumulative** assessment.

Chapter 8 sets out the Plan and Project level **mitigation** measures.

Chapter 9 outlines an environmental **monitoring** framework for the Plan.

2 A81 Corridor Study

2.1 Purpose of the Plan

The purpose of the Plan is to review and update the A81 Corridor Study (published in 2008) in order to evaluate the current transport situation along the A81 corridor between Milngavie, Bearsden and the boundary with Glasgow City Council with the ultimate aim of providing recommendations and options for improvement. The Plan includes:

- An evaluation of the existing situation in the Plan area, including factors such as, transport, economic, demographics and development;
- An evaluation of the problems associated with transport within the Plan area;
- Identifying transport planning objectives; and
- An optioneering and sifting process to determine appropriate Options, which are assessed against Scottish Transport Appraisal Guidance factors, which includes environment, safety and integration.

For the purposes of this Plan, the area of interest is located in the vicinity of the A81 corridor connecting Milngavie and Bearsden through to Mugdock, within the East Dunbartonshire Council authority district as identified within Figure 2.1. This area will be referred to as the 'study area'.

2.2 Content of the Draft A81 Transport Plan

2.2.1 Objectives

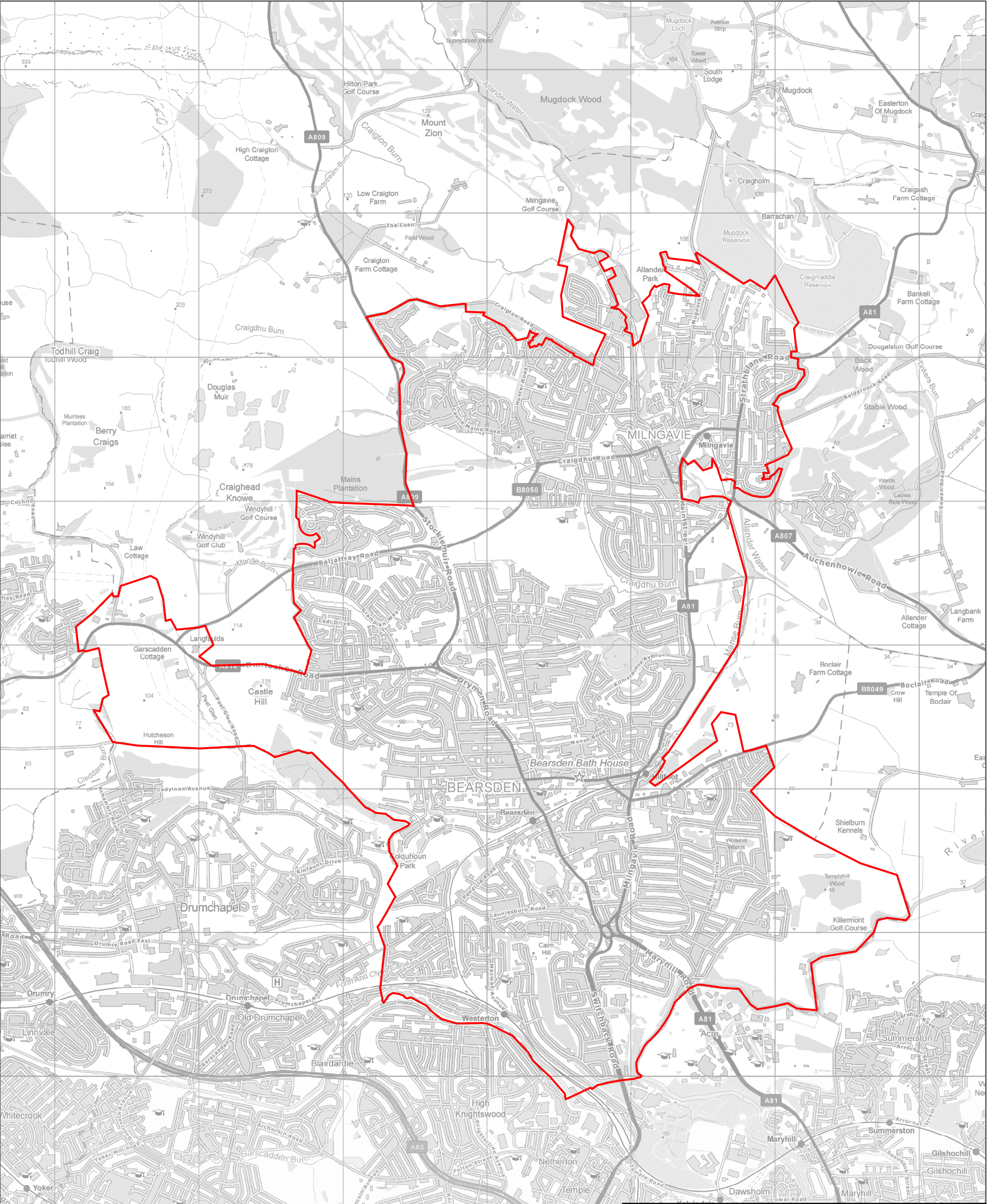
The proposed Transport Objectives (TPO's) (below) have been generated from the East Dunbartonshire Council Local Transport Strategy (LTS) strategic objectives and the problems identified through the interrogation of the LTS consultation data, local socio-economic data and local transport data and trends. The objectives of the Plan are:

- To promote modal shift to sustainable transport for trips (particularly commuting) from or to the study area;
- To improve access to the public transport network, particularly for the first and last miles of journeys;
- To provide a transport network that supports enhanced access to employment, social and leisure opportunities;
- To improve bus journey times and journey time reliability on the A81 corridor, particularly at bottlenecks;
- To develop a transport network that facilitates/ complements local development, contributing towards the sustainable economic growth of the study area;
- To deliver a transport network that supports healthy lifestyles;
- To deliver a transport network that enhances local air quality;
- To develop an integrated transport network, including co-ordination between modes; and
- To provide a transport network that improves safety and security across all modes of transport.

The Plan considers all transport modes, and various means of intervention in order to establish a preferred Option(s), which will be recommended to best deliver the objectives of the Plan.

The Plan will:



- Research and identify the problems and constraints for transport and travel in identified geographical areas;
- Set objectives for transport and travel relating to the Plan, LTS and geographical areas identified; and
- Generate, sift and develop transport intervention options.



KEY:

Study Area


Client:
EAST DUNBARTONSHIRE COUNCIL/
STRATHCLYDE PARTNERSHIP FOR TRANSPORT



Project:
A81 CORRIDOR STUDY

Title:

STUDY AREA



1 Tanfield
Edinburgh
Scotland, EH3 5DA

Tel: +44 (0) 131 301 8600
Fax: +44 (0) 131 301 8699
www.aecom.com

Design:	SM/TC	GIS:		SM
Chk'd:	TC	App'd:		CC
Date:	12/12/2014	Scale:		1:25,000
No:		Figure 2.1		

2.2.2 Proposed Structure

The Plan is structured around nine main Options, each with varying interventions that are proposed to be delivered to meet the objectives of the Plan. These are noted in Table 2.1 below.

Table 2.1 Proposed Transport Options	
Option	Intervention
1. Increase Car Parking at Bearsden and Westerton Rail Stations	a) Partial decking of the station car park at Bearsden b) Provision of additional parking at Westerton
2. Rail Park & Ride at Allander	a) Provision of a rail halt and associated parking (circa 150 spaces) b) Provision of a rail halt with Park and Ride facility (circa 400 spaces)
3. Quality Bus Corridor	a) Burnbrae Roundabout to Boclair Road – southbound bus lane b) Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only) c) Provision of real time information at stops along the route d) Improvements to bus stops and shelters e) Bus priority installed on approaches to junctions / at pinch points f) Bus detection included within SCOOT g) Express bus service from Milngavie to Glasgow
4. Improve Ticketing	a) Improved integrated ticketing between rail and bus services b) Area wide smartcard ticketing measures
5. Enhanced Walking and Cycling	a) Provide pedestrian facilities on desire lines (including link to rail stations) b) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station c) Completion of the cycle link between Mains Estate and Allander Leisure Centre d) Segregated cycle lane from Milngavie town centre/ to Glasgow border to complete what has been achieved through Phase 1 and 2 e) Secure cycle storage facilities built at rail stations and in town centres f) Development of a local network of walking and cycling paths which converge on town centres and stations g) Development of a high quality path which links the Kilmardinny development and Milngavie station
6. Bus Feeder Services	a) New shuttle bus connecting residential areas to stations b) Increase the frequency of bus services to rail stations
7. Junction Improvements	Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road)

Table 2.1 Proposed Transport Options	
Option	Intervention
8. Variable Message Signs	Electronic signs to warn drivers of any traffic issues on the route, or adjoining routes
9. Highway Options to enforce or reduce speeds and enhance the appeal of sustainable travel	a) Carriageway marking / localised narrowing b) Place making initiatives to enhance town centre environments

3 Policy Context

3.1 Introduction

This Chapter provides a summary of other relevant plans, programmes or strategies that are likely to influence the Plan. Only the most relevant plans that directly impact on the Plan are included. A tabular summary of relevant legislation, plans programmes and strategies can be found in Appendix A at the end of this Report. The tabular summary includes a comment on the relevance of each document. A summary of the main transport planning policy documents is provided below. An overview of the relationship of the Plan with other key policies, plans and strategies is also shown in Diagram 1.

3.2 Transport Planning Policy Context

There are a number of national, regional and local strategies and plans that will influence the Plan, however only the most relevant plans that directly impact on the Plan are included, these are listed below.

3.2.1 National Transport Strategies

- **National Transport Strategy (2006)** – Sets the context for transport policy making until 2026.
- **Strategic Transport Projects Review (STPR) (2008)** – Sets out the Scottish Government's 29 transport investment priorities over the period to 2032.
- **Rail Utilisation Strategy, Network Rail** – Sets out the long term vision for improvements across the rail network through a series of Route Utilisation Strategies (RUS) across the country.
- **The Scottish Sustainable Development Strategy: Choosing our Future (2005)** - Sets out actions to be taken in Scotland to turn the shared priorities set out in the UK Framework for sustainable development into action.
- **National Planning Framework 3 (2014)** - sets the context for development planning in Scotland and provides a framework for the spatial development of Scotland as a whole.
- **Scottish Planning Policy (2014)** - Sets out national planning policies which reflect Scottish Ministers' priorities for operation of the planning system and for the development and use of land.
- **Designing Streets (2010)** – Sets out the guidance for design-led street design to result in streets with a good sense of place and to emphasise policy requirements to raise the quality of design in urban and rural development.
- **Scottish Government Economic Strategy (2007)** - Sets out how to support businesses and individuals and to focus the Government and public services on creating a more successful country through increasing sustainable economic growth.

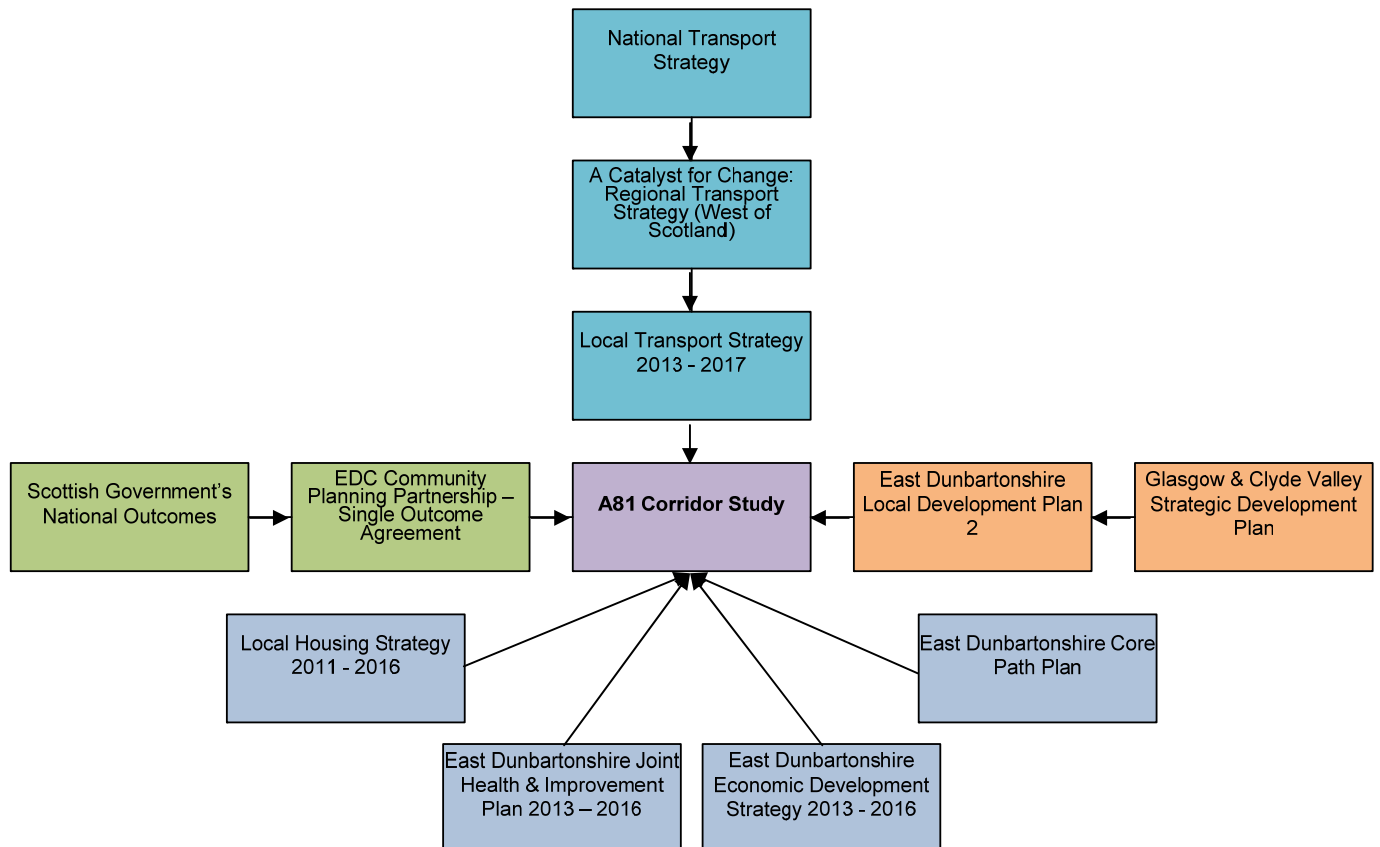
3.2.2 Regional Transport Planning

- **A Catalyst For Change: The Regional Transport Strategy for the West of Scotland (2008-21)** – Sets out Strathclyde Partnerships for Transport's (SPT) vision for transport, shared goals with partner organisations, transport objectives, strategic priorities for transport and the indicators to be used to measure delivery for the first 5 years of the Strategy's implementation.
- **Glasgow and Clyde Valley Strategic Development Plan (Adopted May 2012)** - Sets out a development strategy over the next 20 years of where new development should be located and a policy framework to help deliver sustainable economic growth, shape good quality places and enhance the quality of life in the Glasgow and the Clyde Valley city region.

3.2.3 Local Strategies

- **East Dunbartonshire Single Outcome Agreement (2013-2016)** - Sets out the outcomes which will be delivered for people and communities by the Council and partners. Community Planning Partnerships will mobilise public sector assets, activities and resources, together with those of the voluntary and private sectors and local communities to deliver a shared 'plan for place'.
- **East Dunbartonshire Local Plan 2 (Adopted 2011) & Emerging Local Development Plan, Main Issues Report** – Sets out detailed planning policies and specific development proposals for land in East Dunbartonshire and identified the policies and proposals which affect any given piece of land.
- **East Dunbartonshire Local Transport Strategy (2013 – 2017)** – sets out the objectives, strategy and transport action plans for East Dunbartonshire Council from 2013 to 2017. There is a vision which looks beyond 2017, however the Local Transport Strategy sets out principle objectives which are concerned with achievable local improvements.
- **Local Housing Strategy (2011 – 2016)** – Sets out five key outcomes which direct housing investment and developing housing services across the locality over the next five years.
- **East Dunbartonshire Joint Health and Improvement Plan (2013-2016)** - Sets out the commitment of East Dunbartonshire Council, 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.
- **East Dunbartonshire Community Care Plan (2012-2015)** - Sets out the basis for community care planning in terms of the vision, principles, high level outcomes and strategic priorities that need to be at the heart of planning and service delivery across health, social care and partner services.
- **East Dunbartonshire Sustainable Development Strategy (2004)** - Sets out the Council's strategic commitment to sustainable development. Sustainable Development Action Plans are produced annually which show how the Strategy will be implemented.
- **East Dunbartonshire Open Space Strategy (Final Draft 2014 – 2019)** - Provides a framework for current and future open space provision in their respective areas. It helps the Planning system encourage and promote the best ways to manage and use open spaces and identify current and future needs of sites.
- **East Dunbartonshire Economic Development Strategy (Draft 2013 – 2016)** – The overarching purpose of this document 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.
- **Parking Management Options Study - East Dunbartonshire Council (2007)** - Looks at parking management options within the East Dunbartonshire area.
- **Core Path Plan** – Sets out the Core Paths within East Dunbartonshire and criteria on which they were selected.

Diagram 1: The hierarchical relationship between the A81 Corridor Study and other National, Regional and Local Plans, Policies and Strategies



4 SEA Assessment Methods

4.1 Introduction

This Chapter outlines the methods which used to assess the environmental effects of the Plan.

4.2 Scope of Assessment

In accordance with Schedule 2 of the Environmental Assessment (Scotland) Act 2005 East Dunbartonshire has considered whether the environmental effects (positive and negative) of the A81 Transport Plan are likely to be significant.

There is no statutory definition of 'significance' in the context of SEA, however the Council considered the following issues in determining the significance of impacts (both positive and negative) on the environmental topic areas:

- Scale of impact (geographic);
- Duration of impact (short, medium or long term);
- Reversibility of impact;
- Sensitivity of environment; and
- Potential for significant cumulative effect.

4.3 Scoping

Scoping was undertaken in November 2014 which culminated in the publication of a scoping report which was submitted to consultation authorities to form a view on the consultation periods and scope/ level of detail that will be appropriate for the Environmental Report. A summary of the scoping responses is provided in Table 4.1 below.

Table 4.1 Scoping Responses	
Consultee	Summary of Response
Scottish Natural Heritage (SNH)	<ul style="list-style-type: none"> ■ To aid understanding of the Plan, it would useful if a diagram was provided to show how the appraisal fits with other key plans and strategies. ■ SEA objectives should be SMART in order to better gauge impacts and progress. ■ When assessing alternative proposals, the Environmental Report should consider an alternative to the Plan, as opposed to options within the Plan. ■ Bishopbriggs AQMA management plan is recorded as a relevant plan, policy or strategy, however this area lies outwith the study area. ■ Neither the SWT reserve at Loch Ardinning nor the Dawsholm Park Local Nature Reserve is located within the Study Area. ■ The Options listed within the Plan should be stated in factual terms, as opposed to value terms. ■ SNH were content with the 35 days proposed for consultation on the Environmental Report

Table 4.1 Scoping Responses	
Consultee	Summary of Response
Scottish Environment Protection Agency (SEPA)	<ul style="list-style-type: none"> SEPA note that soil has been scoped out of the assessment, and consider that adequate justification has been provided to do so. Noted that it is unclear as to what criteria will be used when assessing the significance of an effect. Mitigation is a crucial part of SEA and should follow the mitigation hierarchy – avoid, reduce, remedy or compensate. Wherever possible and appropriate, existing monitoring frameworks and indicators can be used effectively to meet the SEA monitoring requirements. SEPA are satisfied with the proposal of an 8 week consultation period for the ER.
Historic Scotland	<ul style="list-style-type: none"> Notes regionally or locally undesignated heritage assets have not been included within the baseline information. These sites should therefore also be considered when assessing potential effects. The methods of assessment refer to a focus on significant adverse effects, however positive effects/ the opportunity for enhancement is also an integral part of the SEA process. Suggest that mitigation measures are included within the assessment tables to allow greater transparency of potential impacts and associated mitigation, and will help show how mitigation can be carried forward in the delivery of the plan. Mitigation measures should follow the mitigation hierarchy – avoid, reduce, remedy or compensate. Indicators chosen for monitoring the historic environment should reflect actions to be delivered by the Plan and the potential effects identified within the SEA. Historic Scotland are content with the proposed 35 day (8 week) consultation period for the Environmental Report.

4.4 Assessment Methods

The assessment will be undertaken in three stages:

- Assessment of alternatives;
- Assessment of each Option identified in the Plan; and
- Assessment of the cumulative effects of the Plan.

4.4.1 Alternatives

As required by SEA Directive and the relevant National SEA Regulations there is a need to consider 'reasonable alternatives' to the Plan. As explained in Section 2.2, a number of options will be developed across all modes of transport have been identified and assessed, in order for the SEA consider alternative ways of achieving the Plan's vision and objectives. As well as the various Options proposed within the Plan, there has also been an assessment of potential effects on the environment should the Plan not be implemented, this is referred to as the 'Do-Minimum' Option. The Do-Minimum Option is described and assessed within Section 6.

The option appraisal process follows Scottish Transport Appraisal Guidance (STAG) methods to provide an integrated appraisal of each option against STAG criteria, including the environment, safety, the economy, integration, and accessibility and social inclusion. The results of the options appraisal have been summarised in the Environmental Report with an explanation of how environmental considerations informed the selection of the preferred measures included in the Plan.

4.4.2 *Assessment of each Option Identified in the Plan*

As described in Section 2, the Plan includes a package of transport Options. The environmental effects of each individual Option have been assessed using the methods outline below.

4.4.3 *Cumulative Effects*

The cumulative of all Options promoted by the Plan have been assessed in their entirety for each of the SEA topics (i.e. the effect of all Options in the Plan on air, ecology etc).

4.5 **Methods for Assessing Measures Promoted by the Plan**

4.5.1 *Assessment Criteria*

The general approach to SEA is to identify potentially significant effects (positive and adverse). Significance is a measure of the magnitude of a potential effect compared to/in relation to the sensitivity or importance of the receptor. It is proposed that the criteria will not attempt to qualify the assessment of significance in any great detail. This includes differentiation between Major, Moderate or Minor significance as there may not be sufficient information available to accurately determine any variation between these given the high spatial level of the Plan. The assessment will therefore be based on the following criteria set out in Table 4.2.

Table 4.2 Assessment Criteria	
SEA Topic	Likely Effects
Potential to result in a Significant Effect	<p>The precise measure for a significant effect will vary across the different SEA topics, however, in general a significant effect is likely when:</p> <ul style="list-style-type: none"> ■ The Plan will result in a permanent, long term or irreversible change in baseline conditions; or ■ Direct long term or permanent enhancement or disruption to a receptor (e.g. biodiversity).
Potential to result in an Effect	<p>As above, the measure of effect will vary across the different SEA topics, however, in general, a potential effect is likely when:</p> <ul style="list-style-type: none"> ■ The Plan will result in temporary short term or reversible change in baseline conditions; or ■ Indirect, temporary or short term enhancement or disruption to a receptor (e.g. biodiversity).

Table 4.2 Assessment Criteria	
SEA Topic	Likely Effects
Negligible	Negligible effects will be identified where there is likely to be change in baseline, or effect on a baseline feature (receptor), but the level of change/effect will be indiscernible/very slight.
Neutral / No Effect	There will be no change in baseline environment/features as a result of the Plan.
Unknown	<p>Unknown effects will be recorded where there is insufficient information available to accurately determine the level and type of potential effect. This could be due to:</p> <ul style="list-style-type: none"> ▪ A lack of baseline data. ▪ Limited knowledge on how the Plan would interact with particular baseline features/ characteristics, for example, where there is limited scientific knowledge of how a certain species would respond to marine noise. ▪ A lack of knowledge as to whether certain baseline features (receptors) are sensitive to development interactions in the marine, coastal or intertidal area.

Likely effects can be both adverse and beneficial.

It is proposed that the following system of coding will be used in the presentation of results from the assessment.

Potential effect	Symbol
Potential to result in a Significant Effect	xx (adverse) ✓✓ (beneficial)
Potential to result in an Effect	x (adverse) ✓ (beneficial)
Negligible	<>
Neutral / No Effect	o
Unknown	?

4.5.2 Mitigation and Monitoring

Where it is identified that the Plan may have environmental impacts these may be mitigated. For example new transport infrastructure may be allocated within an environmentally sensitive area. As per the mitigation hierarchy (avoid, reduce, remedy, compensate) where possible the Council will seek to firstly avoid significant negative environmental impacts. If this is not possible, mitigation measures will be proposed which will aim to reduce the overall impact to an acceptable level.

The Plan will be subject to ongoing monitoring. It is intended to create a set of indicators to measure the impacts that the A81 improvements may have on the environment during its lifespan. The indicators will be based on the baseline information and the existing environmental issues and problems in the area. These indicators will be developed during the preparation of the A81 Options.

5 Environmental Baseline

5.1 Introduction

This section of the Environmental Report provides an outline of the environmental characteristics of the study area focussed on the main data sources and key issues related to each environmental topic within the scope of the SEA. Key constraints or areas of environmental importance are identified by SEA topic area in Figures 5.1 to 5.4. Data sources used for the collation of baseline information are noted in Appendix B.

5.2 Environmental Baseline

5.2.1 *Biodiversity Flora and Fauna*

There are no statutory designated sites within or immediately surrounding the study area with Mugdock wood SSSI being the closest at approximately 1km north west of the A81. This site is designated for its woodland and heath habitats, beetle assemblages and open water.

There are no Royal Society for the Protection of Birds (RSPB) reserves near the study area.

There are a number of Local Nature Conservation Sites in close proximity to the A81, with Important Wildlife Corridors dissecting the road, and along the road at a number of locations. Wildlife Corridors are an important habitat feature which ensures mobility of species, reducing isolation and encouraging species diversity within urban areas. Kilmardinny Loch Local Nature Reserve is also located within the study area, immediately west of the A81 north of Kilmardinny Avenue.

Several strips and pockets of ancient woodland and semi-natural ancient woodland are present within the study area. The closest to the A81 are located along the River Kelvin just east of the A81, and immediately east of the A81 and north of Auchenhowie Road.

The A81 runs through and in close proximity to a number of UKBAP & LBAP habitats for which action plans exist, including: Farmland (General, Arable and Hedgerows) (LBAP & Arable & Horticulture UKBAP), Ponds, Lochs & Reservoirs (LBAP & Standing Open Water & Canals UKBAP), Golf Courses (LBAP), Rivers, Burns & Terrestrial Margins (LBAP & Rivers & Streams UKBAP), Urban (LBAP), Woodland (LBAP & Broadleaved, Mixed and Yew Woodland UKBAP), and Boundary and Linear Features (UKBAP).

A review of aerial photography shows that the A81 runs through and close to a variety of habitats that could support a number of protected species, including European Protected Species otter, water vole and bats. Other protected species, such as breeding birds, badger, in addition to LBAP & UKBAP Priority Species may also be present.

Refer to Figure 5.1 for the map illustrating the spatial extent of ecological constraints within the Study Area.

5.2.2 *Water*

There are two groundwater bodies that underlie the East Dunbartonshire Council area. The Clydebank and Kirkintilloch bedrock and localised sand and gravel aquifers and the Campsie bedrock and localised sand and gravel aquifers are determined to be of poor and good quality, respectively. Both waterbodies are designated under the Drinking Water Directive for Groundwater bodies.

Numerous surface water bodies are also located within the surrounding area of the A81 corridor. These are all part of the wider catchment area of River Kelvin which extends from its source at Kilsyth in North Lanarkshire, to its confluence

with the Clyde to the southwest. The River Kelvin is designated by the Freshwater Fish Directive for Salmonid Waters, as well as being regarded as an Urban Waste Water Treatment Directive Sensitive Area.

Numerous tributaries of the River Kelvin are also located within the study area, including the Craigmaddie Burn, regarded as being of moderate quality and Allander Water, classified as having 'good ecological potential' and also designated under the Drinking Water Directive for Rivers.

Other protected waterbodies in the area include the Kilmardinny Loch Local Nature Reserve (LNR). Kilmardinny Loch LNR is located approximately 150m to the west of the existing A81 road within the area of Bearsden.

5.2.3 *Soil*

Despite three quarters of the land in East Dunbartonshire being utilised for agricultural processes, the district has a small percentage (5%) of prime agricultural soil.

Currently East Dunbartonshire has no areas of land designated as contaminated land (as defined in the Environmental Protection Act 1990). However, a list of potential contaminated sites has been created based on previous land use. On this list 626 potentially contaminated sites (to varying degrees of contamination) have been identified.

There are currently 25 sites of Vacant and Derelict Land within East Dunbartonshire with a total area of approximately 62 hectares. These and other Brownfield land locations within East Dunbartonshire may have potentially contaminated land, depending on their historic uses.

5.2.4 *Cultural Heritage*

A review of available data from PASTMAP – Scottish National and Regional Archaeological and Architectural Datasets, Historic Scotland and the East Dunbartonshire Local Plan have highlighted a number of listed buildings, scheduled ancient monuments and conservation areas within the study area that could be impacted by the proposed road improvements.

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.

"Bearsden Station", Roman bath-house 400m NE of Scheduled Ancient Monument (SAM) is located within close proximity to the A81, approximately 400m west, adjacent to the A808. This monument consists of a Roman bath-house and latrine which has been left undeveloped in a modern housing estate.

At Hillfoot the A81 runs through "Old Bearsden" Conservation Area, heading northwards the A81 runs through "Milngavie Town Centre", "Tannoch" and "Milngavie Reservoir" Conservation 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.

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).

The most important of these are Category B listed (of regional importance) and are as follows:

- "West End Square, Maryhill Road" over the River Kelvin;
- "Garscube Mill" at the River Kelvin;

- Cluster of three properties at “West End Square Maryhill” at Westend;
- Milngavie Station;
- Boclair House, Bearsden Council Chambers, at 100 Milngavie Road;
- “Gavin’s Mill” (restaurant) on Gavin’s Mill Road;
- “Lower Kilmardinny House”, Milngavie road; and
- Craigmaddie Castle, house and dovecot.

There are also a large number of Category C (of local importance), including:

- Canniesburn Square, Bearsden off the A739 at the roundabout with the A81;
- Registrar’s Office at 36 & 38 Roman Road;
- Milepost, Milngavie Road;
- Milepost, McFarlane Road;
- Milepost, Glasgow Road;
- St. Paul’s Church at the junction of A81 and Station Road;
- Kilmardinny Lodge at A81 at Kilmardinny Avenue;
- 1 & 2 Carse View Drive;
- 156 Milngavie Road;
- “Macfarlane Road Horse Trough” to east of A81 at Macfarlane Road;
- “The Waterboard House” at 25 MacFarlane Road; and
- North Lodge (Craigmaddie Lodge) at Strathblane Road just east of Craigmaddie Reservoir.

Refer to Figure 5.2 for the map illustrating the spatial extent of all archaeological and cultural heritage constraints within the Study Area.

5.2.5 *Landscape*

East Dunbartonshire’s landscape is diverse in terms of character and land uses. The district is characterised by five main types of landscape character: Drumlin Foothills; Rolling Farmland; Broad Valley Lowland; Rugged Moorland Hills; and urban areas.

The topography of East Dunbartonshire is generally low lying, undulating land with the exception of the two Regional Scenic Areas, the Campsie Fells and the Kilpatrick Hills to the North and West of the district respectively.

East Dunbartonshire’s Planning Guidance Note on ‘Special Landscape Area Designation’ recognises several ‘exemplars’ of Landscape Character Areas which they have put forward to become Special Landscape Areas. Of these areas, the Barbowie, Balderknock and Torrance – Drumlin Foothills lies immediately adjacent to the east of the A81 corridor.

There are two Townscape Protection Areas located within the study area, these are Whitehurst and Pendicle Road, located just outwith the town centre of Bearsden. As noted in Section 4.2.4 above, the study area includes several conservation areas including: “Old Bearsden”, “Milngavie Town Centre”, “Tannoch” and “Milngavie Reservoir” Conservation 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.

East Dunbartonshire has a total of 1,082.46 hectares of green space, 54% of which is semi-natural.

The green belt is a Development Plan policy which covers the East Dunbartonshire area, with the exception of the upland areas, its objectives include maintaining the character and distinctiveness of the areas settlements.

East Dunbartonshire also has a number of Tree Preservation Order (TPO) areas. Notably, the entire extent of the settlement of Bearsden is a TPO area however there are also a number of other TPO areas within the study area.

The existing A81 corridor is predominantly urban in nature with housing lining the western and eastern sides of the route from the River Kelvin to the north of Milngavie, with the exception of the area of the Kilmardinny development.

Refer to Figure 5.3 for the map illustrating the spatial extent of landscape designations within the Study Area.

5.2.6 *Population and Human Health*

East Dunbartonshire has a total population of 105,860 (2013); a decrease of 0% (from 105,880) from 2012. A trend in decreasing population size in East Dunbartonshire is predicted to continue to 2037 with a reduction of 6.8 per cent to 98,696 expected (from 2012 figures). Conversely, Scotland's population is predicted to increase by 8.8% over the same period.

East Dunbartonshire has a decreasing and ageing population. This is highlighted through the population projections 2012 that by 2037 East Dunbartonshire's population will be 98,696 with a large increase in the 75+ age group and a projected decline of 13.4% of the under 16 age group in comparison to the 2012 population statistics. The number of people aged over 65 years old is forecast to increase by 11,573 people between 2012 and 2037.

From the 2011 census data, the percentage of economically active people living in East Dunbartonshire is the same as the Scottish average (69%).

Areas of Hillhead and Lennoxton are within the top 15% most deprived SIMD data zones in Scotland. There is a considerable difference in the average weekly wage between people that live in East Dunbartonshire and people who work in the area earn.

Generally the health of the residents of East Dunbartonshire is similar to that of the national average statistics, with 85% of the residents being determined as being of 'good' health or better, in comparison to that of Scotland (82%) (2011 census). The level of residents found to be in general health status of 'bad' or 'very bad' within East Dunbartonshire and Scotland was 4% and 5% respectively.

The minor, serious and fatal road accidents in the area are recorded by the police. Road accidents and road casualty rates in the Glasgow and Clyde Valley region, and in Scotland, have fallen considerably over the last 20 years, despite a 20% increase in traffic volume. There is no sign of an overall reduction in adult pedestrian casualties admitted to hospital in the area. Rates remain three times higher in the most deprived areas.

Refer to Figure 5.4 for the map illustrating the spatial extent of constraints relating to population and human health within the Study Area.

5.2.7 *Air Quality*

The main concern for air quality in East Dunbartonshire is transport which is the main contributor of air pollutants such as NO₂ (nitrogen dioxide) and PM₁₀ (particulates).

The busiest routes that are of concern in relation to air quality within the Study Area are the A81 through Milngavie; and the A809 and A739 through Bearsden.

There is an Air Quality Management Area (AQMA) declared within the Study Area, Bearsden Cross (A809), which was declared an AQMA after several years of exceeding National NO₂ and PM₁₀ objective levels. The Bearsden Cross area includes the A810 from Antonine Road and the A809 to the Canniesburn Toll roundabout, at the southern end of the A81 in East Dunbartonshire.

5.2.8 *Climatic Factors*

Vehicular transport is a significant source of carbon dioxide in East Dunbartonshire, which contributes towards climate change.

The level of bus coverage varies across the area. As such there are areas that do not have services that are frequent or operate outwith peak travel periods and daytime hours. The number of bus passenger journeys in Strathclyde and South West Scotland has decreased from a peak in 2008/09 to 2011/12, which equates to a decrease of 20%.

East Dunbartonshire has a higher number of cars per household than the Scottish national average, however traffic levels have decreased during recent years from the particularly high volumes experienced during the mid 2000s.

During 2013, 76.5 per cent of East Dunbartonshire's working population travelled to their place of employment by car.

Glasgow is a key attraction for both employment and higher education opportunities for the population of East Dunbartonshire.

Flooding has been an issue in the Kelvin Valley for many years with the most recent flood events occurring in 1994 and 2005. The main area of concern for potential flooding around the A81 is the River Kelvin and its tributaries –Allander Water, Manse Burn and Craigdhu Burn.

East Dunbartonshire only has one operating landfill (Inchbelle Quarry, Kirkintilloch) but is only used for the disposal of inert materials, mainly construction materials. All household and commercial municipal waste is transferred to landfills in North Lanarkshire. Therefore, there is minimal methane from landfill within East Dunbartonshire to impact on climate change.

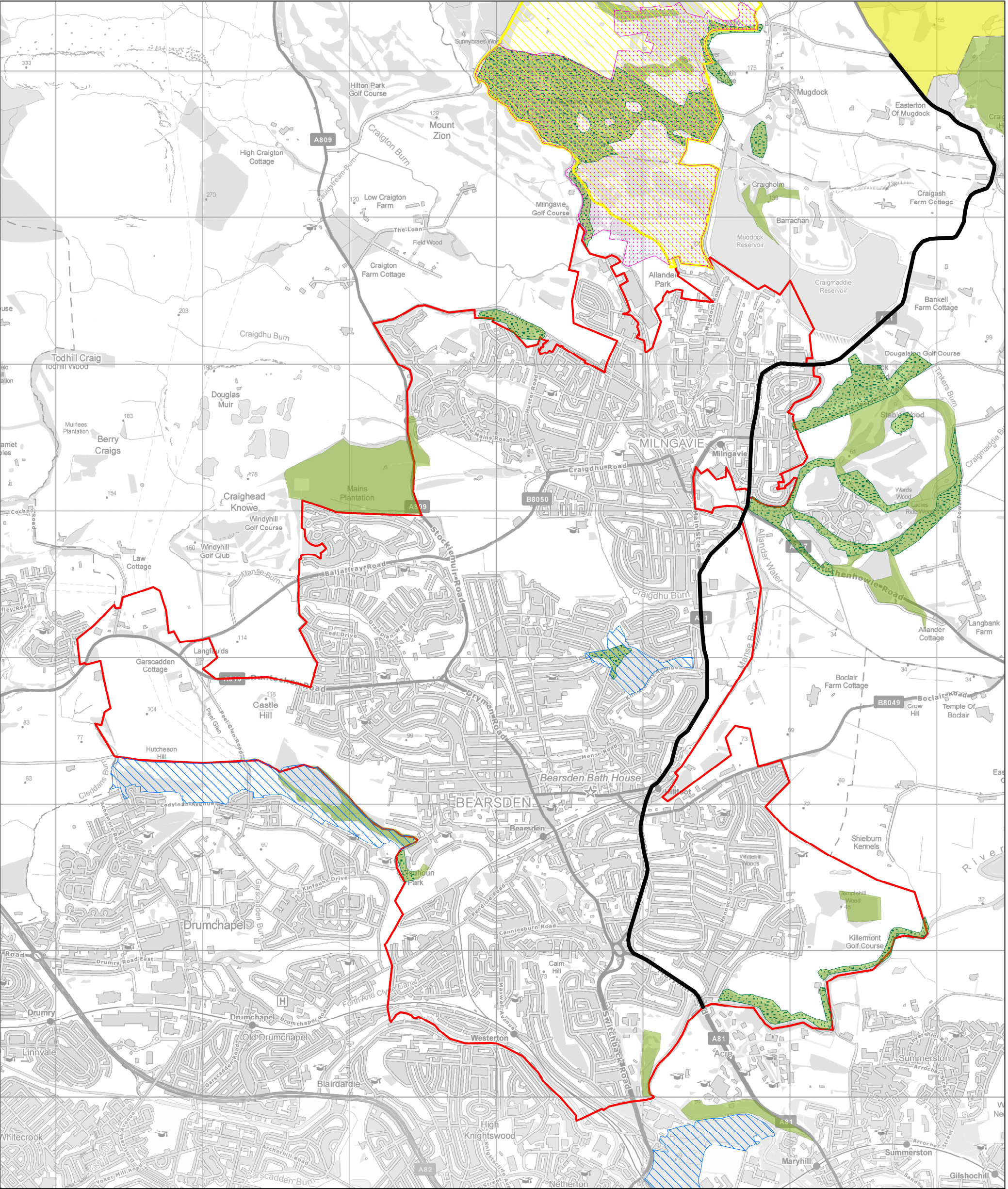
5.2.9 *Material Assets*

East Dunbartonshire is supplied by various levels of transport infrastructure, through well serviced rail networks, bus routes encompassing the whole district and the various road networks that link settlements within East Dunbartonshire together with providing routes out with the district.

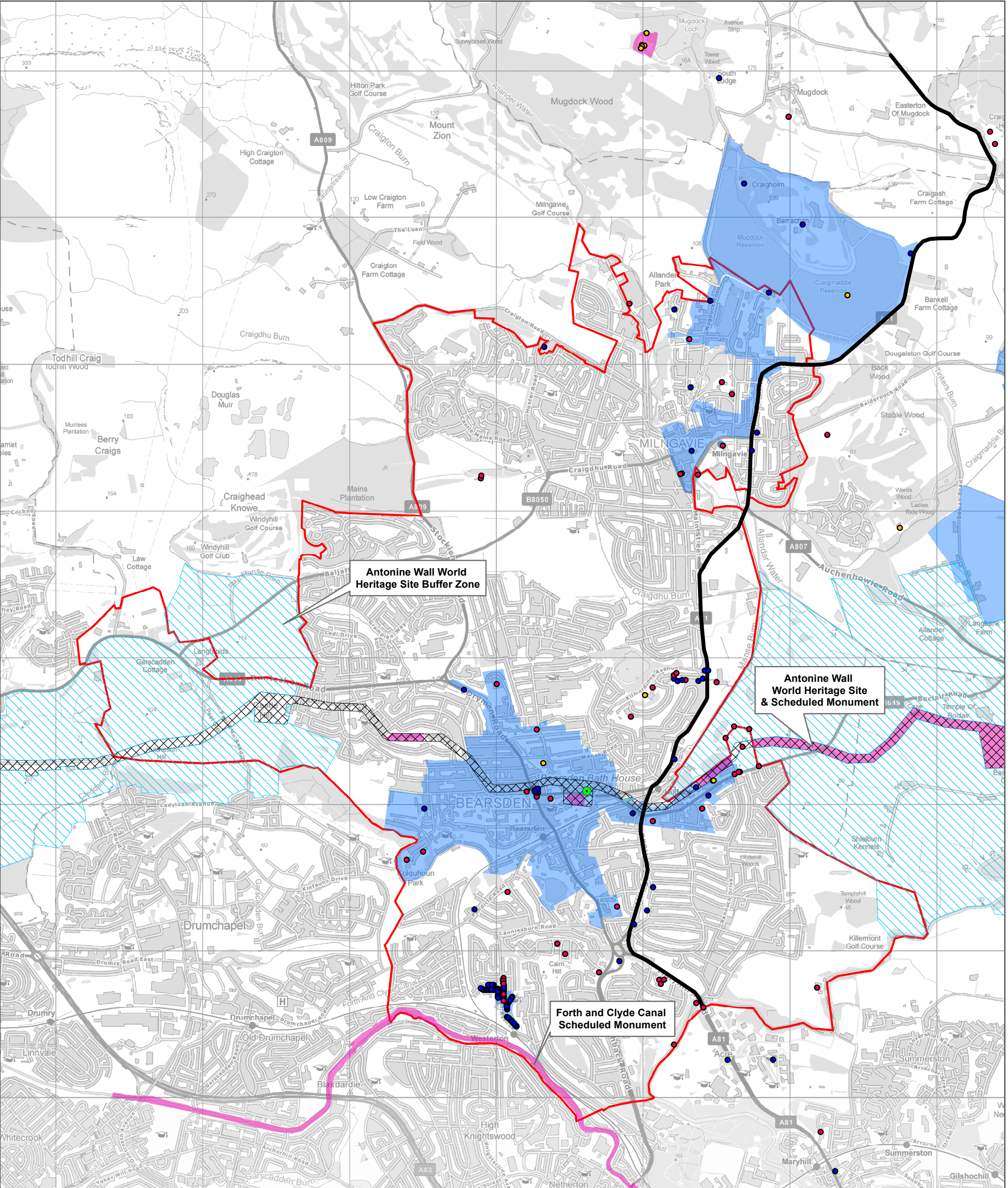
There are 54km of A class roads, 47 km of B class roads and 34km of C class roads. This amounts to 27% of the road network. There are 369 km of unclassified roads.

East Dunbartonshire has a network of Core Paths and public open spaces which provide opportunities for recreation. There are numerous Core Paths within close proximity to and that cross the A81, including the Path that follows Allander Water at Lennox Park.

Housing needs studies have indicated that East Dunbartonshire has one of the highest net needs for affordable housing, compared to other Scottish Local Authorities. The East Dunbartonshire Local Plan 2 identifies the location of new development proposals including transport development proposals, including the A81.



<div>KEY:</div> <div><div><div></div><div>Study Area</div></div><div><div></div><div>Scottish Wildlife Trust Reserve</div></div><div><div></div><div>A81 Route</div></div><div><div></div><div>Local Nature Reserve</div></div><div><div></div><div>Site of Special Scientific Interest (SSSI)</div></div><div><div></div><div>Semi-Natural Ancient Woodland Inventory</div></div><div><div></div><div>Country Park</div></div><div><div></div><div>Ancient Woodland Inventory</div></div></div>		<div><div><div>AECOM</div></div></div> <div><div>1 Tanfield Edinburgh Scotland, EH3 5DA</div><div>Tel: +44 (0) 131 301 8600 Fax: +44 (0) 131 301 8699 www.aecom.com</div></div>	
<div>Client:</div> <div>EAST DUNBARTONSHIRE COUNCIL/ STRATHCLYDE PARTNERSHIP FOR TRANSPORT</div> <div><div><div></div><div>East Dunbartonshire Council</div></div><div><div>SPT</div></div></div>	<div>Title:</div> <div>ECOLOGICAL CONSTRAINTS</div>	<div>Design:</div> <div>SM/TC</div>	<div>GIS:</div> <div>SM</div>
<div>Project:</div> <div>A81 CORRIDOR STUDY</div>		<div>Chk'd:</div> <div>TC</div>	<div>App'd:</div> <div>CC</div>
		<div>Date:</div> <div>12/12/2014</div>	<div>Scale:</div> <div>1:25,000</div>
		<div>No:</div> <div>Figure 5.1</div>	



Study Area

A81 Route

Antonine Wall World Heritage Site Boundary

Antonine Wall World Heritage Site Buffer Zone

Scheduled Monument

Conservation Area

Properties in care

Listed Building Category

Listed Building Category B

Listed Building Category C

AECOM

1 Tanfield
Edinburgh
Scotland, EH3 5DA

Tel: +44 (0) 131 301 8600
Fax: +44 (0) 131 301 8699
www.aecom.com

Client:

EAST DUNBARTONSHIRE COUNCIL/
STRATHCLYDE PARTNERSHIP FOR TRANSPORT

SPT

Title:

ARCHAEOLOGICAL CONSTRAINTS

Design:

SM/TC

GIS:

SM

Chk'd:

TC

App'd:

CC

Date:

12/12/2014

Scale:

1:25,000

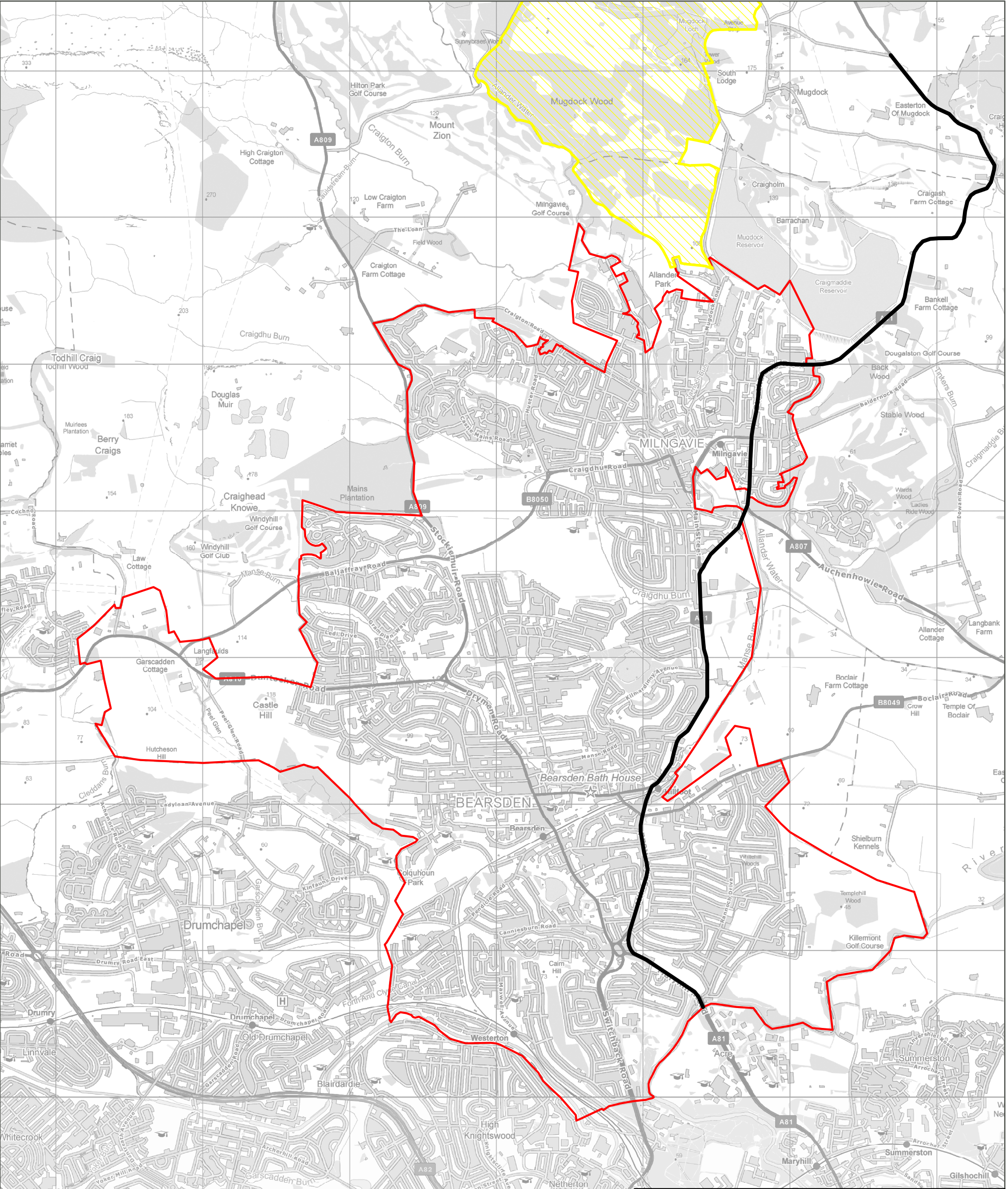
No:

Figure 5.2

Project:

A81 CORRIDOR STUDY

BASED ON ORDNANCE SURVEY MAPPING WITH PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE (C) CROWN COPYRIGHT. ALL RIGHTS RESERVED 2014.





KEY:

Study Area

A81 Route

Mugdock Country Park


Client:
EAST DUNBARTONSHIRE COUNCIL/
STRATHCLYDE PARTNERSHIP FOR TRANSPORT



Project:
A81 CORRIDOR STUDY

Title:

LANDSCAPE CONSTRAINTS



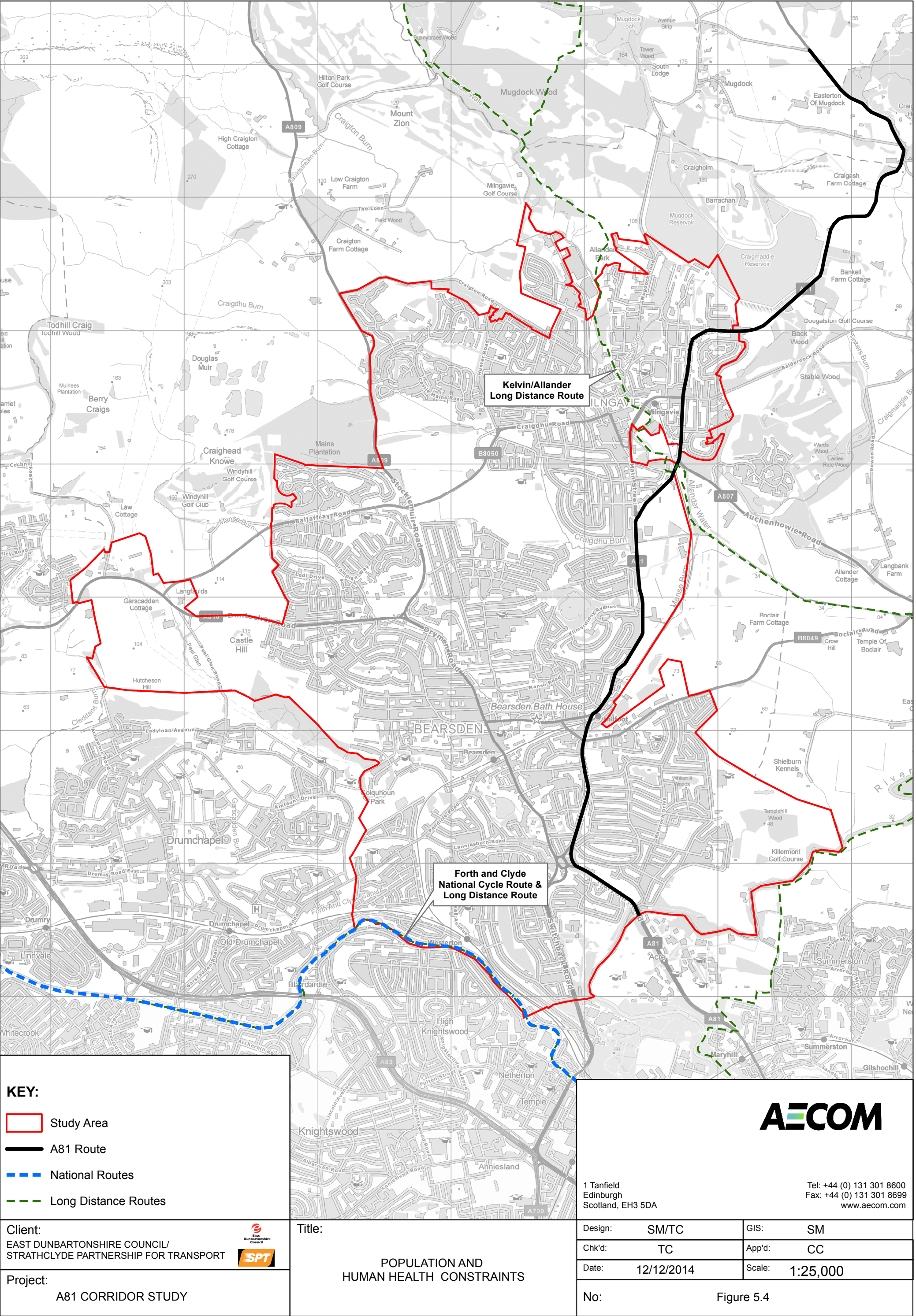
1 Tanfield
Edinburgh
Scotland, EH3 5DA

Tel: +44 (0) 131 301 8600
Fax: +44 (0) 131 301 8699
www.aecom.com

Design:	SM/TC	GIS:	SM
Chk'd:	TC	App'd:	CC
Date:	12/12/2014	Scale:	1:25,000

No:

Figure 5.3



5.3 Key Environmental Issues for the A81 Transport Plan

There are numerous sensitive environmental receptors within the area surrounding the A81 corridor within East Dunbartonshire. The most notable of these that are designated either for their international, national or regional importance.

The Antonine Wall World Heritage Site runs perpendicular to the A81 corridor and includes a buffer zone (as identified in Local Plan 2), to avoid adverse effects from prospective developments. There are also a number of other Scheduled Ancient Monuments and Category B Listed Buildings within the near vicinity of the A81. Other designated areas include River Kelvin as a nationally protected water body for fresh water salmon and as a river used as a drinking water supply, and Kilmardinny Loch Local Nature Reserve.

Other environmental sensitivities include the proposed Special Landscape Area of the Drumlin Foothills covering Bardowie, Baldernock and Torrance, and the Air Quality Monitoring Area at the south of the A81 corridor at the Canniesburn Toll roundabout.

6 Assessment

6.1 Introduction

6.1.1 Introduction

The Options set out within the Plan have been assessed in two stages. Whilst it is important to highlight where temporary effects could occur from construction, with good practice and appropriate construction mitigation, these could be avoided or reduced to an acceptable level. However it was felt that the presentation of these effects within the assessment matrixes presented in Appendix B could mask the key issues. This chapter has therefore been split into temporary, short term effects that could occur as a result of construction and potential permanent and operational effects.

6.1.2 Limitations

The Options proposed within the Plan are generally high level and specific locations are not known. Consequently the lack of spatial reference associated with the Options limits the accuracy by which their effect on the environment can be predicted and evaluated. Without knowledge of the exact area that will be affected by the Option it is also difficult to accurately identify receptors that will be affected, their relative importance and how the baseline will change (magnitude).

As a consequence some of the findings of the SEA are not based upon specific baseline data but in a detailed understanding of the characteristics of the study area, and an understanding of how the policies and options are likely to interact with the surrounding environment.

6.1.3 Construction Impacts

Construction activities generally include the following temporary effects:

- Vegetation removal;
- Ground /earth removal;
- Movements of materials (import of construction materials and removal of waste);
- Traffic movements to a from site;
- Noise generated by construction machinery / activities;
- Construction of contractor compounds;
- Changes to water drainage patterns (below ground and surface);
- Potential pollution/ contamination of water resources from plant and vehicles on broken ground; and
- Generation of dust resulting from earth movements and construction activities.

Table 6.1 sets out the Options identified within the Plan which could result in construction effects.

Table 6.1 Options That May Result in Construction Activities	
Option	Interventions Which May Involve Construction
Increase Car Parking at Bearsden and Westerton Rail Stations	<ul style="list-style-type: none"> ■ Partial decking of the station car park at Bearsden ■ Provision of additional parking at Westerton
Rail Park & Ride at Allander	<ul style="list-style-type: none"> ■ Provision of a rail halt and associated parking (circa 150 spaces)

Table 6.1 Options That May Result in Construction Activities	
Option	Interventions Which May Involve Construction
	<ul style="list-style-type: none"> Provision of a rail halt with Park and Ride facility (circa 400 spaces)
Quality Bus Corridor	<ul style="list-style-type: none"> Burnbrae Roundabout to Boclair Road – southbound bus lane Boclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only) Provision of real time information at stops along the route Improvements to bus stops and shelters Bus priority installed on approaches to junctions / at pinch points
Enhanced Walking and Cycling	<ul style="list-style-type: none"> Provide pedestrian facilities on desire lines (including link to rail stations) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station Completion of the cycle link between Mains Estate and Allander Leisure Centre Segregated cycle lane from Milngavie town centre/ to Glasgow border to complete what has been achieved through Phase 1 and 2 Secure cycle storage facilities built at rail stations and in town centres Development of a local network of walking and cycling paths which converge on town centres and stations Development of a high quality path which links the Kilmardinny development and Milngavie station
Junction Improvements	<ul style="list-style-type: none"> Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Boclair Road)
Variable Message Signs	<ul style="list-style-type: none"> Electronic signs to warn drivers of any traffic issues on the route, or adjoining routes
Highway Options to enforce or reduce speeds and enhance the appeal of sustainable travel	<ul style="list-style-type: none"> Carriageway marking / localised narrowing

Table 6.2 provides details on the short term and temporary effects in relation to each of the environmental topic areas that may arise during construction activities associated with the interventions set out in Table 6.1. The extent of construction required for each is not known at this stage therefore potential negative effects shown in Table 6.2 may not occur as a consequence of the construction activities of all that are listed. It details the general potential effects that could arise from construction activities.

Table 6.2 also sets out potential mitigation measures to minimise construction effects, however specific measures will need to be developed and implemented in line with the development of detailed design of the relevant Option(s).

Table 6.2 Potential Construction Effects and Mitigation		
Environmental Topic	Potential Effects	Potential Mitigation Measures
Biodiversity Flora and Fauna	<ul style="list-style-type: none"> Vegetation removal Loss and fragmentation of habitat Hedgerow removal Impacts on breeding / wintering birds (disturbance) Impacts on fish Discharge of silt laden runoff 	<ul style="list-style-type: none"> Minimise tree / vegetation / topsoil removal Habitat reinstatement Protected species surveys/ licences/ mitigation. Timing and construction Site clearance outwith the breeding bird season Control and treatment of surface runoff
Water	<ul style="list-style-type: none"> Temporary discharges / risk of pollution Discharge of silt laden runoff Pollution incidents 	<ul style="list-style-type: none"> Use of construction SUDS and adoption of best practices to avoid pollution of watercourses Consultation with SEPA and obtaining the necessary temporary discharge consents Adoption of best practices to avoid pollution of watercourses Monitoring Private Water Supplies where required Appropriate storage of fuels and solvents
Soil	<ul style="list-style-type: none"> Erosion or damage to soil Land contamination Soil compaction from heavy machinery 	<ul style="list-style-type: none"> Implement soil erosion prevention measures outlined in good practice guidance Pre construction surveys and application of Good Practice
Cultural Heritage	<ul style="list-style-type: none"> Temporary effect on the setting of World Heritage Sites a Scheduled Monument, listed building or site of archaeological importance. 	<ul style="list-style-type: none"> Archaeological watching briefs - Minimise and monitor ground disturbance
Landscape	<ul style="list-style-type: none"> Visual impacts of construction activities 	<ul style="list-style-type: none"> Temporary screens and hoarding
Population and Human Health	<ul style="list-style-type: none"> Nuisance (noise, odour, dust, vibration, light) Footpath, bridleway and cycleway closures and diversions Temporary changes / alterations to public transport timetables Construction traffic Potential for accidents 	<ul style="list-style-type: none"> Good Practice Guidelines (e.g. construction dust management, use of low noise machinery) Restriction on working hours Erection of temporary noise screens Use of directional lighting Implementation of construction management plans Consultation with the Environmental Health Officer Consultation with local residents and users of footpaths, cycleways and

Table 6.2 Potential Construction Effects and Mitigation		
Environmental Topic	Potential Effects	Potential Mitigation Measures
		bridleways <ul style="list-style-type: none"> Provision of alternative routes (diversions) during construction Appropriate controls and security of construction sites
Air Quality	<ul style="list-style-type: none"> Creation of dust and particulates 	<ul style="list-style-type: none"> Follow appropriate guidelines for construction dust management Implementation of construction management plans
Climatic Factors	<ul style="list-style-type: none"> Increased emissions from construction vehicles. Waste generation (from aggregates (rubble, concrete)) 	<ul style="list-style-type: none"> Preparation of a waste management plan demonstrating how targets for recycling and reuse of aggregates and other waste will be met Management of waste in line with Developers Duty of Care
Material Assets	<ul style="list-style-type: none"> Waste generation (from aggregates (rubble, concrete)) 	<ul style="list-style-type: none"> Reuse of materials where appropriate

Most of the potential effects that could occur as a result of construction can be reduced or avoided through the implementation of appropriate mitigation measures. Any construction works will need to be timed appropriately where required so to avoid significant effects on the qualifying features of any designated sites and protected species. Providing appropriate controls are put in place to avoid or minimise the effects of construction it is unlikely that the Plan (when implemented) will result in significant adverse effects on the environment. However, in order to ensure that the options taken forward under the Plan do not result in a significant effect during construction, the Plan will include a specific statement requiring that Options which are taken forward for development undertake an assessment relevant to the scales of the Options which will identify project level mitigation accordingly.

6.1.4 Do Minimum

Each of the Options generated will be assessed against the current baseline. The baseline conditions must also consider the developments, schemes, plans and programmes which have already been committed to within the study area by Transport Scotland and East Dunbartonshire Council. The interventions that are included within the alternative to the Plan, or the 'do minimum' scenario include:

- 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. The Kilmardinny development occupies the area between the A81 and Manse Burn between the A807 (north) and the existing commercial developments to the south. The development is of mixed use including residential properties, office and business development and leisure/ recreational facilities.
- Kessington Active Travel 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.
- Production of a walking and cycling map for each town.
- Monitoring and maintenance of the Council's core path network in line with the Core Path Plan.
- Signing and lining and general maintenance of the road network, consistent with the future maintenance schedule.

6.2 Do Minimum Assessment

Biodiversity

There are not likely to be any direct effects on biodiversity as a result of the do-minimum scenario. However there may be indirect adverse effects as a result of the reduced local air quality from a greater number of vehicles in the study area from increased housing provided within the Kilmardinny development.

Water quality

Water quality may be reduced as a result of the Kilmardinny development. The greater number of vehicles and hardstanding areas may result in oils and fuel being washed in to the Manse Burn and Allander Water in runoff. As the development has received planning consent it is assumed that these potential effects have been mitigated appropriately.

Soil

It is unlikely that there will be any effects on soil as a result of the do-minimum option.

Cultural heritage

There may be direct and indirect adverse effects on cultural heritage assets within the study area from new development, namely the Kilmardinny development. Direct effects may include physical impacts from increased vibration from increased traffic, and indirect effects may result in effects on the setting of sensitive cultural sites. However as the development has been granted planning permission these effects are assumed to have been appropriately mitigated to be either avoided, reduced, remedied or compensated.

Landscape

It is unlikely that there will be any effects on landscape (townscape) or visual amenity as a result of the do-minimum option.

Population and human health

With the development of the active travel hub in Kessington, the cycle corridor along the A81, and the production of walking and cycling maps for each town, it is likely that a greater number of people within the study area will become more active, choosing to use active travel means more regularly for shorter journeys or for leisure. This will result in improved health, fitness and wellbeing of the population. There may also be indirect negative effects on the population from reduced air quality with an increased population from the development at Kilmardinny increasing the number of vehicles in the study area.

Air quality

The Kilmardinny development will increase the population of the study area and therefore will also increase the number of vehicles. The increase in vehicles will result in increased emissions from transport and have a negative effect on air quality. Positive effects on air quality may also occur as a result of the Kessington active travel hub, the cycle corridor and the promotion of walking routes and cycle paths within the towns. Overall there is likely to be a negligible negative effect on air quality.

Climatic factors

Potential adverse effects on flooding as a result of the Kilmardinny development reducing the space available for flood storage from the Manse Burn and Allander Water. As developments have been given consent within this area it is anticipated that any potential adverse effects have been mitigated appropriately.

Material assets

The Kilmardinny development will increase the number of houses available within the study area and allow for greater population growth as per the East Dunbartonshire Local Development Plan 2. Appropriate transport infrastructure to link this development area with the existing network will also be developed. The do-minimum Option will also increase the sustainable transport infrastructure network within the study through the provision of greater cycle ways and hub areas. Overall it is likely that there will be a positive effect on material assets within the study area.

6.3 Option Assessment

The following sections outline the potential environmental effects as a result of each of the development options proposed.

6.3.1 Option 1 – Increased Car Parking at Bearsden and Westerton Rail Stations

Biodiversity

Should there be additional land take requirements, this would likely require the removal of trees/ areas of potentially suitable habitat for European protected species (e.g. bats) from the immediate surrounding areas of the existing stations. The railway lines also provide an important wildlife corridor through this built up area, connecting various fragmented habitats – new development within the immediate vicinity of this may impact species in use of this corridor. With appropriate mitigation the impact is likely to be negligible.

Water Quality

There are not predicted to be any effects on water quality or flood risk from the development of additional car parking capacity. Increased cars within the area may result in greater chance of leaked fuels and oils which may enter the water environment through surface water runoff; however it is likely that this can be mitigated. It should be noted that the Forth and Clyde Canal – a Freshwater Fish Directive designated waterbody - lies immediately south of the Westerton station. Overall there is likely to be no effects on water quality.

Soil

Given the urban location of the existing rail stations, there are no predicted effects on soil resources from increasing car parking capacity.

Cultural Heritage

There are numerous cultural heritage sites located within Bearsden and the areas immediately surrounding the rail stations. Both Bearsden and Westerton stations are located within and immediately adjacent to the Old Bearsden and Westerton Garden Suburbs Conservation Areas, respectively. The Antonine Wall World Heritage Site (WHS) and associated features (Roman Fort, Scheduled Ancient Monument (SAM)) also extend through Bearsden town centre. Within the Conservation Areas there are also a number of listed buildings of varying category (A, B and C).

Impacts on setting may also occur if development is not sympathetic to the setting and context of the existing environment. Historic buildings, monuments and conservation areas are vulnerable to new development that has the ability to change the setting of the area in which they reside. Appropriate mitigation and careful design will ensure impacts to the setting and character of assets and the surrounding environment is kept to a minimum.

Landscape and Visual

Impacts on landscape and visual amenity are only likely to occur should the additional car parking be built on a platform above existing facilities, thus introducing a new feature in to the landscape/ townscape. The Old Bearsden and Westerton Garden Suburbs Conservation Areas also add greater sensitivity to the area. The character of the surrounding area set by the heritage assets described above has the potential to be impacted by the development. The introduction of increased car parking may change the setting of the assets subsequently impacting the area visually and its character. Overall there is likely to be an adverse effect on the landscape and visual aspect as a result of the proposed development.

Population and Human Health

The Option encourages the use of a more sustainable means of transport other than private vehicles. This reduction in car use will limit car emissions within populated areas improving human health. Reduced road users on other routes would also experience reduced frustration and stress during peak times, improving wellbeing. Overall there is likely to be a positive effect on the human health and population as a consequence of the development.

Air Quality

Air quality is likely to improve from limiting emissions on congested routes and promoting more sustainable means of transport. This would likely only benefit areas within the study area. There remains the possibility that with increased accessibility, a greater number of vehicles will be drawn to Bearsden station, resulting in greater emissions within the Bearsden Air Quality Management Area (AQMA). Overall there is likely to be a positive effect on air quality throughout the majority of the study area.

Climatic Factors

Greater accessibility and the encouragement to use more sustainable means of transport will reduce carbon emissions and contribute towards Scotland's targets of a 42% reduction in greenhouse gas emissions by 2020 leading to a positive effect on climatic factors.

Material Assets

Potential to increase the connectivity of settlements within East Dunbartonshire, and its' linkages to other areas, including Glasgow, Stirling and Edinburgh.

6.3.2 *Option 2 - Rail park and Ride at Allander*

Biodiversity

It is likely that there will be the requirement to develop on ground that is of potential habitat value to European species adjacent to the existing railway line. The railway line offers an important wildlife corridor within a relatively urban area. Lighting of the development may further disturb the surrounding habitat areas not required for the footprint of the development. There is likely to be an adverse effect on biodiversity as a result of the development.

Water Quality

Allander Water may be subject to increased levels of pollutants from fuels and oils leaked from vehicles in use of the park and ride 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 P&R. It is not likely that a park and ride would result in significant impacts on the water environment.

Soil

Soil will be required 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. Earth works also present the opportunity to mobilise ground contaminants already in situ, presenting a threat to the ground water and personnel 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). With appropriate mitigation and best available construction techniques the effects to soil are likely to be negligible.

Cultural Heritage

The development of new infrastructure may result in direct or indirect impacts on cultural heritage sites. Indirect effects may occur should the Option not be sympathetic to the setting and context of the existing environment. Direct impacts may occur from physical damage during construction activities or vibration damage during the operation of the development. This area is of greater sensitivity due to its proximity to the Antonine Wall World Heritage Site and its buffer zone. The proposals have the potential to adversely affect the character of the heritage assets, careful design of the park ride will be needed to ensure the development is in line with the current setting. Overall there is likely to be significant adverse effect on cultural heritage.

Landscape and Visual

The introduction of a new structure within the landscape/ townscape may result in adverse landscape and visual amenity impacts. Impacts on visual receptors is dependent on whether natural screening or boundaries (such as tree lines) are removed from the landscape and the final scale and design of the Option. The character of the surrounding area which is influenced by the heritage assets described above has the potential to be impacted by the development. Overall there is likely to be an adverse effect on the landscape and visual aspect as a result of the proposed Option.

Population and Human Health

The promotion of more sustainable means of transportation than the use of private vehicles will improve air quality. This will improve the health of those within the surrounding area, specifically those near existing congested routes.

Easing congestion/ improving journey times will also improve stress levels and the wellbeing of road users, and improve road safety for all users. There is likely to be a positive effect to the population and human health.

Air Quality

A modal shift from private vehicle use to more sustainable transport will likely improve air quality by cutting vehicle emissions. There is likely to be a positive effect on air quality.

Climatic Factors

A decrease in volumes of traffic on the roads and increasing rail patronage may result in reduced CO2 emissions from transport, therefore positively contributing to Scotland's greenhouse gas emissions targets. Increased hardstanding surface areas in areas that are currently vegetated will reduce the storage capacity of the area in the event of a flood. Flash flooding is becoming more frequent due to climate change – Manse Burn and Allander Water are already subject to flooding events. With appropriate mitigation, for instance the implementation of an appropriate drainage strategy the likely effects that could arise from flooding can be kept to a minimum, and are likely to be negligible.

Material Assets

Potential to increase the connectivity of settlements within East Dunbartonshire, and its' linkages to other areas, including Glasgow, Stirling and Edinburgh. The Park Ride may speed up travel time and increase the attractiveness of travelling to surrounding areas. Overall there is likely to be no effect.

6.3.3 Option 3 – Quality Bus Corridor

Biodiversity

Presuming that the Option allows for a modal shift to sustainable transport along this route, beneficial impacts on local air quality may enhance the biodiversity of the surrounding area, allowing for a greater number of species to flourish in the area surrounding the A81 route. These benefits are unlikely to be realised through the softer interventions detailed within this Option, such as improvements to bus stops and shelters, and SCOOT.

Water Quality

The interventions are mainly improvements to existing infrastructure; as such it is unlikely that the development of any of the interventions included within this Option would result in any impacts (negative or positive) on the water environment.

Soil

The interventions are mainly improvements to existing infrastructure; as such it is unlikely that the development of any of the interventions included within this Option would result in any impacts (negative or positive) on soil or agriculture.

Cultural Heritage

As there is unlikely to be any new development required as part of this Option therefore reducing potential impacts on existing cultural heritage sites from construction activities or setting impacts. The cultural heritage sites along this route (namely the various listed buildings present) may be subject to physical effects from increased vibration should the level of traffic increase or the implementation of bus lanes/ bus priority measures results in buses travelling quicker within close proximity to these receptors. This is unlikely to result from the improvement of bus stops and shelters or bus detection within SCOOT. Overall there is likely to be no effect on cultural heritage.

Landscape and Visual

The implementation of bus priority or measures to improve bus times along this corridor are unlikely to impact landscape/ townscape or visual amenity. The upgrades to existing infrastructure could potentially affect the local visual character of the study area if the improvements do not fit in with the current character of the area, this should be realised in the design to avoid any visual effects.

Population and Human Health

Reducing private vehicle use in favour of more sustainable means of transport will improve air quality within the local area, to the benefit of local residents, and cyclists/ pedestrian users of the route. Should a modal shift be realised, and congestion on the route reduced benefits to human health may also occur from reduced stress levels in users of the route from reduced travel times. The magnitude of these effects is dependent on the reduction of vehicles and travel time along this route which may not occur as a result of improving bus stops or incorporating SCOOT at junctions alone. Overall the effect on the surrounding population and human health is likely to be negligible to positive.

Air Quality

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. Any effect on Air Quality is likely to be positive in nature.

Climatic Factors

As per air quality, the reduction of vehicles using the route and the use of more sustainable transport from a modal shift away from private vehicle use will cut emissions therefore contributing to greenhouse gas emissions targets set by the Scottish Government. The level of reduction of emissions is dependent on level of modal shift achieved. The effect on climatic factors is likely to be negligible to positive.

Material Assets

The development of harder interventions such as bus lanes or an express bus link to Glasgow, may improve journey times creating greater connectivity between Milngavie and Bearsden with Glasgow.

6.3.4 Option 4 – Improve Ticketing

Biodiversity

It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on Biodiversity.

Water Quality

It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on the water environment.

Soil

It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on soil or agriculture.

Cultural Heritage

It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on cultural heritage assets.

Landscape and Visual

It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on landscape or visual amenity.

Population and Human Health

Greater use of public transport is likely to reduce vehicle emissions within the study area and improve public health from improved air quality. Reduced vehicles in use of congested routes are likely to reduce stress and frustration of road users from improved journey times. The magnitude of these effects is dependent upon the scale of modal shift achieved as a result of this Option.

Air Quality

Increased use of bus and train from greater ease of ticketing would increase air quality on account of reducing vehicle emissions. The scale of benefit is dependent on the number of journeys where public transport is used in preference to private vehicle use.

Climatic Factors

As per air quality above, the preferred use of public transport as an alternative to private vehicles will cut emissions from transport in East Dunbartonshire. This will assist in Scotland's greenhouse gas emissions targets for 2020.

Material Assets

Introducing smartcard ticketing accessible throughout all of East Dunbartonshire will increase accessibility of public transport throughout and increase connectivity between Milngavie and Bearsden with larger economic centres, specifically Glasgow, but also Edinburgh and Stirling.

6.3.5 Option 5 – Enhanced Walking and Cycling

Biodiversity

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, such as: a, d, e, and f. As opposed to the others which are location specific measures.

Water Quality

It is unlikely that improved walking and cycling networks would improve or deteriorate the water environment.

Soil

It is unlikely that improving the walking and cycling network within the study area would result in any significant impacts (negative or positive) on soil or agriculture.

Cultural Heritage

It is unlikely that improving the walking and cycling network within the study area would result in any impacts (negative or positive) on cultural heritage assets.

Landscape and Visual

It is unlikely that enhancing the walking and cycling network would result in any significant impacts on landscape or visual amenity. Adverse effects on landscape and visual amenity may occur where interventions require the development of new paths or segregated cycle routes.

Population and Human Health

Human health will likely improve as a result of the development of many of the sub-options. Improvements to human health will result from: greater activity of the population; improved air quality due to reduced vehicle usage/ journeys; and reduced stress and frustration from road users due to reduced congestion. This Option allows for accessibility of areas and facilities for those less able to rely on private vehicles. There is likely to be a beneficial effect on the surrounding population and human health as a result of enhanced walking and cycling.

Air Quality

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 (such as rail, as per sub-options a, b, e, f, and g) as a result of greater accessibility. Overall enhanced walking and cycling facilities across the route. As such there is likely to be a beneficial effect on surrounding Air Quality.

Climatic Factors

As per air quality, 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 this Option will result in reduced emissions and a positive contribution to Scotland's targets of reducing emissions by 42% by 2020. As such there is likely to be a beneficial effect on climatic factors.

Material Assets

It is unlikely that there will be any direct effects on material assets as a result of greater pedestrian and cycling networks.

6.3.6 Option 6 - Bus Service Improvements

Biodiversity

The development of a shuttle service to stations from residential areas will potentially improve air quality should it promote the use of these sustainable means of transport and generate a modal shift from private vehicle use. This in turn may increase biodiversity within the study. 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 possibly creating potential adverse effects on biodiversity. Overall there is likely to be a negligible effect on the biodiversity aspect of the area.

Water Quality

It is unlikely that the water environment will be impacted as a result of either introducing shuttle buses between stations and residential areas, or increasing the frequency of buses on the A81 corridor.

Soil

It is unlikely that soils will be impacted as a result of either introducing shuttle buses between stations and residential areas, or increasing the frequency of buses along the A81 corridor.

Cultural Heritage

Increasing bus services to rail stations and the frequency of buses along the A81 would increase the risk of physical damage to cultural heritage sites adjacent to the rail stations and along A81 due to increased vibration. This may be mitigated should the introduction of these services reduce other traffic passing these sensitive sites. If any effect does occur it is likely to be negligible.

Landscape and Visual

It is unlikely that improved bus services will result in any significant effects on landscape and visual amenity.

Population and Human Health

The development of a shuttle service to stations from residential areas and also increased frequency of services along the A81 will potentially improve air quality should they promote the use of these sustainable means of transport and generate a modal shift from private vehicle use. Improved air quality would aid in the improvement of human health. This Option also allows greater accessibility of wider areas to those that are unable to rely on private vehicles. A potential beneficial effect on human health and the surrounding population is likely.

Air Quality

The development of a shuttle service to stations from residential areas will potentially improve air quality should it promote the use of these sustainable means of transport and generate a 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.

Climatic Factors

The promotion of more sustainable means of transport will potentially reduce emissions from transportation within the study area. This reduction would contribute positively to Scotland's greenhouse gas emission targets of 42% by 2020.

Material Assets

Greater connectivity within the area to quicker means of transport to larger economic centres such as Glasgow may increase the attractiveness of Milngavie and Bearsden as a place to live in and commute. This Option also increases the connectivity of the towns to those that do not have readily available access to private vehicles. Overall there is likely to be a beneficial effect on material assets as a result of improved connectivity to larger economic centres and more isolated towns.

6.3.7 Option 7 – Junction Improvements

Biodiversity

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. If the junction improvements include lighting changes, surrounding biodiversity could be adversely impacted; however appropriate mitigation will ensure the effects are kept to a minimum.

Water Quality

No impacts on the water environment are predicted as a result of implementing a gyratory at this junction.

Soil

There is expected to be no effect to soil as a result of the proposed gyratory system. If any excavation works are needed to include associated infrastructure, appropriate mitigation will ensure any effect is minimised to negligible / no effect.

Cultural Heritage

Impacts on cultural heritage assets within the surrounding location are dependent on the requirements of construction within this area. The Antonine Wall WHS passes through this junction along the B8049, as well as other heritage sites located within the surrounding area. These sites may be physically damaged during construction activities or by increased vibration during operation should traffic levels increase through this junction. Overall there is likely to be an adverse effect to surrounding cultural heritage.

Landscape and Visual

Development of a gyratory at this location is not likely to result in impacts on townscape or visual amenity.

Population and Human Health

Should the introduction of a gyratory at this location improve traffic flow through this section of the A81 some benefits to welfare may be felt should this reduce stress and frustration of current users of the route. 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.

Air Quality

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.

Climatic Factors

It is unlikely that the implementation of this Option will result in any effects on climatic factors.

Material Assets

It is unlikely that there will be any effects on material assets.

6.3.8 Option 8 - Variable Message Signs

Biodiversity

It is unlikely that variable message signs will result in any effects on biodiversity within the study area.

Water Quality

It is unlikely that variable message signs will result in any effects on the water environment within the study area.

Soil

It is unlikely that variable message signs will result in any effects on soils within the study area.

Cultural Heritage

The development of VMS may cause indirect adverse effects on the setting of cultural heritage sites and Conservation Areas. The significance of these potential effects is dependent on the scale of the signs and their proximity to the sensitive sites within the study area.

Landscape and Visual

Developing VMS over transport routes within the study may result in adverse effects on townscape/ landscape and the visual character of the area. These effects could be of greater significance should they be within the near vicinity of any sensitive visual receptors.

Population and Human Health

Should these prevent areas of congestion, stress levels may be improved for all road users, and prevent any accidents that may be caused from frustration.

Air Quality

It is unlikely that variable message signs will result in any significant effects on air quality within study area. Some beneficial effects may be experienced should the signs contribute to the diversion of traffic away from congested routes.

Climatic Factors

It is unlikely that variable message signs will result in any effects on climatic factors within the study area.

Material Assets

It is unlikely that variable message signs will result in any effects on material assets within the study area.

6.3.9 *Option 9 - Highway Options*

Biodiversity

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.

Water Quality

It is unlikely that the water environment will be significantly impacted as a result of this Option. 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.

Soil

Soils are unlikely to be impacted as a result of highway narrowing or placemaking initiatives.

Cultural Heritage

Cultural heritage sites may be improved from placemaking initiatives by promoting greater awareness of the sites within the study area and their importance. Some sites may also benefit from greater financial support through increased visitor numbers.

Landscape and Visual

Townscapes may be improved as a result of placemaking initiatives, depending on the initiatives identified. The magnitude of this effect is dependent upon a number of factors pertaining to the initiatives adopted and therefore the significance of impacts on the townscape is unknown.

Population and Human Health

Speed reductions on highways will improve health and safety along these routes. However should there be any increases in journey times along these routes, users may become more frustrated and stressed during peak times/ in periods of congestion. Effects are not likely to be significant.

Air Quality

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.

Climatic Factors

There are not likely to be any effects on climatic factors as a result of this Option.

Material Assets

Greater publication and support of town centre areas may result in a greater number of visitors and increased profile of Milngavie and Bearsden towns and associated increases in the usage of services within provided within these areas.

7 Cumulative Effects Assessment

7.1 Introduction

This chapter of the Environmental Report sets out any cumulative effects of implementing the Options. The cumulative effect of multiple Options identified as well as the cumulative effect between Options has been considered. The significance of the cumulative effects is again, based on the same point scale as used for the individual assessments (described in section 4.5.1 above).

For the purpose of the cumulative assessment the Options proposed within the Plan have been split between various categories. These categories have been developed around the purpose of the Option and therefore their likely similarity in long-term effects. Table 7.1 identifies the cumulative assessment categories and the Options assigned within each category.

Table 7.1 Cumulative Assessment Option Categories	
Option Categories	Options
Sustainable/ Public Transport	<ul style="list-style-type: none"> ▪ Increase Car Parking at Bearsden and Westerton Rail Stations; ▪ Rail Park & Ride at Allander; ▪ Quality Bus Corridor; ▪ Improve Ticketing; and ▪ Bus Feeder Services.
Active Travel	<ul style="list-style-type: none"> ▪ Enhanced Walking and Cycling.
Road Management	<ul style="list-style-type: none"> ▪ Junction Improvements; ▪ Variable Message Signs; and ▪ Highway Options to enforce or reduce speeds and enhance the appeal of sustainable travel.

7.2 Cumulative Effects

7.2.1 Temporary Effects

Negative cumulative effects could occur where construction activities occur at the same time and in the same general area. In addition negative cumulative effects could also result in effects on protected sites that are hydrologically linked to construction sites or areas that are linked by other causal pathways.

Where construction is undertaken on the highway network this is likely to result in a temporary increase in congestion resulting in temporary effects on local air quality, noise and accessibility. However, if construction works are also to be undertaken at the same time in close proximity or the same general area or on a known alternative route these effects could be exacerbated. The potential for temporary cumulative effects will not be known until the implementation of Options at which point other construction projects in the area and their implementation will be timed accordingly.

7.2.2 *Permanent Operational Effects*

The main aim of all strategic options is to reduce congestion and facilitate a modal shift to more sustainable alternatives than private vehicles. As discussed in Chapter 6 it is unlikely that a number of the Options, if implemented alone, will result in any significant decrease in emissions or modal shift thus significant environmental benefits are unlikely to be realised. However, where a number of Options are implemented together, for example increased modal interchanges with measures to improve safety cumulatively beneficial effects on the environment are likely to be greater. The sub-sections below present a summary of the cumulative effects of the Plan, as split between each of the Option categories as described in section 7.1 above and overall between all Options proposed within the Plan. Although each of the Options has been grouped within various categories, cumulative effects are assessed based on interventions within the Options as the means of delivering the objectives.

7.2.3 *Sustainable/ Public Transport*

The majority of Options and interventions identified within the Plan relate to sustainable or public transport initiatives, in an effort to create a modal shift from the use of private vehicles. Given the number of Options identified with the potential for direct modal shift, or modal shift through the incentivisation of making these means of transport more accessible or a more attractive travel option there is likely to be a greater use of sustainable and transport facilities. Due to the similarity in expected outcome as a result of implementing these Options, potential effects are also likely to be similar.

Cumulative effects are predominantly likely to be moderate positive. Improving accessibility to existing services, increasing the frequency of existing services, and reducing the journey times of public transport services will encourage the use of these services and support the modal shift from private vehicle use to sustainable means of transportation.

Cumulatively, the development of these Options would also create a wider, more connected public transport network that is more accessible and serves the areas where it is greatest need. This would positively contribute to the material assets of East Dunbartonshire, specifically Bearsden and Milngavie, by increasing the connectivity of the area and its economic centres and making these more accessible to larger economies, namely Glasgow.

A positive shift away from private vehicle use would likely result in an improvement in air quality from reducing transport emissions, as well as secondary effects from improving air quality such as improved health and wellbeing of those within the study area, and increased biodiversity. It should be noted that there are a number of potential cumulative negative effects also, namely the impact of new transport infrastructure either directly or indirectly on cultural heritage sites within the study area.

7.2.4 *Active Travel*

The active travel Options will provide a greater network of foot- and cycle-paths, increasing the connectivity of the local town centres and residential areas, as well as developing safer longer transport routes for cyclists, such as between Milngavie and Glasgow. This promotion of a modal shift away from the use of private vehicles and public transport, will aid in the reduction of traffic volumes along the A81 corridor and ease congestion.

Improved walking and cycling routes to access or link public transport nodes will also encourage modal shift to sustainable transport alternatives for longer journeys, reducing the reliance on private car usage, and reduce congestion levels throughout the Study Area. Enhancement of the active travel network will also cumulatively improve linkages for residential areas and rural communities to access amenities and public transport nodes.

Cumulative effects are likely to be moderate beneficial. Direct positive effects are likely to result in improved air quality from reduced vehicle usage and therefore congestion on the A81 corridor. Indirect effects from improving air quality will also benefit the health of the local population, and it will benefit the local biodiversity. Encouraging the local population

to become more physically active will also improve human health. The wellbeing of vehicular users of the A81 corridor may also be improved from easing congestion along the route and reducing stress and frustration.

7.2.5 Road Management

Road improvements and traffic management measures will likely lead to improved efficiency, and reduced congestion and transport generated emissions levels throughout the Study Area. This has the potential to cumulatively improve air quality and also the safety of all users of these routes.

Junction improvements at the A81/ Roman Road/ Roman Drive junction and the implementation of variable message signs will ease congestion and divert others to choose an alternative route. Alleviating congestion and therefore improving journey times will have a positive cumulative effect on the health and wellbeing of users of the A81 corridor by decreasing stress and frustration and from reduced risk of road traffic incidents from safer routes.

The inclusion of placemaking interventions to enhance town centre environments opens numerous opportunities for the improvement of a number of environs (such as biodiversity, townscape and visual amenity, cultural heritage, water environment). The benefits to the towns' environs is dependent on initiatives developed, their breadth and number adopted across the study area and their success in regards to their improvement of whichever facet of the environment in which they are focused.

Minor negative cumulative effects have been identified in regard to cultural heritage assets within the study area, and in particular, within close proximity to the A81 corridor and proposed interventions. Mitigation has been recommended for a number of the negative effects in relation to these effects/ the Options that will cause these effects. Cumulative negative effects are therefore uncertain due until Options are adopted, declined or implemented, along with recommended mitigation.

Table 7.2 Summary of Cumulative Effects*									
Option Categories	SEA Topics**								
	Bio	Water	Soil	Culture	L&V	Pop.	Air	Climate	Mat.
Sustainable/ Public Transport	✓	-	-	✗	-	✓	✓	✓	✓
Active Travel	-	-	-	-	-	✓	✓	-	-
Road Management	-	-	-	✗	-	✓	✓	-	-

* Key: ✗ = cumulative negative effect; - = no cumulative effect; ✓ = cumulative positive effect.

** Bio = Biodiversity; Water = Water Quality; Soil = Soil; Culture = Cultural Heritage; L&V = Landscape and Visual Amenity; Pop. = Population & Human Health; Air = Air Quality; Climate = Climatic Factors; Mat. = Material Assets.

8 Study & Project Level Mitigation

8.1 Introduction

This chapter identifies the mitigation measures required where effects cannot be avoided. It also presents opportunities for enhancements and recommendations that have been suggested to increase the overall sustainability of the Plan.

8.2 Mitigation Measures

Part of the SEA assessment process requires the identification of measures to prevent, reduce or offset any significant adverse effects likely to occur as a result of the implementing the Plan and to maximise its performance in terms of sustainability. These are commonly referred to as mitigation measures, and include both proactive and avoidance of adverse effects as well as the identification of actions to be taken once effects are identified. Mitigation measures typically follow the mitigation hierarchy: avoid, reduce, remedy, compensate. Measures also often include recommendations for improving beneficial effects.

Whilst in general the Plan seeks to minimise environmental effects and the Options set out are aimed at the development of more sustainable and efficient transport network a number of negative effects have been identified. The majority of these relate to the development of new transport infrastructure that will be implemented through the Plan. It is likely that where construction activities are required there are several environmental topics/ receptors which may be impacted. However these are likely to be short term and localised, and with good practice and appropriate construction mitigation, it is likely that these could be avoided or reduced to an acceptable level. Construction effects and mitigation are discussed in Chapter 6.

Options that require new infrastructure are also likely to result in operational effects associated with land take and the potential introduction of nuisance effects such as noise to an area. Significant effects can be avoided through sensitive siting and design and where required additional mitigation such as landscape screening. The mitigation measures set out for the Plan are based upon:

- Level of detail provided in the Options;
- Scale of the potential effect;
- Level of detail in the baseline information; and
- Understanding of the environmental and sustainability issues affecting the area.

As noted within the Assessment (Chapter 6), due to the high level of the Options identified and that the spatial locations for these are not known, the potential effects identified may not be entirely accurate. This consequently limits the details of the potential mitigation measures that may be adopted should there be any effects that cannot be avoided. However the mitigation and recommendations set out within the SEA should be adopted by the Plan and used as a platform for any developments which result from the adoption of the Plan.

Committed mitigation measures are set out in Table 8.1 for each of the identified environmental topic areas.

Table 8.1 Mitigation Measures	
SEA Topic Area	Proposed Mitigation
Biodiversity Flora and Fauna	<p><i>Additional Information/ Surveying</i></p> <p>Where land take is required the following should be undertaken where required:</p> <ul style="list-style-type: none"> ■ Extended Phase 1 Habitat Survey ■ Invertebrate survey ■ Reptile Surveys ■ Bat Habitat Suitability Surveys followed by dawn dusk surveys where required. Should a bat roost be determined to be present on site a licence should be obtained prior to any works commencing and appropriate exclusion mitigation measures may be required ■ Badger surveys and a licence obtained where required ■ Any watercourses, including drains and ditches, within the study area which will be crossed or are adjacent to any proposed works should be surveyed for their potential to support otter and water vole. Any watercourse assessed as having potential to support these species should be subject to further more detailed surveys. ■ Any ponds and ditches within 500 m of the proposed works should be assessed by an ecologist for their potential to support the Great Crested Newt (GNC). This assessment can be assisted by the GCN Habitat Suitability Index (HSI). ■ Fish surveys may be required should the works involve construction within a watercourse, such as the River. It may be possible to request up-to-date species records from organisations, such as the SEPA. If not, fish surveys may be required prior to construction. Any surveys and subsequent construction within the river should not take place in the spring or in late autumn/early winter, so as not to interfere with fish migration patterns. <p><i>Lighting</i></p> <p>Any new lighting along railways, woodland, hedgerow and river corridors should be avoided.</p> <p>Where lighting is required for safety reasons it should be mitigated to reduce light spill to a minimum, with street lighting switched off after peak hours. In all areas lighting design should follow best practice guidance by the Bat Conservation Trust Bats and Lighting in the UK. These included:</p> <ul style="list-style-type: none"> ■ Using low or high pressure sodium lights instead of mercury or metal halide lamps ■ Direct lighting to where needed and avoid spillage, e.g. direct lighting towards buildings front and design luminaries appropriately, included the use of hoods, cowls, shields etc to avoid spillage onto river corridor and tree lines ■ Using lighting modelling programs to indicate where light spill will occur ■ Only light areas which need to be lit, and use the minimal level of lighting required ■ Use movement sensors or timers on security lighting ■ Do not use a lamp greater than 150W for security lighting

Table 8.1 Mitigation Measures	
SEA Topic Area	Proposed Mitigation
Biodiversity Flora and Fauna (continued)	<p><i>Disturbance</i></p> <p>To avoid disturbance to breeding birds, it is recommended that any vegetation clearance is undertaken during October to February inclusive (outside of the breeding bird season). If works are undertaken from March to September inclusive, the area should first be inspected by an ecologist, at most 48 hours before work begins in an area. If any nests are found they will have to be left undisturbed, along with a surrounding buffer area until the chicks have fledged. This could take up to six weeks depending on species. More protection is afforded to Schedule 1 species.</p> <p>In some areas of the study area, wintering and migration surveys may also be required, in particular where sited close to the SPAs. Options involving creation of new bridges for example would require particular consideration. Consultation with SNH should be considered at the earliest possible stage for options with the potential to impact upon European protected sites (SPA, Ramsar and SAC). Any construction activity should aim to avoid periods where passage, breeding and overwintering birds for which the Natura 2000 sites are designated for are using the site in significant numbers.</p> <p><i>Aquatic Environment</i></p> <p>Any proposed bridge structures should be open span and set back from the river banks. Working within the river should be avoided to prevent any potential species disturbance.</p> <p>Run-off from the study area during both construction and operation should be managed in accordance with current SEPA regulations and should reduce the potential for transmission of particulates and pollutants into the watercourse.</p> <p><i>Grassland</i></p> <p>Dependant on the options chosen, protected and notable flora species surveys may be required, within areas of potential conservation interest. Plant species lists may be compiled during Extended Phase 1 Habitat Surveys (discussed above). Such information can be used to carry out National Vegetation Classification Surveys (NVC); a system of classifying natural habitat types in Great Britain according to the vegetation they contain. Should plant species of conservation concern be identified, further mitigation may be required. Mitigation could include protecting plants in situ, permanent or temporary translocation.</p> <p><i>Invasive Species</i></p> <p>Each area where works are proposed should be subject to a controlled species survey, prior to construction. This type of survey can be incorporated into an extended phase 1 habitat survey (discussed above). As it is illegal to assist the spread of controlled plant species, such as Japanese Knotweed, Giant Hogweed and Himalayan Balsam, a suitable method statement must be put in place prior to any works in areas where such species are found, to avoid their spread during construction. Vegetation and soil removal and disposal from contaminated areas should follow current controlled waste regulations.</p> <p><i>Retention and Enhancement</i></p> <p>Any development should aim to retain features of ecological value within the design of the intervention. The highest priorities for protection are ponds, riparian habitats, wetland areas, woodland areas (particularly ancient woodland), important hedgerows, railway, and veteran trees. However, consideration should also be given to the scrub, mature trees, hedgerows, stone walls and grass verges.</p>

Table 8.1 Mitigation Measures	
SEA Topic Area	Proposed Mitigation
Biodiversity Flora and Fauna (continued)	Scrub and hedgerows should be retained where possible. Hedgerow surveys may be required, dependant on the options chosen. In areas where vegetation must be removed it should be replaced by compensatory planting of local, native species. Appropriate timing of works combined with ecological supervision of scrub and hedgerow removal is recommended to reduce the risk to a number of protected species.
	Mature trees should be retained. The Root Protection Areas should be calculated and any development, including installation of signs and lighting, should be planned to avoid damaging tree roots. Any removed trees should be replaced by compensatory planting of locally native tree species.
Water	<p>Ensure that all new transport interventions and transport improvement works involving construction activities adhere to appropriate environmental protection standards, good codes of practice, construction principles and design guides to ensure that the correct measures are implemented to prevent the pollution of surface water and groundwater.</p> <p>Ensure all new transport interventions and transport improvement works will implement appropriate measures to minimise pollution from surface water runoff e.g. oil separators and silt traps.</p> <p>In areas where there are high water tables surveys will be required prior to the implementation of interventions involving construction activities to ensure that there are no breaches of the groundwater and there are not future risks of groundwater pollution from road drainage interventions.</p> <p>Where an intervention may effects sensitive wetlands (SPAs, Ramsar Sites, SSSIs) a test of significance will be required to ensure that any changes to water quality or drainage patterns do not have adverse effects on the integrity of the site.</p> <p>All new interventions within flood risk zones 2 or 3' should be screened for the requirements of a Flood Risk Assessments.</p> <p>Promote the implementation of Sustainable Urban Drainage Schemes (SUDS) in all new transport developments.</p>
Soil	<p>Investigate the implementation of interventions that will encourage and support future economic growth and the reuse of previously developed land.</p> <p>Where new transport interventions and transport improvement works are likely to cause disturbance to contaminated land, advice will be sought from the Council' Environmental Health Service and where necessary permits must be obtained from SEPA.</p> <p>Develop partnership working to ensure that new transport interventions minimise the use of Greenfield land and the severance of agricultural land holdings.</p>
Cultural Heritage	<p>Surveys will be undertaken prior to the implementation of an intervention to determine whether it will affect sites or areas of archaeological importance.</p> <p>New transport interventions that are likely to generate an increase in traffic will be assessed prior to installation to determine whether the vibrations that would be generated from the traffic would cause damage to listed buildings. Where the levels of vibration would have adverse effects on a listed building the intervention may require modification or removal.</p>
Cultural Heritage (continued)	Adverse effects on the character and quality of conservation areas will be avoided or reduced by improving the quality, design and appropriateness of street furniture, lighting, road signs, safety features, public transport facilities (bus stops) and by reducing street

Table 8.1 Mitigation Measures	
SEA Topic Area	Proposed Mitigation
	clutter. Improvements to the quality and design of new and existing highways, footpaths and cycleways will also have positive effects on the character and quality of conservation areas.
Landscape	<p>There are a number of mitigation measures that could be proposed to avoid and/or reduce potential landscape/townscape and visual effects identified. The type of mitigation measures proposed would vary in accordance with the scale of individual proposals and sensitivity of the specific landscape setting, on an intervention by intervention basis. At a broad scale, the following measures could be considered for mitigation of all interventions where potential adverse effects have been identified.</p> <p>Where new development or extensions to existing infrastructure are proposed i.e. new highways, park and ride sites, large scale junction improvements and highway widening, they should be carefully routed/located to avoid direct impacts on areas of designated landscape/townscape such as Special Landscape Areas, Listed Buildings, Conservations Areas and Parks.</p> <p>Where possible, the routing/siting of proposed development should be undertaken to avoid direct impacts upon other existing features that contribute to the character of the landscape/townscape.</p> <p>Where effects cannot be fully mitigated through routing and siting design, specific landscape mitigation proposals could be developed alongside overall intervention design, to reduce effects upon landscape/townscape character and key visual receptors. Mitigation measures could include:</p> <ul style="list-style-type: none"> ■ Mass native tree and shrub planting to replace significant vegetation removed including that located within existing road corridors or that with a screening function in proximity to key visual receptors; ■ A combination of ground modelling and mass native tree and shrub planting to help integrate development within rural areas or to provide screening where located in proximity to sensitive visual receptors in both rural and urban areas; ■ Use of appropriate or vernacular materials in design of new development, particularly in areas of designated landscape or townscape quality/value to complement/enhance the setting, e.g. use of local stone where development is situated within or in close proximity to Conservation Areas or within setting of Listed Buildings; ■ Considered micro-siting of new development to avoid the requirement for new, urbanizing structures within rural areas e.g. designing out the need for retaining structures as part of road widening or installation street furniture. ■ Landscape enhancement and/or restoration measures to compensate for the loss of important landscape features e.g. historic hedgerow restoration to mitigate loss of existing hedgerows; <p>Proposed planting and use of appropriate materials where development is in close proximity to designated areas e.g. Road widening or installations within highway in close proximity to Listed Buildings or Special Landscape Areas.</p>
Population and Human Health	No specific mitigation measures identified
Air Quality (including Noise)	<p>All new transport options which are implemented should be designed with due regard to areas of poor air quality e.g. AQMAs.</p> <p>The locations of park and ride / interchange interventions should be carefully chosen to minimise any localised air quality impacts which may result.</p> <p>Should changes in road alignment be proposed, it is important to ensure, where practicable, that the distance between road traffic</p>

Table 8.1 Mitigation Measures	
SEA Topic Area	Proposed Mitigation
	<p>and sensitive receptors is not significantly reduced. Where the opportunity presents itself, the distance between road traffic and sensitive receptors with poor air quality should be increased in order to improve local air quality at these receptors.</p> <p>Noise</p> <p>For all new interventions a noise impact assessment should be carried out and appropriate noise attenuation measures implemented where there is potential for interventions or initiatives to have an adverse effect on noise levels.</p>
Climatic Factors	The benefits associated with reducing car usage by encouraging public transport use should be maximised by utilising buses with the highest emissions standard possible.
Material Assets	No specific mitigation measures identified

8.3 Residual Effects, Enhancement Opportunities and Recommendations

It is unlikely that the individual interventions within the strategic Options will result in measurable beneficial effects on the environment alone. However, when implemented together the resulting effect could be a modal shift from reliance on the private car and reduced congestion. This would have beneficial effects on the environment, the economy, improve safety and improve human health and wellbeing. The SEA has identified recommendations to further enhance a number of the Options, these are listed below.

8.3.1 *General*

Where new transport infrastructure is required in the implementation of proposed interventions, due to the sensitive cultural heritage sites within the study area, these interventions should be designed, and where appropriate located, with greatest respect of the setting of these sites and perhaps alternatives considered should there be any impacts on these sites. Options which may require new transport infrastructure include: increased car parking at rail stations; development of a park and ride at Allander; junction improvements on the A81 corridor; and some interventions proposed in developing a quality bus corridor. Where interventions may disturb or disrupt important wildlife corridors such as the railway lines or the river corridors of Allander Water, Manse Burn, and the Forth and Clyde Canal, the incorporation of measures to improve these habitats and wider corridors should be sought. This is not only to mitigate potential adverse effects but as a means of improvement of the local environment.

8.3.2 *Road Management*

The proposal of placemaking initiatives to encourage road users to enhance the appeal of using sustainable transport. These initiatives also present the opportunity to focus on the environment within Bearsden and Milngavie, to direct improve environs through community action, but also indirectly through raising awareness and promoting the assets within the study area. Provided an appropriate environmental focus is applied or incorporated within the initiatives, there are multiple environs that may benefit from this intervention, including biodiversity, water quality, cultural heritage, and townscape and visual amenity.

These should all be considered in developing when adopting this Option, and consultation with the appropriate community and local environmental groups and organisations sought to ensure that the benefits to environment are realised to their full potential.

9 Monitoring Framework

9.1 Introduction

This chapter presents a proposed monitoring framework for the implementation of the Plan.

9.2 Monitoring

Monitoring is an ongoing process that is undertaken continuously for the duration of the implementation of the Plan. Monitoring is a means of checking whether the Plan is performing as predicted by measuring how the baseline situation changes following implementation of the Plan.

9.3 Importance of Monitoring

Monitoring allows the actual significant effects of implementation of the Plan to be tested against those predicted in the SEA. In the event that adverse effects are identified then these need to be addressed. East Dunbartonshire Council should be able to produce contingency measures to address any adverse effects through implementation of the mitigation measures suggested in Chapter 8 of this ER.

Monitoring helps to ensure that problems which arise during implementation can be identified and future predictions made more accurately. It can also be used to collect baseline information for future Plans, Policies or Strategies.

9.4 The Monitoring Framework

Monitoring usually involves the use of indicators or targets. An 'indicator' is a measure of how the baseline has changed and are used to monitor whether the Plan is performing as predicted. However there are a number of potential limitations associated with the reliance of certain indicators for the purpose of monitoring these are mainly in relation to:

- Indicators that are not based on information / data / environments that will be directly affected by the implementation of the plan.
- Data available is not always kept up to date and therefore will not identify any significant changes.
- Collection of specific data is often the responsibility of a range of different organisations consequently this can lead to:
 - Data being collected for different areas over different timescales;
 - Data collection methods and techniques changing to reflect different requirements for data or availability of funding for data collection; and
 - Data sets not being updated.
- Some indicators are only relevant where specific receptors are present.

The monitoring framework presented in Table 9.1 includes a number of possible indicators that could be used to monitor the implementation of the Plan. However, taking into account the limitations associated with this approach it is suggested that monitoring is tied into the future reviews of the Plan and is related to monitoring the number and type of Options that have been implemented during the year. This would include a review of the environmental works / studies

and assessments undertaken to support these Options as suggested as part of the mitigation in Chapter 8. The monitoring framework set out in Table 9.1 below is preliminary and will be confirmed at the time of the adoption of the Plan. During public consultation additional data sources may be identified which should be incorporated into the monitoring framework.

Table 9.1 Monitoring Framework					
Environmental Topic	Indicator	Responsibility/ Source			Suggested Timescale
Population/ Human Health	Bus patronage levels	Local Authority			Annual
	Rail patronage	Local Authority			Annual
	% of schools with travel plans	Local Authority			Annual
	% of businesses with travel plans	Local Authority			Annual
	Number of exceedences of key air quality indicators (NO2 and PM10)	Local Authority			Annual
	% of residents feeling 'safe' or 'fairly safe' outside in the area after dark	Local Authority			Annual
	% of SIMD in lowest IMD health Domain	SIMD			Annual
Biodiversity	Reported damage to protected sites (International, National, Regional and Local) caused by transport related activities.	SNH			Annual
	Changes in condition of Lenzi Moss LNR	Local Authority			Annual
	Change in area (ha) of designated biodiversity sites	Local Authority			Annual
	Change in area (ha) of BAP habitat	Local Authority			Annual
Soil	% of contaminated land remediated as a result of the implementation of transport interventions	Local Authority			Annual
Water	Number of new transport infrastructure developments located within areas of flood risk	SEPA/ Local Authority			Annual
	% of new transport infrastructure developments incorporating SUDS	Local Authority			Annual
	Number of transport related water pollution incidents	SEPA			Annual
Air (including Noise & Light)	Emissions levels within existing Bearsden Cross AQMA	Local Authority			Annual
	Number of exceedences of key air quality indicators (NO2 and PM10)	Local Authority			Annual
	Public transport patronage within East Dunbartonshire	Local Authority			Annual
	Levels of noise pollution	Local Authority			Annual
	Number of complaints received with regards to noise	Local Authority			Annual
Material Assets	Waste arising from transport related projects, including demolition	Local Authority			Annual
	% of transport interventions developed on brownfield land	Local Authority			Annual
Cultural Heritage	Number of applications for listed building consent and scheduled monument consent associated with transport interventions	Historic Scotland/ Authority	Local		Annual
	Number of transport interventions affecting Gardens and designated	Historic Scotland/	Local		Annual

	landscapes	Authority	
	Number of transport interventions within or affecting conservation areas	Local Authority	Annual
	% of transport related application refused or withdrawn due to significant impacts on the historic environment	Local Authority	Annual
	Number of transport related applications approved where significant effects on the historic environment were predicted	Local Authority	Annual
Landscape	Change in area (ha) of designated landscapes	Local Authority	Annual
	Number of transport interventions resulting in an effect on a designed landscape quality amenity value	Local Authority	Annual
	Number of interventions promoting landscape enhancement	Local Authority	Annual
Climate Factors	Proportion of materials used in transport developments that are from secondary recycled sources	Local Authority	Annual
	Proportion of construction and demolition waste that is reused and recycled on transport related developments	Local Authority	Annual
	% of transport related CO2 emissions within East Dunbartonshire	Local Authority/ Census Data	Annual
	% of persons travelling to work by car	Local Authority/ Census Data	Annual
	% or persons walking / cycling to work	Local Authority/ Census Data	Annual
	% or children travelling to school by car	Local Authority/ Census Data	Annual

10 Conclusions

This Environment Report was prepared as part of the SEA of A81 Corridor Study ('the Plan') which has been prepared on behalf of East Dunbartonshire Council (EDC) and Strathclyde Partnership for Transport (SPT). The Plan identifies nine objectives in which to address issues related to the A81 corridor. In order to address these objectives the Plan identifies nine Options of varying transport interventions. These Options and interventions are:

- **Increase Car Parking at Bearsden and Westerton Rail Stations**
 - a) Partial decking of the station car park at Bearsden
 - b) Provision of additional parking at Westerton
- **Rail Park & Ride at Allander**
 - a) Provision of a rail halt and associated parking (circa 150 spaces)
 - b) Provision of a rail halt with Park and Ride facility (circa 400 spaces)
- **Quality Bus Corridor**
 - a) Burnbrae Roundabout to Bocclair Road – southbound bus lane
 - b) Bocclair Road to Canniesburn Toll – implementation of bidirectional bus lane (peak hour only)
 - c) Provision of real time information at stops along the route
 - d) Improvements to bus stops and shelters
 - e) Bus priority installed on approaches to junctions / at pinch points
 - f) Bus detection included within SCOOT
 - g) Express bus service from Milngavie to Glasgow
- **Improve Ticketing**
 - a) Improved integrated ticketing between rail and bus services
 - b) Area wide smartcard ticketing measures
- **Enhanced Walking and Cycling**
 - a) Provide pedestrian facilities on desire lines (including link to rail stations)
 - b) Extend cycle route on Woodburn Way north of Park Road to enhance the link to Milngavie town centre and the rail station
 - c) Completion of the cycle link between Mains Estate and Allander Leisure Centre
 - d) Segregated cycle lane from Milngavie town centre/ to Glasgow border to complete what has been achieved through Phase 1 and 2
 - e) Secure cycle storage facilities built at rail stations and in town centres
 - f) Development of a local network of walking and cycling paths which converge on town centres and stations
 - g) Development of a high quality path which links the Kilmardinny development and Milngavie station
- **Bus Feeder Services**
 - a) New shuttle bus connecting residential areas to stations
 - b) Increase the frequency of bus services to rail stations
- **Junction Improvements** - Implementation of a gyratory at the A81/Roman Road/Roman Drive junction (incorporating ban of right turn from Bocclair Road)
- **Variable Message Signs** - Electronic signs to warn drivers of any traffic issues on the route, or adjoining routes
- **Highway Options** to enforce or reduce speeds and enhance the appeal of sustainable travel

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

An SEA of these actions has been undertaken in order to identify likely significant construction, operation and cumulative effects on the environment.

A number of the Plan Options were predicted to have potential temporary negative effects on the environment as a result of construction activities; however, the majority of these effects are temporary in nature and can be avoided or reduced through mitigation.

A number of operational negative effects (cultural heritage, biodiversity and townscape) have been identified as a result of the assessment of the Plan. The majority of these relate to proposed new transport infrastructure developments.

The assessment concluded that provided that the recommended mitigation measures are implemented and additional assessments are undertaken where required, there should be no significant adverse residual effects on the environment.

Overall, the residual beneficial effects of the Plan outweigh the negative residual effects. Many of the actions will contribute to encouraging a modal shift to more sustainable modes of transport. The majority of beneficial effects are associated with a modal shift to public and sustainable forms of transport. A modal shift will have a beneficial effect on air quality, biodiversity, human health and climatic factors due to reduction congestions and emissions from fewer vehicles on the road. Benefits to population include improved public transport, upgraded transport infrastructure, better accessibility, increased flexibility, and people being more active.

Further beneficial effects are possible if some Options are combined with others to aid a modal shift from reliance on the private vehicles to more sustainable and accessible forms of transport.

Appendix A – Summary of Relevant Plans, Programmes & Strategies

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
International		
Kyoto Protocol (1997)	The UK has committed itself to a 12.5% reduction in greenhouse gas emissions from 1990 levels by 2008-2012. It has also set its own domestic target of a 20% reduction in carbon dioxide by 2010.	See European Climate Change Programme.
Rio Declaration (1992)	The Declaration sets out 27 principles to enable the global community to work towards international agreements that respect the interests of all and protect the integrity of the global environmental and developmental system. It recognises the integral and interdependent nature of the Earth.	The A81 Plan contributes to sustainable development.
Johannesburg Declaration (2002)	The Johannesburg Declaration on Sustainable Development. The 2002 Declaration built upon the principles established through the Rio Declaration and further developed principles of sustainable development and sought international commitment to these Sustainable Development Principles.	The A81 Plan contributes to sustainable development.
European		
EU Environmental Noise Directive (2002)	This Directive concerns noise from road, rail and air traffic and from industry. It focuses on the impact of such noise on individuals, complementing existing EU legislation which sets standards for noise emissions from specific sources.	The A81 Plan has a duty to adhere to the requirement of the Noise Directive.
EU Water Framework Directive (2000)	<p>The purpose of the Directive is to establish a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. It will ensure all aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands meet 'good status' by 2015.</p> <p>Directive Objectives</p> <ul style="list-style-type: none"> Prevent deterioration of the status of all surface water and groundwater bodies; 	See Water Environment Water Services (Scotland) Act 2003

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<ul style="list-style-type: none"> Protect, enhance and restore all bodies of surface water and groundwater with the aim of achieving good surface water and groundwater status by 2015; and To produce River Basin management Plans (RBMP) for each river basin district identified, with environmental objectives for each water body to protect and improve the water environment and a programme of measures to progress towards achieving these objectives. 	
EU Floods Directive (2007)	The Floods Directive requires Member States to engage their government departments, agencies and other bodies to draw up a Preliminary Flood Risk Assessment. Flood Risk Management Plans can then be produced to indicate to policy makers, developers, and the public the nature of the risk and the measures proposed to manage these risks.	See Flood Risk Management (Scotland) Act 2009.
EU Birds Directive (1979)	<p>The Birds Directive protects all wild birds, their nests, eggs and habitats within the European Community. It gives EU member states the power and responsibility to classify Special Protection Areas (SPA) to protect birds which are rare or vulnerable in Europe as well as all migratory birds which are regular visitors. (Source: SNH website)</p> <p>There are currently no designated sites within EDC; however the Birds Directive also makes certain provisions for protection of wild birds in the wider countryside outwith protected areas.</p>	<p>There are currently no designated sites within EDC; however the Birds Directive also makes certain provisions for the protection of wild birds in the wider countryside outwith protected areas.</p> <p>The A81 Plan has a duty to adhere to the requirements of the Birds Directive within East Dunbartonshire and ensure there are no cross-boundary impacts from transport proposals on SPA designated sites within adjacent authorities.</p>
EU Habitats Directive (1992)	<p>The Habitats Directive builds on the Birds Directive by protecting natural habitats and other species of wild plants and animals. Together with the Birds Directive, it underpins a European network of protected areas known as Natura 2000. This network includes SPA classified under the Birds Directive and a new set of international nature conservation areas introduced by the Habitats Directive, Special Areas of Conservation (SAC). (Source: SNH website)</p> <p>There are currently no designated sites within EDC.</p>	<p>There are currently no designated sites within EDC; however the Habitats Directive also makes certain provisions for the protection of species and habitats in the wider countryside outwith protected areas. The A81 Plan has a duty to adhere to the requirements of the Habitats Directive within East Dunbartonshire and ensure the proposals have no cross-boundary impacts on SAC designated sites within adjacent authorities.</p>
EU Landfill Directive	The Directive sets a reduction target of 75% of the 1995 levels and 35% of the 1995 levels of waste sent to landfill by 2013 and 2020 respectively.	The A81 Plan should contribute to the targets set by the Directive by encouraging site waste management plans to reduce the amount of waste generated. It should also

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
		encourage the reuse of waste materials from transport works, particularly on site.
European Climate Change Programme	The programme aims to deliver the Kyoto Protocol commitments to reduce greenhouse gas emissions to 8% below 1990 levels by 2012.	The A81 Plan has a role in contributing to these objectives with particular consideration to the reduction of carbon emissions by managing the use of private vehicles, encouraging public transport and the integration and promotion of sustainable transport networks.
National		
Scottish Government Strategic Objectives and National Outcomes (2007)	<p>The Strategic Objectives are:</p> <p>Wealthier & fairer</p> <p>Enable businesses and people to increase their wealth and more people to share fairly in that wealth.</p> <p>Safer and stronger</p> <p>Help local communities to flourish, becoming stronger, safer place to live, offering improved opportunities and a better quality of life.</p> <p>Smarter</p> <p>Expand opportunities for Scots to succeed from nurture through to lifelong learning ensuring higher and more widely shared achievements.</p> <p>Greener</p> <p>Improve Scotland's natural and built environment and the sustainable use and enjoyment of it.</p> <p>Healthier</p> <p>Help people to sustain and improve their health, especially in disadvantaged communities, ensuring better, local and faster access to health care.</p> <p>Fifteen National Outcomes describe what the Scottish Government wants to achieve between 2007-2017.</p> <ul style="list-style-type: none"> ■ We live in a Scotland that is the most attractive place for doing business in Europe. ■ We realise our full economic potential with more and better 	<p>The A81 Plan will meet the Scottish Government's Strategic Objectives as follows: wealthier & fairer by supporting economic development, improving accessibility to services and businesses; Safer and stronger by encouraging safe transport networks and efficient public transport; Greener & healthier by its objective of encouraging a range of alternative transport modes to the car, including walking & cycling, to reduce carbon emissions.</p> <p>The A81 Plan should contribute towards each of the 15 National Outcomes, particularly by encouraging transport which: supports sustainable economic growth; encourages walking and cycling for healthy living; access to services and employment which benefits social inclusion; modal shift which reduces carbon emissions and improves road safety.</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>employment opportunities for our people.</p> <ul style="list-style-type: none"> ■ We are better educated, more skilled and more successful, renowned for our research and innovation. ■ Our young people are successful learners, confident individuals, effective contributors and responsible citizens. ■ Our children have the best start in life and are ready to succeed. ■ We live longer, healthier lives. ■ We have tackled the significant inequalities in Scottish society. ■ We have improved the life chances for children, young people and families at risk. ■ We live our lives safe from crime, disorder and danger. ■ We live in well-designed, sustainable places where we are able to access the amenities and services we need. ■ We have strong, resilient and supportive communities where people take responsibility for their own actions and how they affect others. ■ We value and enjoy our built and natural environment and protect it and enhance it for future generations. ■ We take pride in a strong, fair and inclusive national identity. ■ We reduce the local and global environmental impact of our consumption and production. ■ Our public services are high quality, continually improving, efficient and responsive to local people's needs. 	
National Planning Framework 3 (2014)	<p>The preparation of the third NPF for Scotland provided an important vehicle for Scotland's development over the next 20 to 30 years, setting out strategic development priorities to support the Scottish Government's central purpose of sustainable economic growth.</p> <p>The main elements of the spatial strategy are:</p> <ul style="list-style-type: none"> ■ A successful, sustainable place – that we live in a low carbon, sustainable place, with opportunities distributed fairly to reduce spatial inequalities; 	<p>The A81 Plan should contribute to the delivery of the Development Strategy including encouraging transport which supports sustainable economic growth, social inclusion, healthier living and reduction in carbon emissions. It also identifies the Central Scotland Green Network as a national development. It should also consider the delivery of those national developments which impact directly on East Dunbartonshire.</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<ul style="list-style-type: none"> ■ A low carbon place – that we have seized the opportunity to be a world leader in low carbon energy generation, and that we live in a built environment of greater energy efficiency; ■ A natural, resilient place – we respect our natural and cultural assets, fostering them to be a sustainable economic, environmental, and social resource and aid us to become more resilient to the impacts of climate change; ■ A connected place – to allow everyone access to high-speed fixed and mobile digital networks, and to make better use of existing infrastructure to enable our ambition to grow and foster better national and international relations. 	
Planning Etc (Scotland) Act 2006	Introduces a new development plan hierarchy: National Planning Framework; Strategic Development Plans; Local Development Plans.	The A81 Plan must adhere to the requirements of the Act by taking into consideration any relevant policies and proposals in the Strategic Development Plan or East Dunbartonshire Local Development Plan 2.
Town & Country Planning (Scotland) Act 1997	The law covering most aspects of planning in Scotland until the 2006 Act is in force.	See Planning Etc (Scotland) Act 2006
Scottish Planning Policy (SPP) (2014)	<p>The consolidated SPP provides a shorter, clearer and more focused statement of national planning policy. The SPP sets out:</p> <ul style="list-style-type: none"> ■ the Scottish Government's view of the purpose of planning, ■ the core principles for the operation of the system and the objectives for key parts of the system, ■ statutory guidance on sustainable development and planning under Section 3E of the Planning etc. (Scotland) Act 2006, ■ concise subject planning policies, including the implications for development planning and development management, and ■ the Scottish Government's expectations of the intended outcomes of the planning system. <p>It includes policy for land use change and development, covering: sustainable development, climate change and sustainable economic growth. The key transport aims of SPP include:</p> <ul style="list-style-type: none"> ■ reducing emissions from all transport modes in order for the Scottish Government to meet its greenhouse gas emission 	<p>The A81 Plan objectives and proposals reflect SPP, in particular contributing to sustainable economic growth and sustainable development. The A81 Plan encourage transport development that improves accessibility to services and businesses, develops the transport network and provide opportunities for modal shift to public transport and active travel.</p> <p>In relation to the strategic transport network within East Dunbartonshire, SPP outlines that existing rail services and stations must be utilised effectively before new services or stations are considered. The case for a new station will be considered where the needs of local communities, workers or visitors are sufficient to generate a high level of demand, and it will be served by feeder rather than exiting inter-urban services.</p> <p>Parking policies are highlighted within the SPP and these aim to promote the availability of high quality public transport services and town centre viability.</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>targets through achieving modal shift from private car towards sustainable transport;</p> <ul style="list-style-type: none"> tackling congestion to support economic growth and reduce emissions; supporting development that reduces the need to travel, facilitates travel by public transport and freight movement by rail or water, and provides safe and convenient opportunities for walking and cycling; and supporting improvements in vehicle technology and infrastructure to encourage new technologies such as charging points for electric vehicles. 	
Designing Places	<p>Creating successful and sustainable places will depend on a shift in attitudes, expectations and practices about the design of cities, towns, villages and the countryside.</p> <p>The policy's objectives include:</p> <ul style="list-style-type: none"> Decision makers who understand the role of design in delivering sustainable development (page 9). Developers, landowners, investors and public bodies who recognise the commercial and economic value of good design (page 18). A high level of awareness and urban design skills in local authorities, including planners and councillors who are committed to raising design standards and understand the impact of their decisions (page 47). Greater commitment to higher standards of design among public bodies (page 49). <p>The policy defines the qualities of the most successful places, the ones that flourish socially and economically. They tend to have certain qualities in common. First, they have a distinct identity. Second, their spaces are safe and pleasant. Third, they are easy to move around, especially on foot. Fourth, visitors feel a sense of welcome. Places that have been successful for a long time, or that are likely to continue to be successful, may well have another quality, which may not be immediately apparent – they adapt easily</p>	<p>The A81 Plan objectives include encouraging road safety, walking and cycling through good design and mitigating impacts on the environment. The inclusion of policy and proposals which reflect this through the design of development will help achieve this. It could promote the development of safe sustainable and welcoming spaces which are easy to move around.</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	to changing circumstances. Finally, places that are successful in the long term, and which contribute to the wider quality of life, will prove to make good use of scarce resources. They are sustainable.	
Designing Streets	<p>The policy's objectives include:</p> <ul style="list-style-type: none"> Street design must consider place before movement. Street design guidance, as set out in this document, can be a material consideration in determining planning applications and appeals. Street design should meet the six qualities of successful places, as set out in Designing Places. Street design should be based on balanced decision-making and must adopt a multidisciplinary collaborative approach. 	The A81 Plan objectives include encouraging road safety, walking and cycling through good design and mitigating impacts on the environment. See the section on Designing Places above for the qualities of successful places. The delivery of this depends on how the principles in Designing Streets are applied to policies for road safety, transport network improvements and new projects, particularly by considering place before movement.
National Transport Strategy 2006	<p>The NTS introduced three Key Strategic outcomes, which are to:</p> <ul style="list-style-type: none"> Improve journey times and congestion between our cities and towns and our global markets to tackle congestion and provide access to key markets. Reduce emissions to tackle climate change. Improve quality, accessibility and affordability of transport, to give people the choice of public transport and real alternatives to the car. 	East Dunbartonshire can help meet the first outcome by its objective of developing a transport network which supports the wider region through delivering sustainable economic growth, particularly main line rail improvements. Most of the objectives of the A81 Plan will help meet the last two outcomes.
Transport Projects Review, Transport Scotland	<p>The Strategic Transport Projects Review (STPR) outlines the transport infrastructure investments that Transport Scotland aim to deliver during the period 2012 – 2022. It contributes increasing sustainable economic growth. The outcomes of the STPR are structured on a tiered approach to investment, based around the priorities of:</p> <ul style="list-style-type: none"> maintaining and safely operating existing assets promoting a range of measures, including innovative solutions, that make better use of existing capacity; and promoting targeted infrastructure improvements where these are necessary, affordable and practicable. <p>In relation to the strategic transport network in East Dunbartonshire,</p>	<p>To help meet the objective of developing a transport network which supports local and wider region through delivering sustainable economic growth the interventions included in the STPR interventions list will be identified. These will improve the transport network and travel in relation to East Dunbartonshire:</p> <ul style="list-style-type: none"> Maintaining and Safely Operating Scotland's Rail Network; Further Electrification of the Strategic Rail Network; Enhancing Rail System Capacity through Targeted Improvements;

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	it highlights that overcrowding on train services between Glasgow and Lenzie is an issue and is likely to constrain growth in terms of rail patronage.	<ul style="list-style-type: none"> ■ Integrated Ticketing; ■ Reconfiguration of the National Rail Timetable; ■ (Strategic) Park-&-Ride/Park-&-Choose Strategy; ■ Rail Enhancements between Aberdeen and the Central Belt; and ■ Edinburgh to Glasgow (Rail) Improvements Programme.
Scotland Route Utilisation Strategy, Generation Two – Network Rail	The strategy looks in detail to 2024 and sets out the vision for the route in the longer term. All passenger and freight services that use the Scottish routes are considered. It identifies current capacity, demand & delivery; committed interventions; future demand; gaps & options.	The A81 Plan objective of efficient public transport services and developing a transport network which supports local and wider regeneration to deliver sustainable growth recognises the value of rail transport services. The service options available could be reflected in the A81 Plan actions.
SG, “Scotland’s Transport Future: Regional Transport Partnerships 2005	<p>1. This guidance is intended for statutory regional transport partnerships (RTP), local authorities, the existing voluntary RTP, potential members of statutory RTP, potential advisers on RTP, and other stakeholders.</p> <p>2. The purpose of the guidance is to assist in the selection and appointment of other (non-councillor) members and advisers to RTP, and to assist all members, or potential members: statutory requirements for membership, roles, timetable for appointments.</p>	See objectives set by the Regional Transport Strategy, below.
The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997	Primary legislation which sets out the legal requirements for the control of development and alterations that affect buildings that are listed or in conservation areas, and the framework by which control is maintained.	See Scottish Historic Environment Policy (SHEP) below.
Scottish Historic Environment Policy (SHEP)	<p>The Scottish Historic Environment Policy sets out Scottish Ministers’ policies, providing direction for Historic Scotland and a policy framework that informs the work of a wide range of public sector organisations.</p> <p>The SHEP was originally developed as a series of free-standing publications (SHEP 1 to 5, published between 2006 and 2008). Now that the series is nearing completion Ministers have decided to publish it as a single document, reducing the amount of detail and duplication between the original publications. There have been no</p>	The A81 Plan objectives include encouraging walking and cycling through good design and mitigating impacts on the environment. The conservation and enhancement of listed buildings and Conservation Areas will help do this, particularly attractive transport features such as canals, bridges and street furniture such as walls and railings.

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>substantive changes to previously published policy on Scheduling, Scheduled Monument Consent, Gardens & designed Landscapes and Properties in the Care of Scottish Ministers).</p> <p>The consolidated SHEP also sees the publication of the final Ministerial policy on Listing and Listed Building Consent, which were consulted upon in 2007.</p>	
Nature Conservation (Scotland) Act 2004	The Act places duties on public bodies in relation to the conservation of biodiversity, increases protection for Sites of Special Scientific Interest (SSSI), amends legislation on Nature Conservation Orders, provides for Land Management Orders for Sissy's and associated land, strengthens wildlife enforcement legislation, and requires the preparation of a Scottish Fossil Code.	See comments on Local Biodiversity Strategy, below.
Scottish Forestry Strategy (2006)	<ul style="list-style-type: none"> Using forestry, and adapting forestry practices, to help reduce the impact of climate change and help Scotland adapt to its changing climate Getting the most from Scotland's increasing and sustainable timber resource Strengthening forestry through business development to underpin sustainable forest management and support economic growth and employment across Scotland Improving the quality of life and wellbeing of people by supporting community development across Scotland Making access to, and enjoyment of, woodlands easier for everyone – to help improve physical and mental health Protecting the environmental quality of our natural resources (water, soil, air) contributing to and improving our scenery, and helping to make the most of our unique historic environment Helping to restore, maintain and enhance Scotland's biodiversity, and increasing awareness and enjoyment of it. 	The A81 Plan consideration of the impact of forestry traffic on road safety and maintenance.
2020 Challenge for Scotland's Biodiversity (2013)	<p>To conserve biodiversity for the health, enjoyment and wellbeing of the people of Scotland now and in the future</p> <ul style="list-style-type: none"> To protect and restore biodiversity on land and in our seas, and to support healthier ecosystems; 	See East Dunbartonshire Biodiversity Action Plan below.

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<ul style="list-style-type: none"> To connect people with the natural world, for their health and wellbeing and to involve them more in decisions about their environment; and To maximise the benefits for Scotland of a diverse natural environment and the services it provides, contributing to sustainable economic growth. 	
The Environmental Noise (Scotland) Regulations (2006)	<p>Avoiding, preventing or reducing on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise. This will involve:</p> <ul style="list-style-type: none"> Informing the public about environmental noise maps for large urban areas (referred to as 'agglomerations' in the END and in these regulations), major roads, major railways and major airports as defined in the END and Preparing action plans based on the results of the noise where necessary, and protect environmental noise quality where it is good. 	The objectives of encouraging roads maintenance, walking and cycling and efficient public transport will help implement the reduction of noise from car traffic and old buses combined with uneven surfaces.
Changing Our Ways, Scotland's Climate Change Programme (2006)	<p>Scotland's Climate Change Programme demonstrates how Scotland will deliver carbon savings from devolved policy measures and reduce its vulnerability to the changing climate.</p> <p>Transport objectives include:</p> <ul style="list-style-type: none"> Consulting on climate change targets for the transport sector as part of the National Transport Strategy. Consulting on and deciding on the continuation of the existing traffic stabilization target as part of the development of the National Transport Strategy. Continuing to support UK development work on the implementation of a Renewable Transport Obligation (RTFO) to ensure that 5% of all UK fuels sold on UK forecourts are bio fuels by 2010. Continuing to support developments at UK and international level to promote new and cleaner vehicle technologies and fuels. Awarding Regional Transport Partnerships £500,000 per year for 2006-08 for the appointment of travel plan officers for the 	See East Dunbartonshire Sustainable Development Strategy.

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>promotion and development of sustainable travel.</p> <ul style="list-style-type: none"> Continuing to promote travel behaviour change and modal shift to more sustainable travel modes. 	
National Air Quality Strategy (Revised 2000)	<ul style="list-style-type: none"> To improve and protect ambient air quality in the UK in the medium-term To protect people's health and the environment without imposing unacceptable economic or social costs The Strategy sets objectives for eight main air pollutants to protect health Local authorities work towards achieving the objectives prescribed by regulation for seven of the pollutants: benzene; 1, 3-butadiene; carbon monoxide; lead; nitrogen dioxide; particles (PM10); and sulphur dioxide. 	One A81 Plan objective is in regard to providing a transport network that enhances local air quality. Therefore any proposed transport development will require consideration of impacts on local air quality.
Scotland's Sustainable Development Strategy (2005)	<ul style="list-style-type: none"> To make economic growth sustainable, breaking the link with the environmental damage To secure a better quality of life for current generations, without compromising the right of others in the world and future generations to do the same To support thriving communities To ensure that natural resources needed for life are managed responsibly for our own and future generations To reduce the size of Scotland's resource use footprint To ensure that people have the necessary knowledge, awareness, understanding and skills to play their part in reducing climate change 	See East Dunbartonshire Sustainable Development Strategy.
Environmental Protection Act 1990 Part II a Contaminated Land Contaminated Land (Scotland) Regulations 2000. (SI 2000/178)	<ul style="list-style-type: none"> The Act provides a Regulatory regime for the identification and remediation of contaminated land and is subject to the 2000 Regulations and Statutory Guidance. 	One A81 Plan objective is reducing the environmental impact of transportation. Therefore any transportation proposal which involves the redevelopment of potentially contaminated land should consider the potential to remediate this land or associate controlled waters.
Water Environment Water Services (Scotland) Act 2003	The Act sets out the arrangements for the protection of the water environment. The aim of the Act is to protect and improve the	One A81 Plan objective is reducing the environmental impact of transportation. Therefore any transportation

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>ecological status of the water environment whilst also protecting the social and economic interests of those who depend on the water environment. The Act aims to:</p> <ul style="list-style-type: none"> Promote sustainable water use. Ensure the water environment achieves good ecological status. Promote sustainable flood management. 	<p>proposal should consider the need improve water quality, including the provision of Sustainable Urban Drainage Systems and remediation of any potentially contaminated land which impacts on controlled waters. This also includes any proposals for recreational boat transport on the canal. See also Flood Risk Management Act below.</p>
Flood Risk Management (Scotland) Act 2009	<p>The Act provides a more sustainable and modern approach to flood risk management, suited to the needs of the 21st century and to the impact of climate change. The Act will also create a more joined up and coordinated process to manage flood risk at a national and local level. Specific measures within the Flood Risk Management (Scotland) Act 2009 include:</p> <ul style="list-style-type: none"> A framework for coordination and cooperation between all organisations involved in flood risk management; Assessment of flood risk and preparation of flood risk management plans; New responsibilities for SEPA, Scottish Water and Local Authorities in relation to flood risk management; A revised, streamlined process for flood protection interventions; New methods to enable stakeholders and the public to contribute to managing flood risk, and; A single enforcement authority for the safe operation of Scotland's reservoirs. 	<p>The A81 Plan objective of reducing the environmental impact of transportation will consider this. Therefore any transportation proposal should consider the need to improve water quality, including the provision of Sustainable Urban Drainage Systems.</p>
Zero Waste Plan (2010)	<p>It aims to drive change and inspire households, businesses, community groups, local authorities and the wider public sector to change the way they view and deal with waste. It contains a broader approach to tackle all waste, not just waste collected by councils.</p> <ul style="list-style-type: none"> The plan proposes a new way of looking at the materials Scotland produces - recognising everything designed, produced and used is a resource which has a value. It will introduce 'radical' new measures, including: Landfill bans for specific waste types, aiming to reduce 	<p>The A81 Plan proposals should consider the management of construction waste on site where possible and use of recycled waste construction materials.</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>greenhouse gas emissions and capturing their value</p> <ul style="list-style-type: none"> Separate collections of specific waste types, including food (to avoid contaminating other materials), to increase reuse and recycling opportunities and contributing to the Scottish Government's renewable energy targets Two new targets that will apply to all waste: 70 per cent target recycled, and maximum five per cent sent to landfill, both by 2025 Restrictions on the input to all energy from waste facilities, in the past only applicable to municipal waste Encouraging local authorities and the resource management sector to establish good practice commitments and work together to create consistent waste management services, benefitting businesses and the public. 	
Scottish Government Economic Strategy (2011)	<p>The overarching aim of the strategy 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 priorities include:</p> <ul style="list-style-type: none"> Transition to a Low Carbon Economy; Infrastructure Development and Place; Equity. 	<p>Transport supports and develops the economy. A strategy objective recognises that an efficient transport system helps enhance productivity and deliver sustainable growth. Another objective recognises that infrastructure investment is central to the ambition for a low carbon economy. Enhancing transport networks and services can open up new markets, increase accessibility to employment and help build a critical mass of businesses that drive competitiveness and deliver growth.</p>
Regional		
Glasgow & Clyde Valley Strategic Development Plan (SDP)	<p>The Scottish Ministers approved, with modifications, the Glasgow and the Clyde Valley Strategic Development Plan on 29.5.12.</p> <p>The SDP together with the LDP forms the Development Plan in city region areas. The key aim of the SDP is to set out a long term Spatial Vision and related spatial development strategy. This will determine the future geography of development in the city region to 2035, which will support economic competitiveness & social cohesion, set within a sustainable environmental approach. It is about creating quality of place by focusing on the continued regeneration and transformation of the city region's communities whilst securing positive action on its key asset, its natural</p>	<p>The A81 Plan objectives of safe transport network, improving accessibility to services, facilities and businesses and improving health and wellbeing can be delivered by strategic scale development. The A81 Plan helps support the SDP Strategy by promoting an efficient public transport service, accessibility to services and employment and active travel.</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>environment. It seeks to minimise the development and carbon footprints of the city region, meet climate change emissions targets and above all, support a drive towards a sustainable low carbon economy.</p> <p>Transport cuts across the SDP spatial vision, including the economy, infrastructure and the environment and key elements include:</p> <ul style="list-style-type: none"> ■ Key locations in the city-region with Glasgow city centre as the central core, and all accessed by a network of sustainable transport, will drive a regional low carbon economy; ■ A system of sustainable transport networks will integrate the rest of the city-region with central Glasgow rail stations; and ■ Public transport, integrated mass transit system e.g. trains, trams, buses will be key sustainable transport modes, along with the promotion of active travel. This provides the alternative to the private car with development prioritised to locations accessible by such sustainable transport. The growth of existing communities will be based on this location policy, as evidenced by the continued focus on the Community Growth Areas. <p>The SDP Spatial Development Strategy promotes a network of centres, which includes Kirkintilloch town centre, for a mix of services and facilities and public transport. It also promotes the Green Network, which extends into in East Dunbartonshire, which encourages active travel.</p>	
A Catalyst For Change: The Regional Transport Strategy (RTS) for the West of Scotland 2008-21	<p>Strategy vision: "A world class sustainable transport system that acts as a catalyst for an improved quality of life for all."</p> <p>The Shared Goals:</p> <ul style="list-style-type: none"> ■ Develop the Economy – Through improving connectivity for business and freight, making transport more effective and efficient, providing access to employment, education, shopping and leisure, by improving transport integration. ■ Promote Social Inclusion and Equality – By providing a transport system that is safe, accessible, and affordable to all sections of the community. 	The A81 Plan objectives follow all of these goals and help implement them in East Dunbartonshire.

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<ul style="list-style-type: none"> Improve Health and Protect the Environment – By minimising emissions and consumption of resources and energy, by promoting active travel, quality public transport and modal shift. <p>Strategic objectives</p> <p>1. Safety and Security</p> <p>To improve security and personal safety on the transport system.</p> <p>2. Modal Shift</p> <p>To increase the proportion of trips undertaken by walking, cycling and public transport.</p> <p>3. Excellent Transport System</p> <p>To enhance the attractiveness, reliability and integration of the transport network.</p> <p>4. Effectiveness and Efficiency</p> <p>To ensure the provision of an effective and efficient transport infrastructure and services to improve connectivity for people and freight.</p> <p>5. Access for All</p> <p>To promote and facilitate access that recognises the transport requirements for all.</p> <p>6. Environment and Health</p> <p>To improve health and protect the environment by minimising emissions and consumption of resources and energy by the transport system.</p> <p>7. Economy, Transport and Land-use Planning</p> <p>To support land-use planning strategies, regeneration and development by integrating transport provision.</p> <p>8. Corporate Management</p> <p>To provide effective and efficient management of the Partnership's people and resources.</p> <p>9. Pursuit of Excellence</p>	

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	To provide a high level of service based on the needs and expectations of customers.	
Neighbouring Authority Strategic Actions	<p>The neighbouring authorities in which this would relate include:</p> <ul style="list-style-type: none"> West Dunbartonshire Council Stirling Council North Lanarkshire Council and Glasgow City Council <p>This will include documents that could potentially impact on East Dunbartonshire, for example:</p> <ul style="list-style-type: none"> Local Plan (Local Development Plans) Local Housing Strategies Local Transport Strategies 	The A81 Plan objectives
Antonine Wall Management Plan 2013 – 2018 (Consultation draft)	<p>The Management Plan sets out the significance of the Antonine Wall World Heritage Site, and provides a vision and a framework for an integrated and consensual approach to the management of the Site while ensuring outstanding universal values are conserved.</p> <p>The Plan's aims are:</p> <ul style="list-style-type: none"> Safeguard and enhance the Outstanding Universal Value of the World Heritage Site by management, conservation and protection; Promote awareness and understanding at local, regional, national and global levels; Realise the WHS's full potential as an educational and learning resource; Build strong partnerships with local, national and international organisations; strengthen engagement with local communities; and contribute to sustainable economic growth; Balance wider environmental concerns in the sustainable management of the WHS; and Increase research opportunities nationally and internationally 	The A81 Plan objectives of encouraging active travel, reducing and mitigating environmental impacts will help meet the Management Plan aims of an integrated approach to activities on the wall, particularly in relation to access to and around the wall.

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	and use this research to underpin work to protect the WHS.	
Scottish Canals Waterspace Strategy, Draft	The objective of the waterspace strategy is to increase animation on the Scottish canals in a way which ensures harmony between all waterway users and creates an increasingly attractive community space and destination for boaters and tourists.	The objective of improving health and wellbeing through sustainable travel and good design could help encourage recreational boating.
Scottish Canals Heritage Strategy, 2013 - 38 & five year plan	<p>Vision Statement: Through our good stewardship the heritage of our canals will be valued, celebrated and conserved for Scotland. In the course of one generation, we can bring about real benefits for Scotland's canal heritage and people's lives. We aim to ensure that our heritage will be well understood and managed and that people will feel that they have a stake in securing its future.</p> <p>One Strategy Objective is to: Improve understanding and appreciation of canal heritage through physical access and interpretation.</p>	The A81 Plan objectives of encouraging active travel, reducing and mitigating environmental impacts will help meet the Strategy objective of improving appreciation of the canal through access.
Local		
EDC Community Planning Partnership - Single Outcome Agreement (2014-2017)	<p>EDC Vision</p> <ul style="list-style-type: none"> Working together to achieve the best with the people of East Dunbartonshire <p>Local Outcomes</p> <ul style="list-style-type: none"> East Dunbartonshire has an expanding economy with a competitive and diverse business and retail base; Our people are equipped with knowledge, skills and training to enable them to progress to employment; Our children and young people are safe, healthy and ready to learn; East Dunbartonshire is a safe environment in which to live, work and visit; Our people and communities enjoy physical and mental wellbeing and health inequalities are reduced; Our older population are supported to enjoy a high quality of life and our more vulnerable citizens, their families and carers benefit from effective care and support services. 	The A81 Plan objectives of safe transport network, improving accessibility to services, facilities and businesses and improving health and wellbeing will help meet the Local Outcomes of accessible built environment for residents, safe young people, good quality of life for older population, healthier communities, and safe environment to live and work in and visit.

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
Local Plan 2 2011-2016	<p>The Local Plan 2 is primarily concerned with the use and development of land in East Dunbartonshire. It provides clear guidance on what will or will not be permitted and where and also contributes towards sustainable development. It has the following purpose:</p> <ul style="list-style-type: none"> Set out detailed policies and specific proposals for the development and use of land to guide decisions on planning applications and investments. Highlight development opportunities and promote economic development. Maintain and enhance the quality of the historic and natural environment. <p>It contains policies on how development should promote accessibility, encourage road design and parking, address rail and park and rides and active travel.</p>	The A81 Plan objectives promote the issues that can be delivered by development. They include safe transport network, improving accessibility to services, facilities and businesses and improving health and wellbeing through active travel. This complements the policy for what transportation impacts development should consider.
Antonine Wall World Heritage Site and Buffer Zone Supplementary Planning Guidance (SPG) 2011 – 2016	<p>The area that is covered by the SPG includes Falkirk, North Lanarkshire, Glasgow City, West Dunbartonshire and East Dunbartonshire.</p> <p>The purpose of the SPG is to help ensure that development along the Wall retains, protects, preserves and enhances the outstanding universal value of the monument and its setting.</p>	This will help meet the A81 Plan objective of reducing and mitigating environmental impacts. It sets out what development, including transport development
East Dunbartonshire Council: Planning Guidance Notes 2011	The Planning Guidance Notes set out a series of detailed Technical Notes which amplify Local Plan policies and proposals into a clear and concise format. Notes of particular interest to transport include: Developer Contributions, Green Network, Residential layout and redevelopment, road layout and design and parking standards sustainable construction and design, transport assessments and travel plans and urban design.	The A81 Plan objectives promote the issues that can be delivered by development. They include safe transport network, improving accessibility to services, facilities and businesses and improving health and wellbeing. This complements the notes which help guide development to consider the transportation impacts of development, potential infrastructure work and mitigation measures to help meet these objectives.
Town Centre Review Summary Paper & Action Plan, 2007	<p>The paper summarises the assessment of the performance and management of East Dunbartonshire's 4 key town centres, and sets out recommendations for the strategic approach to town centre improvements. It aims to:</p> <ul style="list-style-type: none"> create an up to date base line profile of the town centres which 	The A81 Plan actions will review some of those transport actions identified in the Town Centre Action Plan but not yet actioned, to identify if they are still relevant.

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>highlight common and area specific issues</p> <ul style="list-style-type: none"> establishes action required to address the issues identified by the review and form a strategic approach to improvement. <p>Its conclusions cover parking and access, environment (covering streetscape & design) and town centre management and it sets a series of actions to help achieve this.</p>	
Dunbartonshire Biodiversity Action Plan (2010)	<ul style="list-style-type: none"> To conserve species and habitats in Dunbartonshire that are considered vulnerable or threatened on a local or national basis, and in turn to contribute to conservation of our global biodiversity To promote awareness of our local natural resources To promote community engagement in, and ownership of, the practical conservation of our natural resources To promote sustainable and wise use of our natural resources 	The objective of reducing the impact of transport policy and proposals on biodiversity can be met through the A81 Plan. This can be at an international level by mitigating climate change by encouraging walking, cycling and public transport and at a local level by mitigating the impact of individual transport proposals on specific habitats and species.
Open Space Strategy (2014 – 2019)	<ul style="list-style-type: none"> Improve the management of structures and practices; Help ensure that the Council has a clear strategic direction to its open space investment and asset management; Establish requirement for new open space from development proposals together with the scale and nature of any planning obligations; and Contribute to meeting the objectives of the Single Outcome Agreement. 	The A81 Plan objectives will support the delivery of East Dunbartonshire's emerging green space strategy, which will develop the green network. In particular any active travel proposals which will result in improvements to the accessibility of existing and new open spaces will be in line with this Strategy. This could come from encouraging a modal shift of transport to sustainable, healthy walking and cycling, increasing accessibility, reducing the environmental impact of transportation, which could see environmental enhancement.
Contaminated Land Inspection Strategy (2001)	<ul style="list-style-type: none"> To use the Environmental Protection Act 1990: Part IIa as one of the mechanisms that will help to protect and enhance the quality of life and the environment The redevelopment of derelict, brown field and potentially contaminated land, either through the planning system as detailed in PAN 33 or Part IIa To ensure compliance with and enforcement of Part IIa of the Environmental Protection Act 1990. 	See Environmental Protection Act 1990, above.
Local Housing Strategy	<ul style="list-style-type: none"> The LHS gives an overview of the Local Housing System in the 	The A81 Plan objective of improving access to services,

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>East Dunbartonshire area and highlights the strategic challenges and priorities that have been identified along with our partners and key stakeholders.</p> <ul style="list-style-type: none"> The Strategy aims to respond to these challenges by setting realistic priorities for action to ensure that East Dunbartonshire is a location which has good quality housing set in an attractive and safe environment. Our priorities are achievable as long as we plan our resources effectively so that real improvements for local people are delivered. <p>The LHS vision is:</p> <p>“To deliver a sufficient and suitable supply of housing so that every household in East Dunbartonshire has access to a warm affordable home, in good condition and in the community they want to live in, both now and in the future.”</p> <p>The Local Housing Strategy Outcomes reflect the key housing issues that require to be addressed to improve the operation of the housing system in East Dunbartonshire, they are:</p> <ul style="list-style-type: none"> people successfully access suitable and affordable housing in their community and tenure of choice more people enjoy the benefits of living in diverse communities and sustainable places less people will become or be badly affected by homelessness more people with particular needs access suitable housing options which promote independent living more people live in well repaired and maintained homes 	<p>facilities and businesses links with the LHS outcomes of providing suitable homes and that people enjoy the benefits of living in sustainable places and housing which promotes independent living.</p>
Strategic Housing Investment Plan	<p>The Strategic Housing Investment Plan establishes the key investment priorities for affordable housing to achieve the outcomes set out in the Local Housing Strategy. The Plan details where public subsidy is needed over the next five years and prioritises development to sub-area level.</p>	<p>The objective of access to services, facilities and businesses can be met by the location of housing development in this plan.</p>
Sustainable Development Strategy	<ul style="list-style-type: none"> To promote a strong local economy To ensure the social wellbeing of everyone in the community 	<p>Many of the A81 Plan policy objectives and proposals will help reduce green house gas emissions from vehicle traffic by encouraging walking. Cycling and public transport. These include improving accessibility to services and</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<ul style="list-style-type: none"> To protect the natural environment 	businesses, efficient public transport services, developing the transport network and opportunities for modal shift and aiming to reduce the impact of transport on the environment.
Economic Development Strategy (2013 – 2016) (Dunbartonshire Economic Forum)	<p>The overarching purpose for this EDS is to create more high quality jobs for the area by focusing on business creation and growth and the delivery of balanced communities with enhanced infrastructure and services. The EDS operates on three strategic priorities:</p> <ul style="list-style-type: none"> Support the growth of East Dunbartonshire's competitive and diverse business base; Support the development, diversification and growth of the town and village centres within East Dunbartonshire and capitalise on the area's tourist, leisure and natural assets; 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. 	The A81 Plan objectives of improving accessibility to businesses and developing a transport network which supports the local and wider region will help make the area more attractive for business and support existing businesses. The encouragement of efficient public transport services will particularly benefit trade in shops and businesses dealing with the visiting public in town centres.
Economic Development Framework (2007)	<ul style="list-style-type: none"> Support / promote locations for appropriate development, maximising inward investment and securing economic development related planning gain. Retain existing economic development; identify new development opportunities which meet the changing needs of the economy; assist with redevelopment of brown field sites; ensure provision of a range of commercial and industrial properties; reduce demand for out-commuting. 	See Economic Development Strategy, above.
Tourism Strategy & Action Plan	<ul style="list-style-type: none"> To maximise the tourism potential in East Dunbartonshire, particularly through capitalising on the opportunities presented by the short stay and day trip markets, and building on the relatively strong visiting family and friends market To develop programmes of proactive leisure marketing To improve the range and quality of tourism product To strengthen communication between private and public sector To encourage local pride and improve the status of the industry 	The A81 Plan objectives of encouraging walking and cycling modes of transport, improving accessibility to services, particularly through the development of the green network, and improving the environment through design will help make the area attractive to visitors.

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
Campsie Fells Strategic Review & Action Plan	The Strategic Review and Action Plan identify a range of project options which will contribute towards the strategic outcome of sustainable economic, social and ecological development in the Campsie Fells Region. The contents of the documents are recommendations only.	As for Tourism Strategy & Action Plan, see above.
East Dunbartonshire Strategy for Carers 2012- 2015	<p>The Plan makes clear statements about the commitments to improve services for people who have community care needs and their families, and identifies what the priorities are. There is an action plan to deliver these priorities, as well as a statement on how to monitor and report on progress.</p> <p>The Plan was jointly written by East Dunbartonshire Council and East Dunbartonshire Community Health Partnership, in consultation with Carers Link East Dunbartonshire.</p> <p>The Community Care Context - Overarching Themes:</p> <ul style="list-style-type: none"> ■ Best value - effective and efficient working jointly ■ Participation, representation and capacity building ■ Equality, Diversity and Inclusions: ■ Supporting More People at Home ■ Assisting People to Lead Independent Lives ■ Ensuring People Receive a High Standard of Care ■ Better Involvement of and Support for Carers and Other Stakeholders ■ Effective Workforce Planning and Development 	As for Joint Health Improvement Plan below. Encouraging walking, cycling and efficient public transport particularly helps meet the objective of supporting people at home and assisting them to lead independent lives.
Joint Health Improvement Plan 2013 – 2016	This Plan sets out the commitment of East Dunbartonshire Council, 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 A81 Plan objectives of safe transport network and improving accessibility to services, facilities and businesses, thereby promoting social inclusion, and encouraging efficient public transport services and promoting sustainable, healthy modes such as walking and cycling will help meet the objectives of promoting health and wellbeing and reducing inequalities.
Children & Young People's Partnership Action Plan 2011-14	The Plan is an update to the second partnership plan to change our services, our culture and our working practices, with the single aim	The A81 Plan objectives of safe transport network, improving access to services, while promoting inclusion

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>of improving outcomes for children, young people and their families. The Delivering for Children and Young People Partnership has a critical role in bringing all agencies together</p> <p>The vision is that East Dunbartonshire's children and young people, whatever their needs, grow up in safe, healthy, nurturing communities and develop the necessary skills for learning, life and work, in order to achieve their potential</p> <p>Aims: We will deliver our vision and local outcomes by:</p> <ul style="list-style-type: none"> ■ Supporting families ■ Improving children and young people's health ■ Keeping our children and young people safe ■ Improving children and young people's learning and achievement ■ Engaging and empowering young people ■ Training and supporting a confident and capable workforce 	<p>and improving health and wellbeing through active travel and good street design help meet the aims of improving young people and children's health and keeping them safe.</p>
East Dunbartonshire Community Safety Partnership vision.	<p>The East Dunbartonshire Community Safety Partnership comprises East Dunbartonshire Council, British Transport Police, British Waterways Scotland, East Dunbartonshire Council for Voluntary Organisations, Strathclyde Fire and Rescue and Strathclyde Police. The partnership also works closely with services such as Criminal Justice, Education, Environmental Health, the Integrated Children's Services Core Group, Roads Services, Social Work and Trading Standards in both planning and actions.</p> <p>It is a Partnership with related aims and objectives. It faces common problems, which impact on all of us, as well as our communities, albeit in different ways and at different times. It has recognised that no one organisation has the sole capacity or resources to solve many of the complex problems that exist today.</p> <p>Its Vision is that East Dunbartonshire, 2010, includes:</p> <p>An area for achievement, offering a wide range of opportunities and a safe, attractive and healthy environment We will build on the positive attributes of a safe and healthy environment to support the development of our communities and help sustain their individuality</p>	<p>The A81 Plan objectives of safe transport network and improving accessibility to services, facilities and businesses while promoting social inclusion will address and follow the community partnership's vision.</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<p>An area which is confident and ambitious, able to make and take advantage of opportunities for investment in jobs, enterprise and learning</p> <p>We will encourage innovation and forward thinking to create a thriving learning and business sector with flourishing towns and villages</p> <p>An area where opportunities are accessible by everyone and which builds on the cultural diversity of our communities</p> <p>We will strive to ensure equality of access to services, information and opportunities for all local citizens and support their involvement in our activities</p> <p>An area which looks to the future, through supporting the potential of our young people and sustaining our environment</p> <p>We will ensure our young people are provided with cohesive support throughout their early years and that our communities prosper in a balanced and environmentally sustained way</p> <p>An area that plays a significant role in Scottish life, building effective relationships with surrounding areas and continually seeking to improve</p> <p>We will work with a wide range of organisations to plan and deliver effective and responsive</p>	
Local Transport Strategy 13 – 17	<p>The Local Transport Strategy sets out the objectives, strategy and transport action plans for East Dunbartonshire Council from 2013 to 2017. We have a vision which looks beyond this, but this Local Transport Strategy is concerned with achievable local improvements</p> <p>There are seven principal objectives:</p> <ul style="list-style-type: none"> ■ Develop a safe travel network across all modes; ■ Improve 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; 	<p>The A81 Plan will meet the objectives set within the LTS, through ensuring sustainable, more accessible and alternative means of transport are available to the community.</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	<ul style="list-style-type: none"> 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; 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. 	
Equality & Human Rights Policy 2011-14	<p>The Equality and Human Rights Policy was launched in July 2011. This is an overarching document, setting out the Council's commitment to equality and human rights issues and provides information on work being undertaken across the Council.</p> <p>This policy aims to identify the range of work being undertaken across the organisation on equality and human rights and provide clear information on how the Council's approach to mainstreaming equalities is implemented.</p> <p>As such, the main objectives of the policy are as follows:</p> <ul style="list-style-type: none"> To provide a 'statement of intent' with regard to Equality and Human Rights; To provide information on the legislative framework with regard to Equality and Human Rights; To provide information on the range of work undertaken across the council with regard to equality and human rights, including consultation and engagement activity; To set out information on the key groups and those who share protected characteristics within East Dunbartonshire as an area; To set out the responsibility and accountability for equality and human rights in East Dunbartonshire Council; and To provide information on how our work on equality and human 	<p>The A81 Plan objectives will be subject to an Equality Impact Assessment to ensure they do not result in indirect or direct discrimination on the grounds of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion and belief, sex and sexual orientation.</p>

Table A1		
Legislation / Plan / Strategy	Summary / Objectives	Implications for the SEA / Plan
	rights is implemented and reviewed.	
Consultation & Engagement Strategy 2008 – 11	This Strategy sets out a revised approach to consultation and engagement across East Dunbartonshire Council. The purpose of the Strategy is to set out details of how the Council will consult and engage with our key stakeholders and the methods of consultation we will use. It also sets out how the information from consultation and engagement will inform the development of our services and how and when results and information will be made available to our citizens and other key stakeholders.	The A81 Plan objectives are subject to public consultation. This Strategy sets out the process for consulting & responding to comments which the A81 Plan will follow.
Parking Management Options Study, 2007	<p>The study is a review of the existing car parking situation across the authority area and developing future parking options. It addresses the rising levels of car ownership in East Dunbartonshire and an understanding that there are increasing problems with car parking at certain locations within the area.</p> <p>It also examines the quality of parking available in town centres, train stations, schools and residential areas. It produced a range of potential options to improve car parking within East Dunbartonshire.</p>	The A81 Plan objectives of improving access to services, while promoting inclusion and maintenance of roads and footways cover parking. Issues and Improvements identified in this study will be reviewed, considered &/or developed in the Interventions & Action Plan section.
Core Path Plan	<p>The Land Reform (Scotland) Act 2003 requires the preparation of a Core Path Plan. It will provide a basic framework of paths sufficient for the purpose of giving the public reasonable access throughout the area and it will link into and support a wider network of paths and all other areas of land and inland water over which access rights are applicable.</p> <p>Core paths may includes rights of way (note that not all rights of way are core paths), other existing routes such as paths, footways, cycle routes, paths established through public path agreements and orders and waterways over which access rights are applicable.</p> <p>The core path network provides opportunities to link communities and to help the people of East Dunbartonshire to lead healthier lifestyles by taking regular exercise.</p>	The A81 Plan objective of improving health and wellbeing through encouraging active travel will utilise Core Paths which link residential areas with businesses and services. The health benefits of walking are encouraged by both plans.

Appendix B – Baseline Data Sources

Table B1	
SEA Topic	Baseline Data Sources
Biodiversity Flora & Fauna	<ul style="list-style-type: none"> ■ Dunbartonshire Biodiversity Action Plan ■ Scottish Natural Heritage ■ East Dunbartonshire Council
Water Quality	<ul style="list-style-type: none"> ■ SEPA – RBMP Data ■ East Dunbartonshire Council ■ Dunbartonshire Biodiversity Action Plan
Soil	<ul style="list-style-type: none"> ■ East Dunbartonshire Council ■ EDC Local Plan 2 ■ Scotland Vacant & Derelict Land Survey 2013 ■ The Macaulay Institute ■ Scottish Natural Heritage
Cultural Heritage	<ul style="list-style-type: none"> ■ Historic Scotland ■ Sites and Monuments Record (SMR) ■ East Dunbartonshire Council ■ United Nations Educational, Scientific and Cultural Organisation – World Heritage Site Designation ■ Scottish Natural Heritage ■ Scottish Canals (Heritage Strategy, 2013 - 38)
Landscape	<ul style="list-style-type: none"> ■ EDC Local Plan 2 ■ British Geological Survey ■ UKRIGS (Regionally Important Geological or Geomorphological Site) ■ Glasgow & Clyde Valley Landscape Character Assessment, 1999
Population & Human Health	<ul style="list-style-type: none"> ■ General Register Office for Scotland ■ Census 2001 – for health data ■ Census 2011 data (2013 review) ■ Scottish Government (mid year population estimates, 2011 revised estimates to take account of census due July 2013. ■ Scottish Government SIMD data) ■ East Dunbartonshire Council ■ Scottish Neighbourhood Statistics

Table B1	
SEA Topic	Baseline Data Sources
	<ul style="list-style-type: none"> NOMIS (Economically active population & Average weekly wage) Scottish Household Statistics (walking/ cycling to work) 2009/10 Glasgow Centre for Population Health 2011. (Briefing Paper 28)
Air Quality	<ul style="list-style-type: none"> East Dunbartonshire Council National Air Emissions Inventory Scottish Government DEFRA Transport Direct, July 2012 (bus service frequencies) Bus & Coach Statistics 2010/11
Climatic Factors	<ul style="list-style-type: none"> Scottish Government SEPA East Dunbartonshire Council (for traffic information) UK Climate Impacts Programme Online Handbook of Climate Trends across Scotland 2006 (SNIFFER Guidance) Scottish Household Survey 2009/10 (cars per household & mode of travel). Office of Rail Regulation (rail patronage) Transport Direct, July 2012 (bus service frequencies) Bus & Coach Statistics 2011/12 SEPA Flood map
Material Assets	<ul style="list-style-type: none"> Scottish Government East Dunbartonshire Council Transport Scotland SPT

Appendix C – Assessment Summary Tables

Table C1: Option 0 – Do Minimum		
Environmental Topic Area	Assessment	Potential Effect
Biodiversity	There are not likely to be any direct effects on biodiversity as a result of the do-minimum Option. However there may be indirect adverse effects as a result of the reduced local air quality from a greater number of vehicles in the study area. It is unlikely that these effects will be significant.	<>
Water Quality	Water quality may be reduced as a result of the Kilmarlinny development. The greater number of vehicles and hardstanding areas may result in oils and fuel being washed in to the Manse Burn and Allander Water in runoff. As the development has received planning consent it is assumed that these potential effects have been mitigated appropriately.	O
Soil	There are no areas of known contamination within the study area, nor are any of the interventions within the do-minimum Option require land take from current agricultural purposes.	O
Cultural Heritage	There may be direct and indirect adverse effects on cultural heritage assets within the study area from new development, namely the Kilmarlinny development, such as physical impacts from increased vibration from increased traffic, and/ or indirect effects on the setting of sensitive cultural sites. However as the Kilmarlinny development has been granted planning permission these effects are assumed to have been appropriately mitigated to be either avoided, reduced, remedied or compensated.	<>
Landscape	There are not likely to be any adverse or positive effects on landscape or townscape within the study area as a result of the do-minimum Option.	O
Population & Human Health	With the development of the active travel hub in Kessington, the cycle corridor along the A81, and the production of walking and cycling maps for each town, it is likely that a greater number of people within the study area will become more active, choosing to use active travel means more regularly for shorter journeys or for leisure. This will result in improved health, fitness and wellbeing of the population. There may also be indirect negative effects on the population from reduced air quality with an increased population from the development at Kilmarlinny, increasing the number of vehicles within the study area.	✓
Air Quality	The Kilmarlinny development will increase the population of the study area and therefore will also increase the number of vehicles. The increase in vehicles will result in increased emissions from transport and have a negative effect on air quality. Positive effects on air quality may also occur as result of the Kessington active travel hub, the cycle corridor and the promotion of walking routes and cycle paths within the towns. Overall there is likely to be a negligible negative effect on air quality.	<>
Climatic Factors	The do-minimum Option may result in adverse effects on account of the Kilmarlinny development reducing the space available for flood storage from the Manse Burn and Allander Water. This area is currently within the flood extent of both of these water bodies. As developments within this Option (namely the Kilmarlinny development) have been given consent it is assumed that any potentially	<>

Table C1: Option 0 – Do Minimum		
Environmental Topic Area	Assessment	Potential Effect
	adverse effects have been appropriately mitigated.	
Material Assets	The Kilmardinny development will increase the number of houses available within the study area and allow for greater population growth as per the East Dunbartonshire Local Development Plan 2. Appropriate transport infrastructure to link this development area with the existing network will also be developed. The do-minimum Option will also increase the sustainable transport infrastructure network within the study through the provision of greater cycle ways and hub areas.	✓

Table C2: Option 1 – Increased Car Parking at Bearsden and Westerton Rail Stations		
Environmental Topic Area	Assessment	Potential Effect
Biodiversity	Should there be additional land take requirements, this would likely require the removal of trees/ areas of potentially suitable habitat for European protected species (e.g. bats) from the immediate surrounding areas of the existing stations. The railway lines also provide an important wildlife corridor through this built up area, connecting various fragmented habitats – new development within the immediate vicinity of this may impact species in use of this corridor. With appropriate mitigation the impact is likely to be negligible.	<>
Water Quality	There are not predicted to be any effects on water quality or flood risk from the development of additional car parking capacity. Increased cars within the area may result in greater chance of leaked fuels and oils which may enter the water environment through surface water runoff, however it is likely that this can be mitigated. It should be noted that the Forth and Clyde Canal – a Freshwater Fish Directive designated waterbody - lies immediately south of the Westerton station. Overall there is likely to be no effects on water quality.	○
Soil	Given the urban location of the existing rail stations, there are no predicted effects on soil resources from increasing car parking capacity.	○
Cultural Heritage	There are numerous cultural heritage sites located within Bearsden and the areas immediately surrounding the rail stations. Both Bearsden and Westerton stations are located within and immediately adjacent to the Old Bearsden and Westerton Garden Suburbs Conservation Areas, respectively. The Antonine Wall World Heritage Site (WHS) and associated features (Roman Fort, Scheduled Ancient Monument (SAM)) also extend through Bearsden town centre. Within the Conservation Areas there are also a number of listed buildings of varying category (A, B and C). Impacts on setting may also occur if development is not sympathetic to the setting and context of the existing environment. Historic buildings, monuments and conservation areas are vulnerable to new development that has the ability to change the setting of the area in which they reside. Appropriate mitigation and careful design will ensure impacts to the setting and character of assets and the surrounding environment is kept to a minimum.	xx
Landscape	Impacts on landscape and visual amenity are only likely to occur should the additional car parking be built on a platform above existing facilities, thus introducing a new feature in to the landscape/ townscape. The Old Bearsden and Westerton Garden Suburbs Conservation Areas also add greater sensitivity to the area. The character of the surrounding area set by the heritage assets described above has the potential to be impacted by the development. The introduction of increased car parking may change the setting of the	x

Table C2: Option 1 – Increased Car Parking at Bearsden and Westerton Rail Stations		
Environmental Topic Area	Assessment	Potential Effect
	assets subsequently impacting the area visually and its character. Overall there is likely to be an adverse effect on the landscape and visual aspect as a result of the proposed development.	
Population & Human Health	The Option encourages the use of a more sustainable means of transport other than private vehicles. This reduction in car use will limit car emissions within populated areas improving human health. Reduced road users on other routes would also reduce frustration and stress during peak times, improving wellbeing. Overall there is likely to be a positive effect on the human health and population as a consequence of the development.	✓
Air Quality	Air quality is likely to improve from limiting emissions on congested routes and promoting more sustainable means of transport. This would likely only benefit areas within the study area. There remains the possibility that with increased accessibility, a greater number of vehicles will be drawn to Bearsden station, resulting in greater emissions within the Bearsden Air Quality Management Area (AQMA). Overall there is likely to be a positive effect on air quality throughout the majority of the study area.	✓
Climatic Factors	Greater accessibility and the encouragement to use more sustainable means of transport will reduce carbon emissions and contribute towards Scotland's targets of a 42% reduction in greenhouse gas emissions by 2020 leading to a positive effect on climatic factors.	✓
Material Assets	Potential to increase the connectivity of settlements within East Dunbartonshire, and its' linkages to other areas, including Glasgow, Stirling and Edinburgh.	<>

Table C3: Option 2– Rail Park & Ride at Allander		
Environmental Topic Area	Assessment	Potential Effect
Biodiversity	It is likely that there will be the requirement to develop on ground that is of potential habitat value to European species adjacent to the existing railway line. The railway line offers an important wildlife corridor within a relatively urban area. Lighting of the development may further disturb the surrounding habitat areas not required for the footprint of the development. There is likely to be an adverse effect on biodiversity as a result of the development.	✗
Water Quality	Allander Water may be subject to increased levels of pollutants from fuels and oils leaked from vehicles in use of the park and ride 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 P&R. It is not likely that a park and ride would result in significant impacts on the water environment.	✗
Soil	Soil will be required 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. Earth works also present the opportunity to mobilise ground contaminants already in situ, presenting a threat to the ground water and personnel 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). With appropriate mitigation and best available construction techniques the effects to soil are likely to be negligible.	<>

Table C3: Option 2– Rail Park & Ride at Allander		
Environmental Topic Area	Assessment	Potential Effect
Cultural Heritage	The development of new infrastructure may result in direct or indirect impacts on cultural heritage sites. Indirect effects may occur should the Option not be sympathetic to the setting and context of the existing environment. Direct impacts may occur from physical damage during construction activities or vibration damage during the operation of the development. This area is of greater sensitivity due to its proximity to the Antonine Wall World Heritage Site and its buffer zone. The proposals have the potential to adversely affect the character of the heritage assets, careful design of the park ride will be needed to ensure the development is in line with the current setting. Overall there is likely to be significant adverse effect on cultural heritage.	xx
Landscape	The introduction of a new structure within the landscape/ townscape may result in adverse landscape and visual amenity impacts. Impacts on visual receptors is dependent on whether natural screening or boundaries (such as tree lines) are removed from the landscape and the final scale and design of the Option. The character of the surrounding area set by the heritage assets described above has the potential to be impacted by the development. Overall there is likely to be an adverse effect on the landscape and visual aspect as a result of the proposed Option.	x
Population & Human Health	The promotion of more sustainable means of transportation than the use of private vehicles will improve air quality. This will improve the health of those within the surrounding area, specifically those near existing congested routes. Easing congestion/ improving journey times will also improve stress levels and the wellbeing of road users, and improve road safety for all users. There is likely to be a positive effect to the population and human health.	✓
Air Quality	A modal shift from private vehicle use to more sustainable transport will likely improve air quality by cutting vehicle emissions. There is likely to be a positive effect on air quality.	✓
Climatic Factors	A decrease in volumes of traffic on the roads and increasing rail patronage may result in reduced CO ₂ emissions from transport, therefore positively contributing to Scotland's greenhouse gas emissions targets. Increased hardstanding surface areas in areas that are currently vegetated will reduce the storage capacity of the area in the event of a flood. Flash flooding is becoming more frequent due to climate change – Manse Burn and Allander Water are already subject to flooding events. With appropriate mitigation, for instance the implementation of an appropriate drainage strategy the likely effects that could arise from flooding can be kept to a minimum, and are likely to be negligible.	<>
Material Assets	Potential to increase the connectivity of settlements within East Dunbartonshire, and its' linkages to other areas, including Glasgow, Stirling and Edinburgh. The Park Ride may speed up travel time and increase the attractiveness of travelling to surrounding areas. Overall there is likely to be no effect.	O

Table C4: Option 3 – Quality Bus Corridor		
Environmental Topic Area	Assessment	Potential Effect
Biodiversity	Presuming that the Option allows for a modal shift to sustainable transport along this route, beneficial impacts on local air quality may enhance the biodiversity of the surrounding area, allowing for a greater number of species to flourish in the area surrounding the A81 route. These benefits are unlikely to be realised through the softer interventions detailed within this Option, such as improvements to	O to ✓

Table C4: Option 3 – Quality Bus Corridor		
Environmental Topic Area	Assessment	Potential Effect
	bus stops and shelters, and SCOOT.	
Water Quality	It is unlikely that the development of any of the interventions included within this Option would result in any impacts (negative or positive) on the water environment. The interventions are mainly just improvements to existing infrastructure.	○
Soil	It is unlikely that the development of any of the interventions included within this Option would result in any impacts (negative or positive) on soil or agriculture. The interventions are mainly just improvements to existing infrastructure.	○
Cultural Heritage	As there is unlikely to be any new development required as part of this Option therefore reducing potential impacts on existing cultural heritage sites from construction activities or setting impacts. The cultural heritage sites along this route (namely the various listed buildings present) may be subject to physical effects from increased vibration should the level of traffic increase or the implementation of bus lanes/ bus priority measures results in buses travelling quicker within close proximity to these receptors. This is unlikely to result from the improvement of bus stops and shelters or bus detection within SCOOT. Overall there is likely to be no effect on cultural heritage.	○ to ✕
Landscape	The implementation of bus priority or measures to improve bus times along this corridor are unlikely to impact landscape/ townscape or visual amenity. The upgrades to existing infrastructure could potentially affect the local visual character of the study area if the improvements do not fit in with the current character of the area, this should be realised in the design to avoid any visual effects.	<>
Population & Human Health	Reducing private vehicle use in favour of more sustainable means of transport will improve air quality within the local area, to the benefit of local residents, and cyclists/ pedestrian users of the route. Should a modal shift be realised, and congestion on the route reduced benefits to human health may also occur from reduced stress levels in users of the route from reduced travel times. The magnitude of these effects is dependent on the reduction of vehicles and travel time along this route which may not occur as a result of improving bus stops or incorporating SCOOT at junctions alone. Overall the effect on the surrounding population and human health is likely to be negligible to positive.	<> to ✓
Air Quality	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. Any effect on Air Quality is likely to be positive in nature.	✓
Climatic Factors	As per air quality, the reduction of vehicles using the route and the use of more sustainable transport from a modal shift away from private vehicle use will cut emissions therefore contributing to greenhouse gas emissions targets set by the Scottish Government. The level of reduction of emissions is dependent on level of modal shift achieved. The effect on climatic factors is likely to be negligible to positive.	<> to ✓
Material Assets	The development of harder interventions such as bus lanes or an express bus link to Glasgow, may improve journey times creating greater connectivity between Milngavie and Bearsden with Glasgow.	

Table C5: Option 4 – Improve Ticketing

Environmental Topic Area	Assessment	Potential Effect
Biodiversity	It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on Biodiversity.	<> to ✓
Water Quality	It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on the water environment.	○
Soil	It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on soil or agriculture.	○
Cultural Heritage	It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on cultural heritage assets.	○
Landscape	It is unlikely that improving the integration of ticketing between means of public transport would result in any impacts (negative or positive) on landscape or visual amenity.	○
Population & Human Health	Greater use of public transport is likely to reduce vehicle emissions within the study area and improve public health from improved air quality. Reduced vehicles in use of congested routes are likely to reduce stress and frustration of road users from improved journey times. The magnitude of these effects is dependent upon the scale of modal shift achieved as a result of this Option.	✓
Air Quality	Increased use of bus and train from greater ease of ticketing would increase air quality on account of reducing vehicle emissions. The scale of benefit is dependent on the number of journeys where public transport is used in preference to private vehicle use.	✓
Climatic Factors	As per air quality above, the preferred use of public transport as an alternative to private vehicles will cut emissions from transport in East Dunbartonshire. This will assist in Scotland's greenhouse gas emissions targets for 2020.	✓
Material Assets	Introducing smartcard ticketing accessible throughout all of East Dunbartonshire will increase accessibility of public transport throughout and increase connectivity between Milngavie and Bearsden with larger economic centres, specifically Glasgow, but also Edinburgh and Stirling.	<> to ✓

Table C6: Option 5 – Enhanced Walking and Cycling

Environmental Topic Area	Assessment	Potential Effect
Biodiversity	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, such as: a, d, e, and f. As opposed to the others which are location specific measures.	✓
Water Quality	It is unlikely that improved walking and cycling networks would improve or deteriorate the water environment.	○
Soil	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.	○
Cultural Heritage	It is unlikely that improving the walking and cycling network within the study area would result in any impacts (negative or positive) on	○

Table C6: Option 5 – Enhanced Walking and Cycling		
Environmental Topic Area	Assessment	Potential Effect
	cultural heritage assets.	
Landscape	It is unlikely that enhancing the walking and cycling network would result in any significant impacts on landscape or visual amenity. Adverse effects may occur where interventions within this Option require the development of new paths or segregation of cycle routes.	<>
Population & Human Health	Human health will likely improve as a result of the development of many of the sub-options. Improvements to human health will result from: greater activity of the population; improved air quality due to reduced vehicle usage/ journeys; and reduced stress and frustration from road users due to reduced congestion. This Option allows for accessibility of areas and facilities for those less able to rely on private vehicles. There is likely to be a beneficial effect on the surrounding population and human health as a result of enhanced walking and cycling.	✓✓
Air Quality	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 (such as rail, as per sub-options a, b, e, f, and g) as a result of greater accessibility. As such there is likely to be a beneficial effect on surrounding Air Quality.	✓
Climatic Factors	As per air quality, 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 this Option will result in reduced emissions and a positive contribution to Scotland's targets of reducing emissions by 42% by 2020. As such there is likely to be a beneficial effect on climatic factors.	✓
Material Assets	It is unlikely that there will be any direct effects on material assets as a result of greater pedestrian and cycling networks.	○

Table C7: Option 6 – Bus Service Improvements		
Environmental Topic Area	Assessment	Potential Effect
Biodiversity	The development of a shuttle service to stations from residential areas will potentially improve air quality should it promote the use of these sustainable means of transport and generate a modal shift from private vehicle use. This in turn may increase biodiversity within the study. 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 possibly creating potential adverse effects on biodiversity. Overall there is likely to be a negligible effect on the biodiversity aspect of the area.	<>
Water Quality	It is unlikely that the water environment will be impacted as a result of either introducing shuttle buses between stations and residential areas, or increasing the frequency of buses on the A81 corridor.	○
Soil	It is unlikely that soils will be impacted as a result of either introducing shuttle buses between stations and residential areas, or increasing the frequency of buses along the A81 corridor.	○
Cultural Heritage	Increasing bus services to rail stations and the frequency of buses along the A81 would increase the risk of physical damage to cultural heritage sites adjacent to the rail stations and along A81 due to increased vibration. This may be mitigated should the introduction of these services reduce other traffic passing these sensitive sites. If any effect does occur it is likely to be negligible.	<>

Table C7: Option 6 – Bus Service Improvements		
Environmental Topic Area	Assessment	Potential Effect
Landscape	Impacts on landscape and visual amenity are not likely to be significant.	<>
Population & Human Health	The development of a shuttle service to stations from residential areas and also increased frequency of services along the A81 will potentially improve air quality should they promote the use of these sustainable means of transport and generate a modal shift from private vehicle use. Improved air quality would aid in the improvement of human health. This Option also allows greater accessibility of wider areas to those that are unable to rely of private vehicles. A potential beneficial effect on human health and the surrounding population is likely.	✓
Air Quality	The development of a shuttle service to stations from residential areas will potentially improve air quality should it promote the use of these sustainable means of transport and generate a 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.	<>
Climatic Factors	The promotion of more sustainable means of transport will potentially reduce emissions from transportation within the study area. This reduction would contribute positively to Scotland's greenhouse gas emission targets of 42% by 2020.	<>
Material Assets	Greater connectivity within the area to quicker means of transport to larger economic centres such as Glasgow may increase the attractiveness of Milngavie and Bearsden as a place to live in and commute. This Option also increases the connectivity of the towns to those that do not have readily available access to private vehicles. Overall there is likely to be a beneficial effect on material assets as a result of improved connectivity to larger economic centres and more isolated towns.	✓

Table C8: Option 7 – Junction Improvements		
Environmental Topic Area	Assessment	Potential Effect
Biodiversity	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. If the junction improvements include lighting changes, surrounding biodiversity could be adversely impacted, however appropriate mitigation will ensure the effects are kept to a minimum.	<>
Water Quality	No impacts on the water environment are predicted as a result of implementing a gyratory at this junction.	○
Soil	There is expected to be no effect to soil as a result of the proposed gyratory system. If any excavation works are needed to include associated infrastructure, appropriate mitigation will ensure any effect is minimised to negligible / no effect.	○
Cultural Heritage	Impacts on cultural heritage assets within the surrounding location are dependent on the requirements of construction within this area. The Antonine Wall WHS passes through this junction along the B8049, as well as other heritage sites located within the surrounding area. These sites may be physically damaged during construction activities or by increased vibration during operation should traffic	✗

Table C8: Option 7 – Junction Improvements		
Environmental Topic Area	Assessment	Potential Effect
	levels increase through this junction. Overall there is likely to be an adverse effect to surrounding cultural heritage.	
Landscape	Development of a gyratory at this location is not likely to result in impacts on townscape or visual amenity.	○
Population & Human Health	Should the introduction of a gyratory at this location improve traffic flow through this section of the A81 some benefits to welfare may be felt should this reduce stress and frustration of current users of the route. 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.	<>
Air Quality	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.	<>
Climatic Factors	It is unlikely that there will be any significant effects on climatic factors.	○
Material Assets	It is unlikely that there will be any effects on material assets.	○

Table C9: Option 8 – Variable Message Signs		
Environmental Topic Area	Assessment	Potential Effect
Biodiversity	It is unlikely that variable message signs will result in any effects on biodiversity within the study area.	○
Water Quality	It is unlikely that variable message signs will result in any effects on the water environment within the study area.	○
Soil	It is unlikely that variable message signs will result in any effects on soils within the study area.	○
Cultural Heritage	The development of VMS may cause indirect adverse effects on the setting of cultural heritage sites and Conservation Areas. The significance of these potential effects is dependent on the scale of the signs and their proximity to the sensitive sites within the study area.	<> to ✕
Landscape	Developing VMS over transport routes within the study may result in adverse effects on townscape/ landscape and the visual character of the area. These effects could be of greater significance should they be within the near vicinity of any sensitive visual receptors.	<> to ✕
Population & Human Health	Should these prevent areas of congestion, stress levels may be improved for all road users, and prevent any accidents that may be caused from frustration.	<> to ✓
Air Quality	It is unlikely that variable message signs will result in any significant effects on air quality within the study area. Some beneficial effects may occur should the Option result in the diversion of traffic away from areas of congestion.	<>
Climatic Factors	It is unlikely that variable message signs will result in any effects on climatic factors within the study area.	○
Material Assets	It is unlikely that variable message signs will result in any effects on material assets within the study area.	○

Table C10: Option 9 – Highway Options		
Environmental Topic Area	Assessment	Potential Effect
Biodiversity	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. The significance of the potential effects on biodiversity is dependent on the initiatives adopted and are therefore unknown.	?
Water Quality	It is unlikely that the water environment will be significantly impacted as a result of this Option. 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. The magnitude and significance of effect is dependent on the initiatives adopted and is therefore unknown.	?
Soil	Soils are unlikely to be impacted as a result of highway narrowing or placemaking initiatives.	O
Cultural Heritage	Cultural heritage sites may be improved from placemaking initiatives by promoting greater awareness of the sites within the study area and their importance. Some sites may also benefit from greater financial support through increased visitor numbers. The significance of the potential beneficial effects is unknown as it depends solely on the initiatives adopted.	?
Landscape	It is not likely that there will be any improvements to townscape or visual amenity as a result of this Option.	O
Population & Human Health	Speed reductions on highways will improve health and safety along these routes. However should there be any increases in journey times along these routes, users may become more frustrated and stressed during peak times/ in periods of congestion. Effects are not likely to be significant.	<>
Air Quality	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. Potential impacts on air quality are unknown.	?
Climatic Factors	There are not likely to be any effects on climatic factors as a result of this Option.	O
Material Assets	Greater publication and support of town centre areas may result in a greater number of visitors and increased profile of Milngavie and Bearsden towns and associated increases in the usage of services within provided within these areas.	O