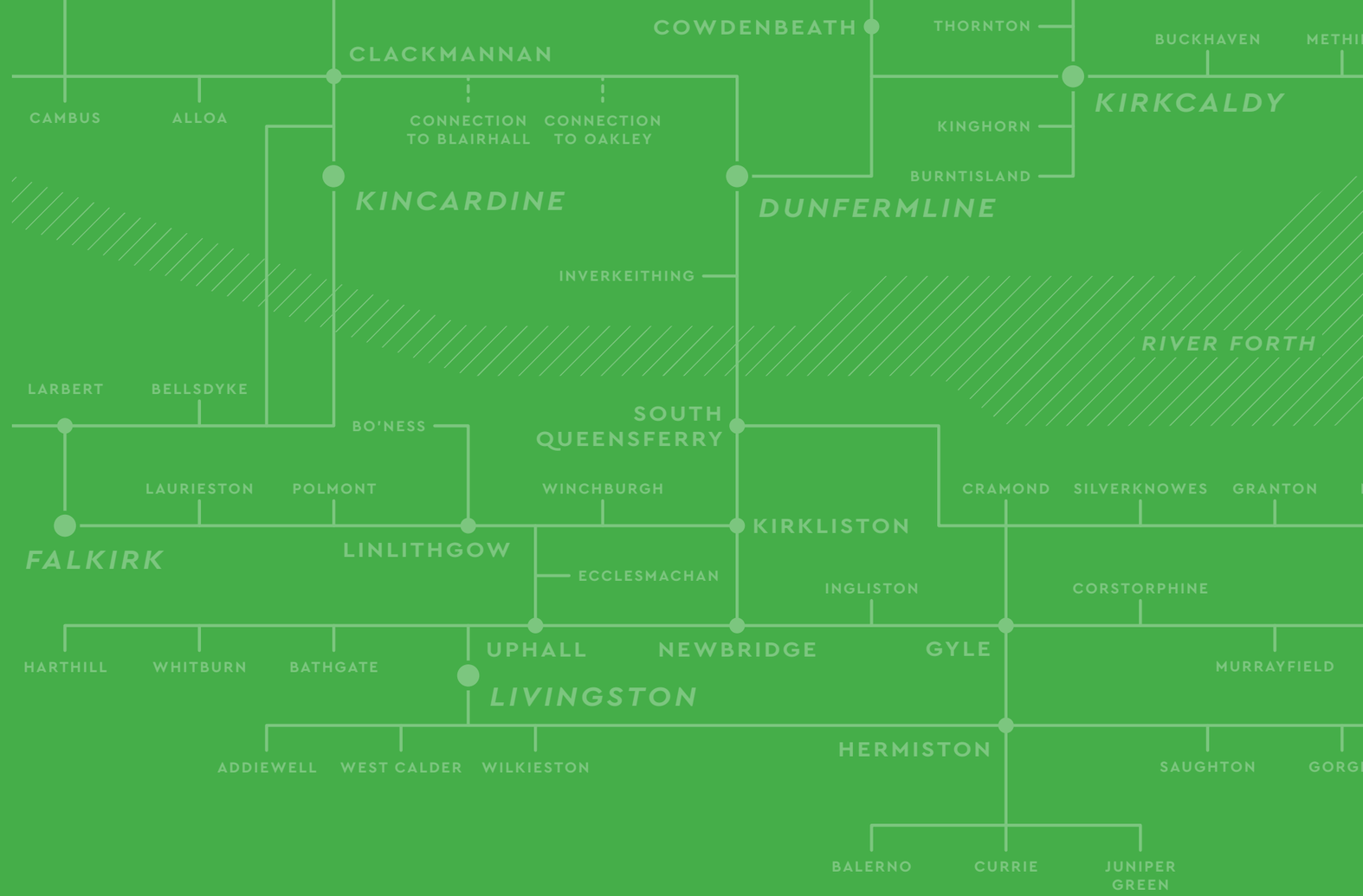
SESTRAN STRATEGIC NETWORK

Cross boundary active travel routes, connecting people and places



EXPLORE...

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THIS IS AN INTERACTIVE DOCUMENT, PLEASE USE THE TABS AND BUTTONS TO HELP NAVAIGATE THROUGHOUT THIS REPORT.

This project has been funded by the Scottish Government and delivered through Sustrans' Strategic Partnerships programme in partnership with SEStran to plan future walking and cycling networks.

This report has been updated as of December 2023 as a result of a review of the Multi-Criteria Assessment (MCA). Given the changes in travel patterns, as well as the availability of new data since 2019, the MCA has been updated and consulted on with the partner local authorities to ensure their forthcoming priorities have been considered. This update therefore contains new information in relation to the MCA as well as the prioritisation of the SEStran Strategic Network.

The network will see a return of over ***£1,400 MILLION*** *in benefits for the SEStran region*

600KM *network of high quality routes physically separated from traffic*

Reduction in CO_2 *emission by over* ***7000 TONNES*** *each year*

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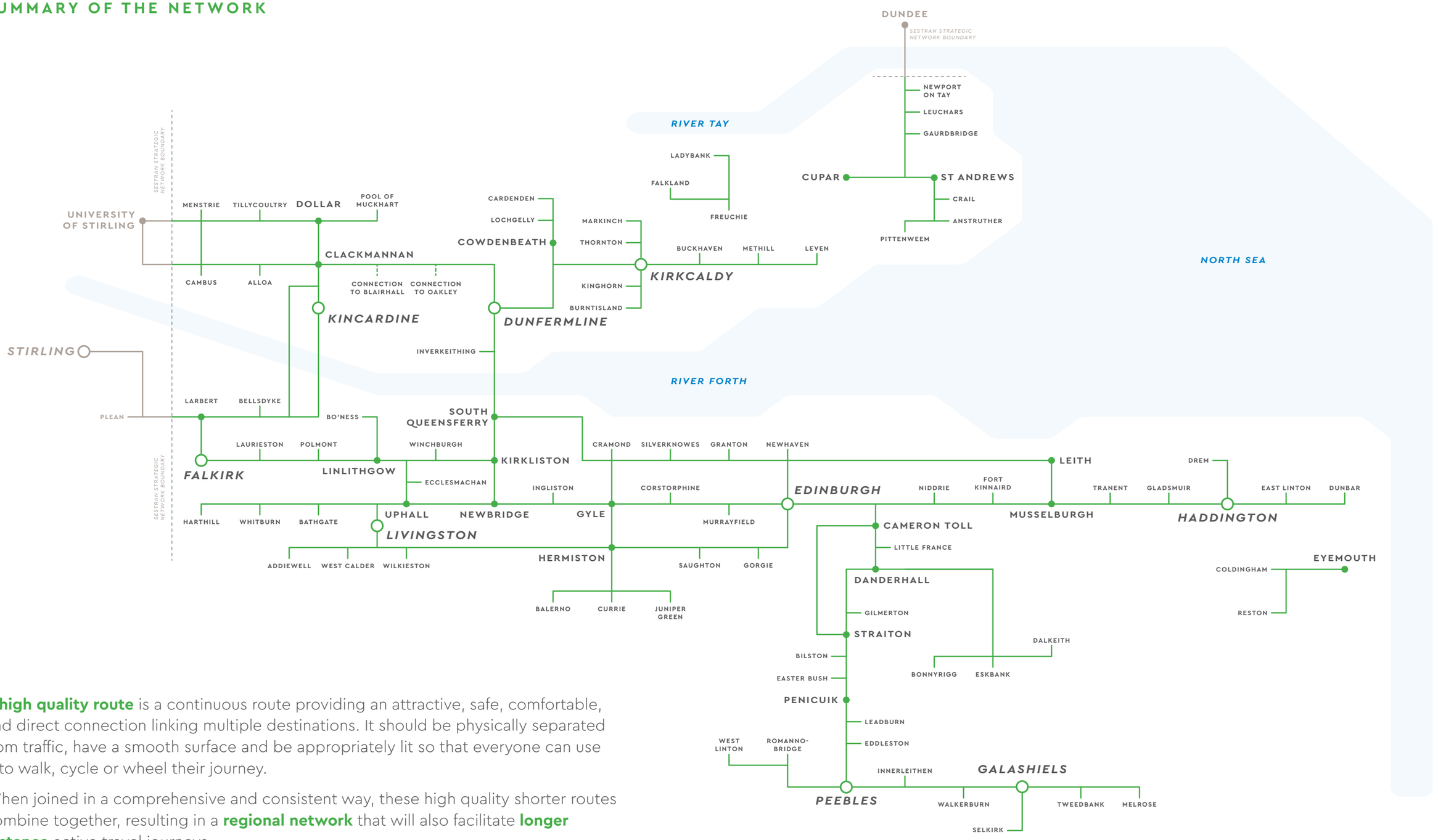
SUMMARY OF THE NETWORK



A **high quality route** is a continuous route providing an attractive, safe, comfortable, and direct connection linking multiple destinations. It should be physically separated from traffic, have a smooth surface and be appropriately lit so that everyone can use it to walk, cycle or wheel their journey.

When joined in a comprehensive and consistent way, these high quality shorter routes combine together, resulting in a **regional network** that will also facilitate **longer distance** active travel journeys.

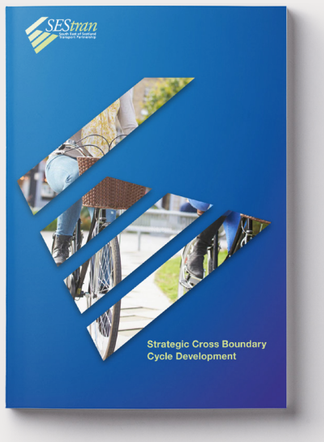
INTRODUCTION

The SEStran Strategic Network presents a framework for coordinated development of cross boundary active travel routes connecting cities, towns, neighbourhoods, settlements and public transport hubs in the SEStran region.

The Network builds on the 2015 SEStran **"Strategic Cross Boundary Cycle Development"** study, with a focus on identifying development and improvement opportunities for cross-boundary commuter routes.

An optimal network has been identified and prioritised according to predicted current and future journeys made in the region, with the aim of helping shift focus away from delivery of one-off active travel projects or investments to a more shared vision of a comprehensive, region-wide strategic active travel network.

Delivery of this network will provide significant new opportunities for enabling walking and cycling and in particular cross boundary trips and links to public transport hubs. The Strategic Network provides clear recommendations and a phased project bank which when implemented will deliver the vision for a high quality regional active travel network.



STRATEGIC CROSS BOUNDARY CYCLE DEVELOPMENT
(click image to download brochure)

A GAME CHANGING NETWORK

Within the SEStran region at a local authority level, there is a diverse range of starting positions for active travel participation, promotion, provision and scheme development. Whilst, recognising this, there are many opportunities for significantly increased walking and cycling numbers from well-targeted strategic regional interventions.

Infrastructure caters for demand where it already exists, but some form of prediction, imagination and foresight is needed to develop plans which can help transform the active travel network in the region. This network proposal will maximise the impact that available investment can have, targeting interventions throughout the region to get more people on the move through active travel.

The development of this network has moved away from the **"Predict and Provide"** methodology into a new **"Vision and Validated"** approach focussing on outcomes as opposed to outputs. A key component of our assessment approach was a rigorous engagement exercise with stakeholders, which was instrumental in informing the project findings and recommendation.

"A high quality route would be considered to be a continuous route providing an attractive, safe, comfortable, and direct connection linking multiple destinations. It should be physically separated from traffic, have a smooth surface and be appropriately lit so that it can meet the accessibility of any potential user."

METHODOLOGY

Through collaborative client and stakeholder working, the network was constantly reviewed with emerging options tested against baseline parameters as both a circular and a dynamic process. In more detail the following general project stages informed the development of the strategic network.

- Desktop Review
- Site Audits
- Engagement/Consultation
- Route Development/Filtering
- Multi-Criteria Assessment/Cost Benefit Analysis

This multi-stage approach allowed the strategic active travel potential of the region to be assessed fully and then used to develop a network that can be delivered in phases. This approach harnesses the power of secondary data combined with on-site visits and local knowledge derived through stakeholder conversations to inform a strong evidence base that has defined the strategic network plans.

THIS REPORT PROVIDES

- Up-to-date information and audits of existing active travel networks and corridor proposals within the region.
- Information and clear, high quality mapping of potential active travel networks.
- A proposal for investment in active travel infrastructure across the region, presented in phases, to help guide potential future projects and funding bids.

DESKTOP REVIEW

The desktop data gathering, review and analysis has been undertaken in a comprehensive manner, building on the work undertaken previously by SEStran in 2009 and 2015. The desktop review assisted in the initial identification of potential opportunities and constraints, helping to tailor and focus the subsequent site audit and stakeholder engagement exercises and ultimately aiding in the development of the strategic network.

The data gathering stage involved a review of sources of geographic information, including but not limited to the following:

Standard maps with walking and cycling information detailed

Specialist active travel maps

High-level strategies and investment plans with geographic details

Studies: such as active travel commissions by local authorities and SEStran

Masterplans and development proposals

Flow data: including census, travel plan and local authority data collection

Context and demographics

Public transport data

The following headlines have been summarised during the desktop review stage. Alongside these the location of Air Quality Management Areas has been reviewed, where it is crucial that people are encouraged to travel more actively and sustainable through improved travel opportunities to reduce car travel. Census data was also reviewed for demographics and population data which were used to score routes in the multi-criteria assessment.

Mapping

A range of mapping sources were reviewed to establish a baseline map of existing active travel infrastructure throughout the SEStran region. It should be noted that this information was further validated and supplemented by other phases of the study methodology (including site visits and stakeholder interviews). This approach is detailed in subsequent sections of this report.

- Open Street Mapping
- Google Maps and Street View
- OS mapping
- Sustrans National Cycle Network Route Map
- Core Path Plans
- Local Walking and Cycling Maps and Leaflets
- Cycle Streets Data
- Local Authority GIS Atlases

Active Travel Commissions and Proposals

Active Travel Strategies, Local/Regional Transport Strategy documents, feasibility studies and design studies were all sourced and used to identify the following active travel proposals within the SEStran region and have been highlighted as important in the development of the strategic network as they are located within corridors where there are high levels of movement. This is not an exhaustive list but highlights studies relevant to the strategic network.

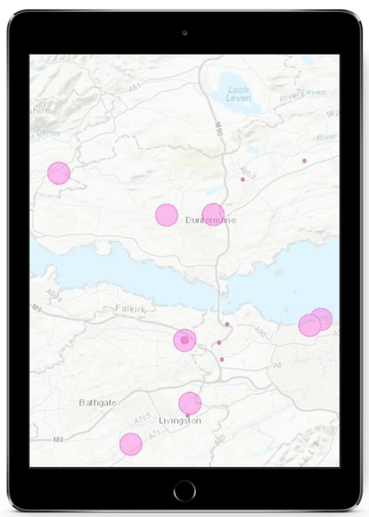
PROJECT TITLE	STAGE / STATUS
East Lothian AT corridor	Detailed Design
Crail-St Andrews	Feasibility
Musselburgh – Portobello	Feasibility Design
Clovenfords – Walkerburn	Feasibility
A71 West Calder – Hermiston	Feasibility
A7 Wisp – Sheriffhall	Feasibility
Winchburgh – Kirkliston	Feasibility
A9 Stirling – Larbert	Feasibility
A701 Straiton – Gowkley Moss	Feasibility
Musselburgh – Tranent	Detailed Design
Kirkcaldy – Buckhaven	Detailed Design
Edinburgh West Link	Detailed Design
Cameron Toll-Bioquarter	Detailed Design and Consultation
Edinburgh City Centre West – East Link	Detailed Design and Consultation
Meadows to George Street	Detailed Design and Consultation
George Street and First New Town redesign	Feasibility Design

Masterplans and Development Proposals

When developing the strategic network, consideration was given to major development proposals within the SEStran area identified within the desktop review stage, this information has been gathered from local authority development plans and the planning applications Scotland website. Below major development proposals within the SEStran area are highlighted, those developments that are 400 units or above have been considered when developing the network as anything above this number of units is classed as major development.

Examples of the largest developments include:

- The Shawfair Masterplan which details plans for the Shawfair Rail Station, town centre, 3 schools, community woodland, open space and capacity for 3990 housing units.
- Leith Waterfront, Western Harbour has the capacity for 3000 housing units in the north of Edinburgh.
- The mixed-use development to the north of Dunfermline with capacity for 4200 units which will include housing, this will also involve an active travel link connecting into the main Dunfermline settlement areas.



DEVELOPMENT (UNITS)

- 400 – 750
- 750 – 1000
- >1000

MAJOR DEVELOPMENT LOCATIONS ACROSS THE SESTRAN REGION

Population and Flow Data

In order to review existing movement within the SEStran region and identify desire lines for future active travel provision, the census data source for commuting journeys, Datashine (*www.scotlandcommute.datashine.org.uk*) was used. Key travel movements within the SEStran region were identified, these movements currently include a high proportion of car travel and would therefore benefit from active travel infrastructure that will provide more sustainable opportunities of travel for people. Some of the key travel movements identified at this stage were as follows:

- North Midlothian (Straiton, Dalkeith, Bonnyrigg etc.) to Edinburgh City Centre
- Dalkeith to Edinburgh Bioquarter
- Straiton to Penicuik
- Edinburgh City Centre to Edinburgh Park
- Edinburgh City Centre to Musselburgh (Queen Margaret University)
- Edinburgh City Centre to Currie (Heriot Watt University)
- Dunfermline to Rosyth
- Dunfermline to Edinburgh Park and Edinburgh City Centre
- East Lothian (Haddington, Tranent, Dunbar etc.) to Edinburgh City Centre
- Peebles to West Linton
- Livingston internal movements (north to south)
- Falkirk to Livingston, Edinburgh and Glasgow
- Alloa to Stirling
- Kincardine to Alloa

In addition to reviewing the commuter census data, Strava Heat Maps, the Scottish Index of Multiple Deprivation 2020, Local Development Plans, Public Transport Maps and bicycle/vehicle counts were sourced, analysed and used to score routes in the multi-criteria assessment.

KEY MOVEMENT CORRIDORS AND POPULATION FLOWS ACROSS THE SESTRAN REGION

Public Transport Data

A review of the existing and proposed key public transport interchanges was undertaken to identify those that are important to include within our strategic network. Given there are longer distances being travelled within the SEStran area, it is recognised that multi-modal journeys are important and have therefore ensured that links to key commuter interchanges are included within the network.

There were a number of locations that were identified as key commuter interchanges for bus travel, this included Halbeath Park and Ride, Inverkeithing Park and Ride, Hermiston Gait Park and Ride, Ingliston Park and Ride, Forth Valley Hospital Bus Stances, Kincardine Bus Stances, Straiton Park and Ride, Sheriffhall Park and Ride and Newcraighall Park and Ride. In addition to this there are a number of bus stops in Peebles, Innerleithen, Walkerburn, Clovenfords, Galashiels and Melrose at which the Bike Bus service X62 stops at.

The figure shows patronage numbers at rail stations across the SEStran region, based on the annual number of entries and exits at a station. It identifies where good active travel linkages, at a standard that meets usage numbers, would be beneficial (for example Edinburgh stations, Kirkcaldy and Inverkeithing). Also identified are those stations which could be better utilised and would benefit from better access in the form of active travel infrastructure (for example Drem and Addiewell Stations). Links to such locations have been included within our strategic network. The table highlights the stations with the largest recent increase and decrease in patronage within the SEStran region. The large increases at Edinburgh Gateway and Shawfair is due to them being new stations. The decrease in patronage at South Gyle and Addiewell will be due to a number of reasons, with poor walking and cycling connections to these stations likely to be contributory factor. Addressing these connections has been considered in the planning of the network.

SUMMARY

As previously stated, the desktop review stage helped focus site audit and stakeholder engagement exercises and ultimately aided in the development of the strategic network. A GIS database was compiled with a wealth of information that could be used as reference in the subsequent stages as well as justification for the chosen routes.

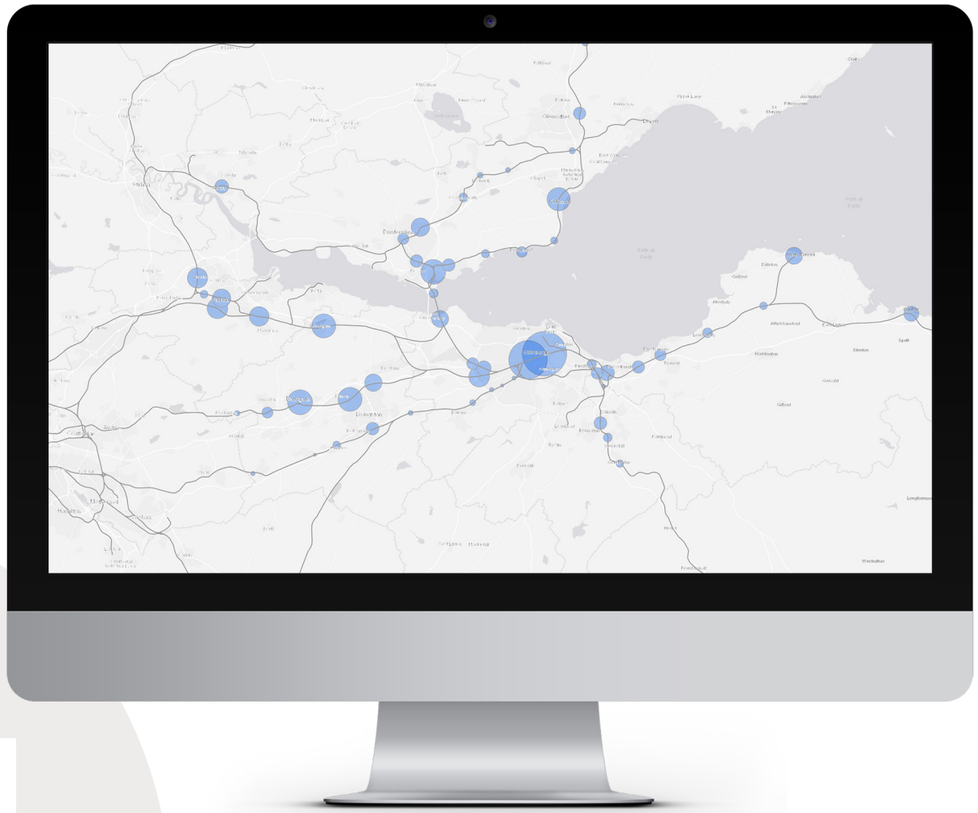
2017/2018 EXITS AND ENTRIES

50,000

500,000

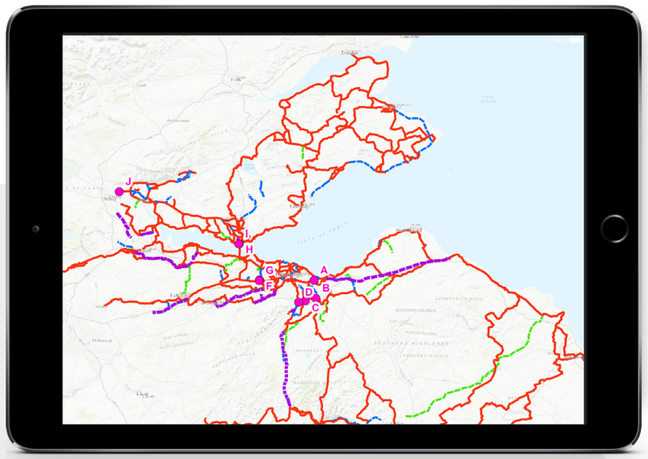
25,000,000

RAILWAY STATION EXIT AND ENTRY FIGURES FOR STATIONS IN THE SESTRAN REGION



Station Name	% Change from 2017 to 2018
Edinburgh Park	387.2
Shawfair	42.1
South Gyle	-12.9
Addiewell	-4.3

RAILWAY STATIONS WITH THE GREATEST PATRONAGE CHANGES BETWEEN 2017 AND 2018 WITHIN THE SESTRAN REGION



DESKTOP REVIEW DATA WAS UTILISED DIGITALLY ONSITE

SITE AUDITS

Routes examined during site audits focussed on cross boundary connections, links between towns and cities and public transport hubs.

Digital technologies were used to ensure that data collected was accurate as well as streamlining data handling.

To achieve this, the iPad-based Collector app was used on site which allows for "pins" to be dropped on a map at areas of interest and photos taken meaning that findings are geospatially recorded using GPS.

Information gathered during the desktop review exercise was viewable within the app on site meaning that specific issues or interest areas could be easily targeted.

Information for various categories was recorded on site to gather a broad understanding of the characteristics of each place.

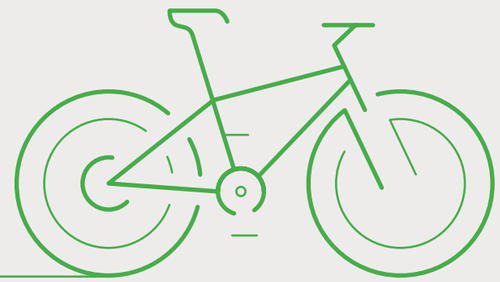
These characteristics are as follows.

- General Land Use
- Local Attractor (employment/leisure/retail)
- Surfacing
- Surface Quality
- Pedestrian Infrastructure
- Cyclist Infrastructure
- Footway Width
- Cycle Provision Width
- Crossing Facility
- Pedestrian Flows
- Cyclist Flows
- Lighting Provision
- Signage/Wayfinding
- Maintenance of route
- Directness
- Safety (daytime)
- Safety (night-time)
- Proximity to population

AUDIT LOCATION POINTS

250km+

of on and off-road corridor and routes were audited throughout the SEStran region



The missing links and barriers identified in the 2015 Strategic Cross Boundary report formed the starting point to the audit process. This allowed for an updated assessment of these missing links. In addition to this, the comprehensive desktop review process undertaken previously informed several corridor areas to audit based on census movement data and key land uses and travel demand.

To supplement the physical site audits, a comprehensive digital site audit process was undertaken.

MISSING LINKS FROM THE 2015 STRATEGIC CROSS BOUNDARY REPORT

THE SITE AUDITS PROCESS

Specific areas within each of the identified corridors were visited. Some corridors were targeted more than others based on the findings from the desktop review or volume of potential strategic routes in each corridor. The map below shows the missing links from the 2015 Strategic Cross Boundary Report which were audited.

2015 identified missing links

21 out of 28 missing links were audited as they were deemed as strategic. These links formed a basis for areas to target.

Online/virtual site audit

For areas where a prior understanding of infrastructre or characeristics was held online mapping tools were used to audit. This method was also usefully applied to areas which physical audits were to take place for familiarisation purposes.

Physical site audit

First hand site audits were undertaken using iPads and the Collector app to gather geospatial data and images of the areas informed by previous stages in the audit process.

Interest areas from desktop review

Supplementary data sources including census movement data, proposed development areas and land uses informed audits. These helped form an understanding of each area prior to visit.

FINDINGS

Connections/Extensions to Existing High Quality Infrastructure

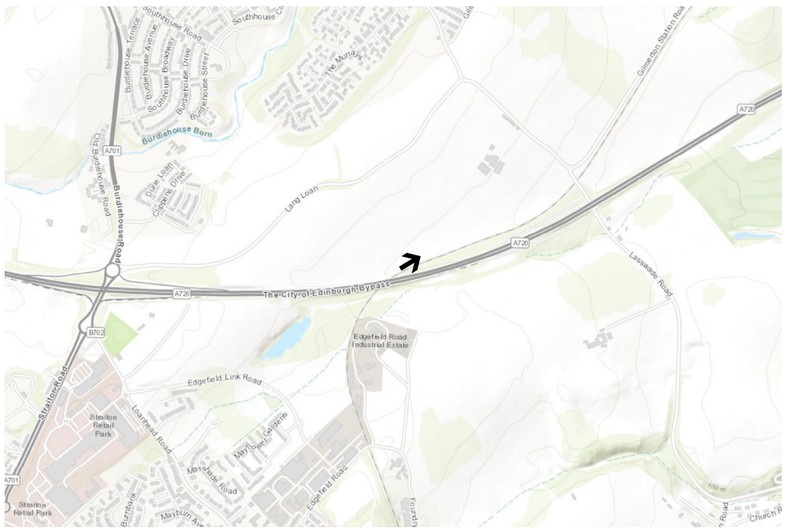
The audits revealed that there are several locations where high quality active travel infrastructure is in place, **however intermediate connections to make a coherent and strategic network are missing.** The quality of these individual sections of route are suitable and indeed facilitate local trips, and when missing connections are provided would result in sections of a wider strategic network. The example shows the path on the discussed railway line at Loanhead which is direct, surfaced and well-lit.

Existing Infrastructure not suitable for strategic network

It was also found that where infrastructure is in place it fails to meet the standards set for the new network (i.e. the definition of a high quality route, page 3). Non-strategic routes were identified and typically consisted of more leisure focussed routes such as canal paths, indirect routes or routes hidden from view of other travellers. These routes do not fit the definition of a strategic route, outlined previously, as consisting of a direct connection linking multiple destinations, have a smooth surface and be well lit.
The example shows on road cycle lanes on Old Dalkeith Road which do not meet the definition of strategic infrastructure.

EXAMPLE OF PATH ON THE DISUSED RAILWAY LINE AT LOANHEAD WHICH IS DIRECT, SURFACE AND WELL-LIT.

EXAMPLE SHOWS ON ROAD CYCLE LANES ON OLD DALKEITH ROAD WHICH DO NOT MEET THE DEFINITION OF STRATEGIC INFRASTRUCTURE.



Existing Infrastructure suitable or can be upgraded to include in strategic network

Throughout the SEStran region, **several routes were identified as being or could be made suitable to form part of a strategic network.** The routes connect settlements and public transport interchanges which allow improved travel choices to be made. The example shows a shared footway cycleway on Bellsdyke Road which is wide, of good surface quality and highly visible.

Quick Wins

The site audits revealed recurring issues along several of the routes including lack of lighting provision, general path maintenance (including verge encroachment) and a lack of safe crossing points to access active travel infrastructure. If addressed, these routes would meet the definition of a strategic network. Many of these can be resolved relatively easily allowing them to be classified as **"quick wins"**. Ensuring maintenance plans are put in place and adhered to, lighting provision is upgraded and access to routes is improved. The example shows the access to the Loanhead railway path. If upgraded to formal crossing provision active travel users would be able to more safely cross the road to access the path.

The technical appendix outlines in more detail which routes require minor interventions to resolve route issues.

EXAMPLE SHOWS A SHARED FOOTWAY CYCLEWAY ON BELLSDYKE ROAD WHICH IS WIDE, OF GOOD SURFACE QUALITY AND HIGHLY VISIBLE AND APPROPRIATE IN THIS INSTANCE AS THERE IS LOW FOOTFALL. HOWEVER, IN THE WRONG LOCATION A SHARED FOOTWAY/CYCLEWAY LIKE THIS WOULD FALL BELOW THE NETWORK STANDARD.

EXAMPLE SHOWS THE ACCESS TO THE LOANHEAD RAILWAY PATH.

STAKEHOLDER ENGAGEMENT

The stakeholder engagement stage was an important step in developing and informing the strategic network in collaboration with SEStran, Sustrans, the local authorities and other identified key stakeholders. The process gathered feedback from stakeholders on the key issues from their perspective and their thoughts on strategic network corridors across the region.

The stakeholder engagement stage involved the following steps:

Inception

Agreed a list of stakeholders with SEStran

1

Initial Engagment

Stakeholders were contacted, 1 to 1 meetings and telephone calls were held

2

Stakeholder Workshop

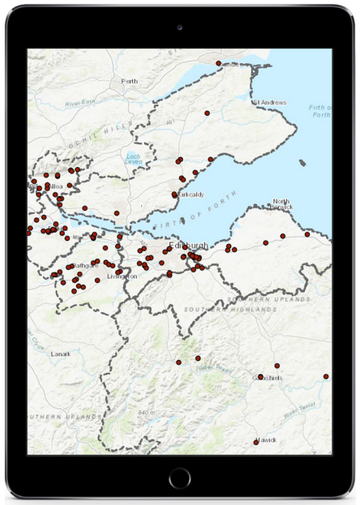
A network planning workshop was held to which all engaged stakeholders were invited

3

Organisation
Clackmannanshire Council
City of Edinburgh Council
East Lothian Council
Falkirk Council
Fife Council
Midlothian Council
Scottish Borders Council
West Lothian Council
Scottish Natural Heritage
ScotRail
Edinburgh Airport
Transport for Edinburgh
Sustrans Scotland
University of Edinburgh
Edinburgh Napier University
Heriot Watt University
Forth Valley College
Queen Margaret University

EXTENSIVE STAKEHOLDER ENGAGEMENT UNDERTAKEN

WHAT STAKEHOLDERS TOLD US



LOCATION OF COMMENTS SUBMITTED VIA COLLECTOR

Initial contact was made with officers at each of the eight local authorities as well as other interested stakeholders. Our Digital Collector app was used to collect comments and information from stakeholders, allowing for accurate and efficient data collection and to identify comments and observation banded into common themes. The collector app also fully integrates with GIS software which ensures a seamless transition between onsite data collection and desktop analysis.

Some key findings from these initial conversations was as follows.

KEY CROSS BOUNDARY MOVEMENTS

Clackmannanshire ↔ Falkirk

Clackmannanshire and Falkirk ↔ Stirling

The Lothians ↔ Edinburgh

Fife ↔ Edinburgh and Dundee

Borders ↔ Edinburgh

High levels of internal movement have been highlighted by all local authorities.

Key Barriers and Gaps in Active Travel network

- Multimodal journeys are important within the SEStran region due to the length of distances being travelled, this is particularly important in the Scottish Borders and Fife.
- Many existing junctions on strategic network corridors are difficult to negotiate acting as significant barriers for active travel.
- Awareness of some routes is low, particularly those that are off-road.

Emerging Active Travel Proposals

- Many projects within local authority areas promoting and focusing on short local active travel trips as opposed to longer distance strategic commuter type trips.
- East Lothian Cycle Highway linking from Dunbar into Edinburgh.
- City of Edinburgh study looking at the feasibility of active travel on arterial routes.

Public Transport

- Proposals for new travel hubs/park and ride sites/ new train stations, for example confirmed proposals in East Linton, Winchburgh, and Levenmouth.
- There is poor active travel connectivity to some existing stations, for example Leuchers, Ladybank and Addiewell Stations.

Major Development Proposals

- Significant residential developments planned/being built throughout, for example Blindwells in East Lothian and Gallatown in Fife.
- Large mixed-use developments, for example the investment zone at Grangemouth, Longannett train factory and the Edinburgh International Business gateway in West Edinburgh.

" There is opportunity for cycle routes to link into key transport hubs, stations and bus stops"

FIFE COUNCIL

STAKEHOLDER WORKSHOP

Following the initial conversations, in January 2020 a practical cycling and walking network planning session was held. The workshop resulted in the production of maps identifying the key barriers to active travel throughout the region, existing infrastructure that is currently being used for strategic trips and emerging proposals for a strategic active travel network.

THEMES/OUTPUTS FROM WORKSHOP

Desired Cross Boundary Movements and Internal Links to Public Transport

- Links to new rail stations from surrounding developments
- Links to rail stations from surrounding developments with no rail provision, particularly in more rural areas
- Links to P&Rs and key bus stops
- Links between settlements with shared services (community/health, retail/education)
- Links to new development, residential and employment opportunities in particular
- Links along key commuter routes, linking places to key employment zones and education

Key Barriers and Gaps in Active Travel network

- Distances between settlements and to destinations can discourage people from walking or cycling
- Topography can often act as a barrier to people walking and cycling
- There are good sustainable travel connections using the NCN, however these can be indirect and not very visible
- Some NCN and other existing shared routes are at capacity and therefore alternatives are required

Solutions to Key Barriers

- Where existing infrastructure is already at capacity, suggest an alternative direct route
- E-bikes can be introduced to enable people to travel longer distances and on varying topographies by bike

Potential Active Travel Proposals

- Shared use active travel leisure route following the route of the Tweed, connecting the Borders with northern England
- New link along the B8046 to connect Ecclesmachan to Threemiletown
- The East Lothian cycle highway spanning from Dunbar to Musselburgh
- Edinburgh's City Mobility Plan contains active travel projects for Edinburgh City Centre, this contains proposals for new links which are important to consider when developing our network

Public Transport

- New stations proposed for locations throughout the region, located in East Linton, Winchburgh and Levenmouth with potential stations at Reston and Kincardine
- Opportunity to grow bike buses, such as recently introduced in Scottish Borders (*www.bordersbuses.co.uk/bike-friendly-buses*), with the potential for more stops to be located along the network to promote multimodal journeys

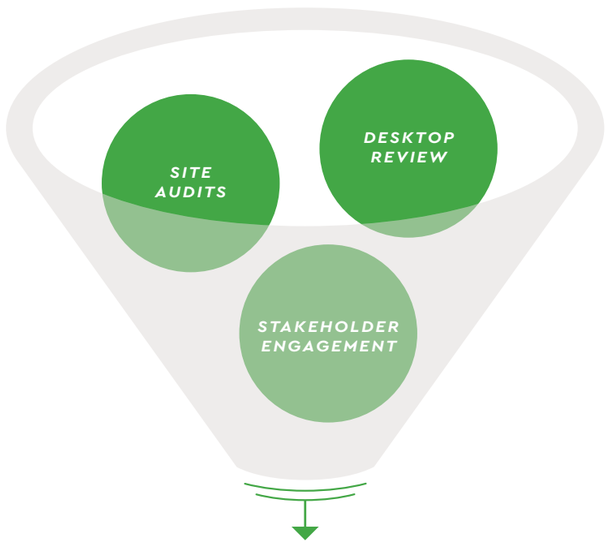
Major Development Proposals

- Lots of large residential developments >400 units located throughout the region
- Large employment and mixed-used development planned for around the region, with some providing significant employment opportunity

The output maps and themes and comments / feedback from the workshop were utilised to help inform and devise the emerging strategic network.

INTRODUCTION

Following the desktop data gathering/review, site audits and stakeholder engagement sessions, the route development stage of informing the strategic network was undertaken. Information gathered from all the prior stages was utilised to develop the network. The desktop review allowed for initial data gathering and a general understanding of movements in the SEStran region. The site audits provided a more in-depth review of where existing active travel infrastructure exists and allowed specific areas to be targeted. The stakeholder engagement sessions saw valuable input from those with detailed knowledge and understanding of the local area.



ALL PREVIOUS PROJECT STAGES
FED INTO THE ROUTE DEVELOPMENT PROCESS

ROUTE DEVELOPMENT

Data gathered from the desktop review such as census movement data, land use, proximity to public transport interchanges and future development areas was examined in tandem with the knowledge obtained from site audits. This information was compiled digitally to be spatially assessed and layered to give a clear indication of where routes were required. Where there was indication of a high concentration of movement in conjunction with a requirement or future desire for high quality active travel infrastructure, a route was developed. Stakeholder comments were also referred to and often aligned with the data gathered during the desktop review or findings from site which strengthened the justification for a route.

The breadth of information drawn upon meant that in most instances there was a clear route which best suited the strategic network development criteria. Where there were two potentially suitable routes in close proximity to each other, filtering was undertaken to weigh up the most desirable and suitable route to take forward.

As an example, routes from the south into Edinburgh city centre were subject to this further scrutiny which, again, was informed by the evidence base collated in the previous stages of the project. Desire lines, population centres and environmental constraints on the ground were examined in greater details to determine which route, out of two similar, was most appropriate.

Process of further scrutiny followed in instances of similar close-proximity routes.

1. ***Desire Lines***
2. ***Population Centres***
3. ***On-site Environmental Factors***

To ensure active and sustainable travel is a genuine choice as a means of transport for the majority of users in the SEStran region, high quality infrastructure needs to be implemented. This is imperative, in conjunction with routes being in the right place enabling people to travel to the destinations they need to on a daily basis. The delivery of the strategic network will ensure that the region is well connected, healthy and ready for a more sustainable and environmentally conscious future.

There were instances of distinct cross boundary movements over relatively small distances which could be made by active modes, should suitable infrastructure be in place. The Falkirk-Kincardine-Alloa route is one which is particularly pertinent as services are shared between the towns as well as there being several commuting trips between them. Falkirk and Alloa both have railway stations which Kincardine lacks as well as large supermarkets.

Similarly, in Fife there are key railway stations and park and ride interchanges which facilitate longer distance strategic cross boundary trips. Consequently, proposed routes in this area focus on connections to these transport hubs while enabling shorter strategic active travel journeys within Fife. Ladybank railway station is relatively remote, but it is a well-served station with frequent services permitting longer distance cross boundary travel. Similarly, the Halbeath and Ferrytoll Park & Ride sites serve as important connections to Edinburgh.

STAKEHOLDER WORKSHOP

A workshop was held where several of the stakeholders previously engaged with were invited back to share their views and ideas collaboratively. Routes were commented upon and new sections sketched on to maps to ensure that all options were considered. Following this session an internal review was undertaken where further analysis and development of routes was undertaken. This engagement proved to be highly useful as there were instances where local knowledge and discussions led to some routes being extended beyond that initially proposed. The east-west route in the Borders was extended eastwards to ensure that the connectivity benefits are extended to smaller outlying towns.

STRATEGIC ROUTES

Throughout the development of the network an emphasis on strategic regional routes was focussed upon. The routes developed facilitate cross boundary movements and are of a strategic nature within the SEStran region.

The temptation to connect routes where there was a gap between them, particularly over large distances, was resisted. This ensures that the evidence base and reasoning for route selection retains its value and is robust, meaning that a **"join the dots"** approach was not taken where it was not justified.

In certain areas the routes proposed as part of the strategic network make use of existing high-quality infrastructure. This ensures that existing, well used routes which users are already familiar with can be integrated into a network of longer more strategic cross boundary routes. Similarly, parts of existing routes that require relatively minor improvements or maintenance are included within the strategic network.

INTRODUCTION

To assess and analyse the strategic network, a multi-criteria assessment (MCA) methodology was adopted to assist with the proposed phasing of the network. This approach assists in understanding which section of the network proposals will have the greatest impact. The development of a MCA for the assessment of individual sections of the network has been developed for a regional strategic network. This is reflected in the assessment criteria selected for a MCA as well as the scale range for scoring. Several similar active travel scoring frameworks were examined prior to the development of the MCA.

This included government level policy as well as project specific examples. Throughout the development of assessment criteria, the project aim of **"identifying development and improvement opportunities for cross-boundary commuter routes"** in addition to the overarching SEStran vision, **"a regional transport system that provides all citizens of South East Scotland with a genuine choice of transport which fulfils their needs and provides travel opportunities for work and leisure on a sustainable basis"** was considered to ensure that these aligned and that the scoring categories were applicable.

Criteria		High = 5	Medium = 3	Low = 1
1. Demand (Sustrans Network Planning Tool)		Route is in close proximity to a very large pool of potential users (>250,000)	Route is in close proximity to a significant pool of potential users (100,000 – 250,000)	Route is in close proximity to a limited number of potential users (<100,000)
2. Local Policies, Strategies and Priorities		A high-profile route which has the power to transform active travel choices in the region and is identified in local strategies or plans	A route identified at least in part through local strategies or plans	A route not identified in any local strategies or plans
3. Connectivity to key services	3.1 Links to public transport- bus	Route is within close proximity to a major bus hub or station	Route is within close proximity to at least 1 local bus route or bus stop	Route is within close proximity to no bus routes
	3.2 Links to public transport- rail	Route is within close proximity to multiple key local and regional rail stations	Route is within close proximity to at least 1 rail station	Route is within close proximity to no rail stations
	3.3 Links to healthcare	Route is within close proximity to multiple key local and regional healthcare facilities	Route is within close proximity to route to at least one local healthcare facilities	Route is within close proximity to no healthcare facilities
	3.4 Links to education	Route is within close proximity to multiple key local and regional education facilities (4+)	Route is within close proximity to some (2–3) key local education facilities	Route is within close proximity to limited (1 or less) or no education facilities
	3.5 Links to existing active travel routes	Route is within close proximity to multiple local and regional active travel routes	Route is within close proximity to some key local active travel routes	Route is within close proximity to limited or no active travel routes
	3.6 Links to employment areas	Route is within close proximity to multiple local and regional employment areas	Route is within close proximity to some local employment areas	Route is within close proximity to limited or no employment areas
	3.7 Links to town centres/retail	Route is within close proximity to multiple town centres and/or retail centres	Route is within close proximity to at least one town centre and/or retail centre	Route is not within close proximity to a town centre and/or retail centre
	3.8 Links to future development	Route is within close proximity to a large / key regional future development	Route is within close proximity to at least one small future development	Route is not within close proximity to any key future developments
	3.9 Links to parks/ green space	Route is within close proximity to multiple parks / areas of green space	Route is within close proximity to at least one park/ area of green space	Route is not within close proximity of any parks / areas w of green space
4. Overcoming barriers	4.1 Accident data	Route passes through an area with >9 collisions within the 30m radius/known barriers	Route passes through and area with 5–9 collisions within a 30m radius/few barriers	Route passes through an area with <5 collisions within a 30m radius/limited barriers
	4.2 Physical barriers	Route passes through an area with multiple physical barriers	Route passes through an area with some physical barriers	Route passes through an area with limited physical barriers
5. Cross boundary routes		Route would be a cross boundary route which passes through multiple local authorities	Route leads into a route which would be classed as a cross-boundary route	Route would not be classes as a cross-boundary route, and does not lead into what would be classes as a cross-boundary route
6. Economic hardship	6.1 Deprivation	The route passes mainly through areas of high socioeconomic deprivation in the study area, linking residents to everyday activity destinations	The route passes mainly through areas of medium or mixed socioeconomic deprivation on the study area, linking residents to everyday activity destinations	This route passes mainly through areas of low socioeconomic deprivation, or relative affluence
	6.2 Local car or van ownership	The route passes through an area where >30% of households have no access to a private car/van	The route passes through an area where 20–30% of households have no access to a private car/van	The route passes through an area where <20% of households have no access to a private car/van
7. Deliverability	7.1 Landownership/ permissions	The route can be delivered within local authority land, and no landownership/ permissions issues are anticipated	The route can be delivered mostly within local authority land, however some minor landownership/ permissions issues may occur	The route cannot be delivered within local authority land, and major landownership/ permissions issues are likely to occur
	7.2 Cost	The likely costs of such a scheme would be under £5M (dependent on feasibility studies)	The likely costs of such a scheme would be £5M-£10M (dependent on feasibility studies)	The likely costs of such a scheme would be in excess of £10M (dependent on feasibility studies)
	7.3 Interdependencies	The route is not dependent on other schemes / proposals and can proceed to route development	The route is potentially dependent on other schemes/ proposals therefore should consider these schemes/ proposals during route development	The route will be dependent on other schemes/ proposals therefore should be developed in conjunction with these schemes/ proposals during route development

▲MULTI-CRITERIA ASSESSMENT SCORING FRAMEWORK

MCA SCORING CRITERIA

1. Demand (Sustrans Network Planning Tool)
2. Local Policies, Strategies and Priorities
3. Connectivity to key services
4. Overcoming barriers
5. Cross boundary routes
6. Economic hardship
7. Deliverability

NETWORK BREAKDOWN

For assessing and analysing purposes, the strategic network was split into several sections within each corridor, allowing for section characteristics to be accounted for during MCA scoring. Splitting the network into smaller section also aids future phasing/deliverability as a network of this scale and ambition will be delivered incrementally over an extended period. The network was split up based on environmental characteristics surrounding the route, namely urban and rural, which results in the network being logically split between settlements or obvious smaller phases.

SCORING

A robust and consistent scoring mechanism was developed. This transparency gives confidence in the analysis and means that the future phasing of the network is based on a clear evidence base. The use of several MCA scoring factors with equal weightings ensures that one characteristic such as usage or population doesn't skew the scoring of a regional network.

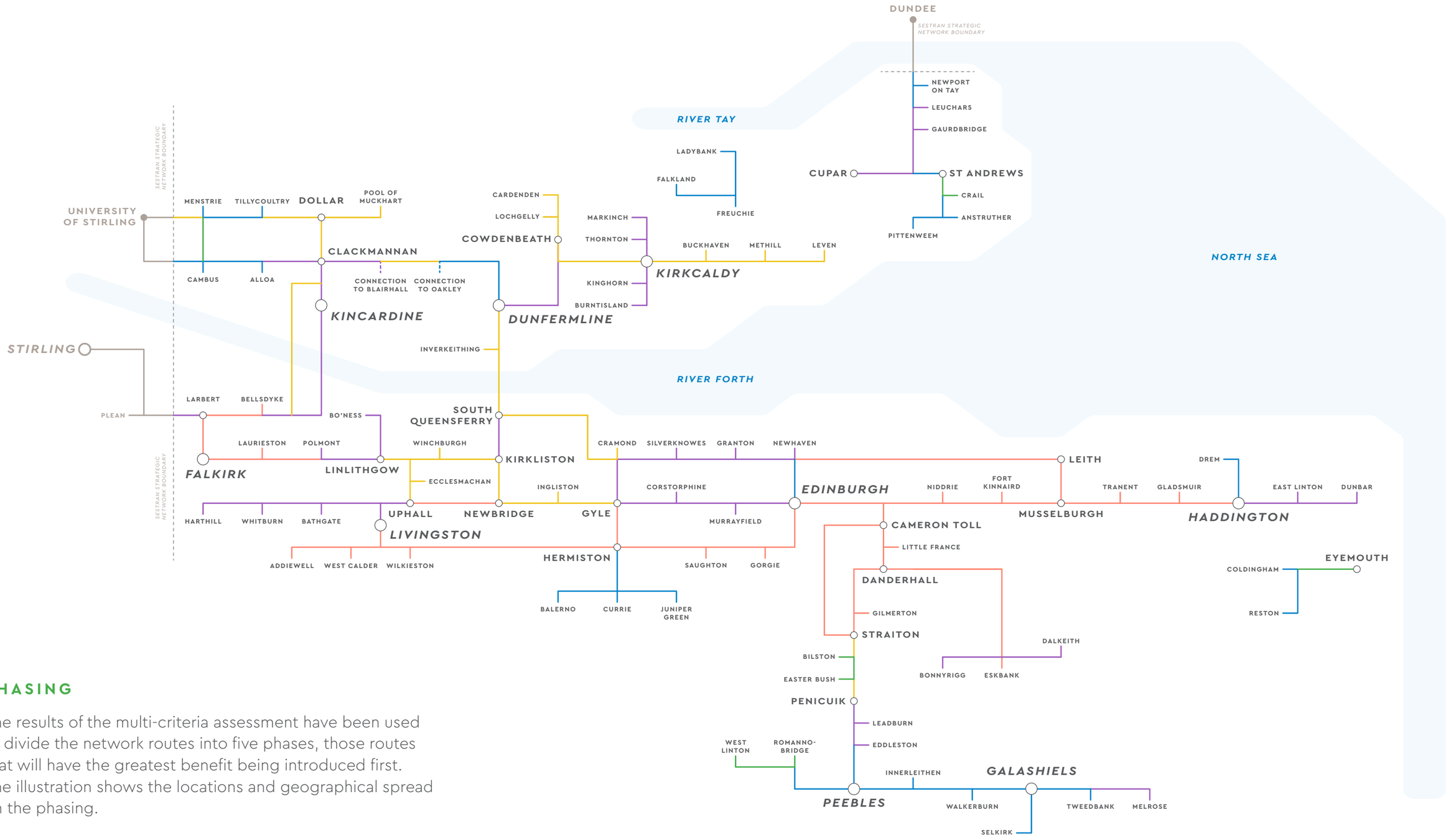
Route ID	Route Name	Local Authority	1 (Sustrans NPT Go Dutch)	2 Local Policies, Strategies and Priorities	3 Connectivity to key services	4 Overcoming Barriers	5 Cross Boundary	6 Economic Hardship	7 Deliverability	"Total Score (Average from each criteria)"	Phase
E5	Musselburgh – Fort Kinnaird	East Lothian	1	5	4	4	5	4	4	26	1
E3	Haddington – Musselburgh	East Lothian	5	5	3	4	3	3	5	23	1
ED1	Musselburgh- Newhaven	Edinburgh	5	3	5	3	5	4	5	25	1
ED5	Fort Kinnaird – Cameron Toll	Edinburgh	5	3	4	5	3	5	4	24	1
ED9	Gyle – Hermiston	Edinburgh	5	3	4	5	3	4	4	23	1
ED11	Hermiston – Gorgie	Edinburgh	5	3	4	5	1	5	4	22	1
ED7	Little France- Edinburgh City Centre	Edinburgh	5	3	4	4	3	4	4	22	1
ED12	Gorgie – Edinburgh City Centre	Edinburgh	5	3	4	3	1	5	5	21	1
NW17	Falkirk- Polmont	Falkirk	5	5	4	4	3	3	5	24	1
NW16	Larbert- Falkirk	Falkirk	5	5	4	4	3	3	5	24	1
NW14	Bellsdyke- Larbert (Bellsdyke Rd)	Falkrik	5	5	3	3	3	3	5	22	1
S3	Danderhall – Straiton	Midlothian	5	1	3	4	5	5	5	23	1
S4	Straiton – Cameron Toll	Midlothian	5	1	4	5	5	4	3	22	1
S1	Little France – Eskbank Station	Midlothian	5	1	4	4	5	4	3	21	1
SW4	Livingston- Addiewell	West Lothian	5	5	4	4	3	4	4	24	1
SW5	Livingston- Hermiston	West Lothian	5	1	4	4	5	4	4	22	1
SW8	Uphall- Newbridge	West Lothian	5	1	3	4	5	4	4	21	1
B8	Eddleston- Penicuik	Borders	1	5	3	1	5	3	3	20	2
NW6	Alloa- Clackmannan	Clacks	5	3	3	3	3	4	4	20	2
NW9	Clackmannan- Blairhall	Clacks	1	1	2	2	5	4	5	19	2
NW8	Clackmannan- Bellsdyke (via Kincardine Bridge)	Clacks	1	3	2	2	5	3	3	18	2
E2	East Linton – Haddington	East Lothian	1	5	3	2	1	3	5	19	2
E1	Dunbar – East Linton	East Lothian	1	5	4	2	1	2	5	19	2
ED10	Gyle – Edinburgh City Centre	Edinburgh	5	3	4	3	1	4	4	19	2
ED2	Newhaven- Cramond	Edinburgh	5	1	4	4	1	4	5	19	2
ED8	Cramond – Gyle	Edinburgh	5	3	4	2	1	3	5	18	2
NW15	Larbert- Plean (SEStran Boundary)	Falkirk	3	3	3	3	5	3	3	20	2
F9	Kirkcaldy- Burntisland	Fife	3	5	4	3	1	4	3	20	2
F3	Leuchars – Cupar	Fife	3	5	3	3	1	2	5	19	2
F6	Markinch – Kirkcaldy	Fife	5	1	4	5	1	3	4	18	2
F12	Cowdenbeath – Dunfermline	Fife	5	1	4	5	1	4	3	18	2
S2	Dalkeith – Bonnyrigg	Midlothian	5	1	4	5	3	3	4	20	2
SW1	Uphall- Bathgate	West Lothian	5	1	3	5	3	4	5	21	2
SW2	Bathgate-Harthill (SEStran boundary)	West Lothian	3	1	3	2	5	4	5	20	2
SW3	Uphall- Livingston	West Lothian	5	1	3	4	3	3	5	19	2
W2	Bo'ness- Linlithgow (via A804)	West Lothian	1	1	4	2	5	2	5	19	2
W7	Kirkliston- South Queensferry	West Lothian	3	1	3	4	3	3	4	18	2
W1	Polmont- Linlithgow	West Lothian	1	1	3	3	5	1	5	18	2
B2	Melrose – Galashiels	Borders	3	1	4	3	1	3	5	17	3
NW7	Clackmannan- Bellsdyke (via Clackmannanshire Bridge)	Clacks	1	3	2	2	5	3	3	18	3
NW13	Dollar- Pool of Muckhart (SEStran boundary)	Clacks	1	5	2	2	5	1	3	18	3

MCA SCORING RESULTS

Route ID	Route Name	Local Authority	1 (Sustrans NPT Go Dutch)	2 Local Policies, Strategies and Priorities	3 Connectivity to key services	4 Overcoming Barriers	5 Cross Boundary	6 Economic Hardship	7 Deliverability	"Total Score (Average from each criteria)"	Phase
NW4	Menstrie – SEStran Boundary	Clacks	3	5	2	1	5	1	3	17	3
NW1	Cambus- SEStran Boundary	Clacks	5	1	2	2	5	3	4	17	3
NW12	Dollar- Clackmannan	Clacks	3	1	3	2	3	3	3	15	3
SW11	Gyle – Ingliston	Edinburgh	5	1	3	5	1	4	4	18	3
SW10	Newbridge – Ingliston	Edinburgh	5	1	2	4	3	3	4	17	3
ED3	South Queensferry- Silverknowes	Edinburgh	5	1	3	2	3	2	4	15	3
F8	Buckhaven-Kirkcaldy	Fife	3	3	4	1	1	5	4	18	3
F14	Dunfermline Town – Inverkeithing (Ferry Toll P&R)	Fife	5	1	4	4	1	2	5	17	3
F7	Buckhaven – Leven	Fife	5	3	3	3	1	4	3	17	3
F15	Inverkeithing (Fery Toll P&R) – South Queensferry	Fife	5	1	3	3	5	2	3	17	3
F10	Kirkcaldy- Cowndenbeath (avoiding A92)	Fife	1	1	4	3	1	5	3	17	3
F11	Cardenden -Cowdenbeath	Fife	5	1	3	4	1	5	3	17	3
NW10	Blairhall – Oakley	Fife	1	1	2	1	3	4	5	16	3
S5	Straiton- Penicuik	Midlothian	5	1	3	4	3	3	2	16	3
W6	Kirkliston-Newbridge	West Lothian	3	1	3	3	3	4	4	18	3
W5	Winchburgh- Kirkliston	West Lothian	1	1	2	1	5	3	5	17	3
W3	Linlithgow- Winchburgh	West Lothian	1	1	3	2	3	3	5	17	3
W4	Winchburgh- Uphall	West Lothian	1	1	2	1	3	5	3	15	3
E6	Reston- Coldingham	Borders	1	5	2	1	1	1	4	14	4
B3	Galashiels- Walkerburn	Borders	1	1	3	1	1	4	3	13	4
B4	Walkerburn- Peebles	Borders	1	1	3	2	1	3	3	13	4
B7	Peebles- Eddleston **	Borders	1	1	3	1	3	2	3	13	4
B1	Tweedbank-Selkirk	Borders	3	1	3	1	1	3	3	12	4
NW3	Tillicoultry-Menstrie	Clacks	5	1	3	2	3	2	3	14	4
NW5	Cambus- Alloa	Clacks	1	1	2	1	1	4	4	13	4
E4	Haddington – Drem	East Lothian	1	1	3	2	1	2	4	13	4
ED4	Silverknowes- Edinburgh City Centre	Edinburgh	5	1	4	2	1	3	4	15	4
SW6	Hermiston- Currie	Edinburgh	5	1	3	2	1	3	5	15	4
SW7	Juniper Green- Balerno	Edinburgh	5	1	3	2	1	3	4	14	4
NW11	Oakley – Dunfermline	Fife	3	1	4	1	1	3	5	15	4
F1	Newport-on-Tay – Leuchars	Fife	1	1	2	2	5	1	3	14	4
F2	St Andrews – Leuchars	Fife	3	1	3	4	1	2	3	14	4
F5	Crail – Pittenweem	Fife	1	1	2	2	1	3	3	12	4
F16	Falkland – Ladybank	Fife	1	1	2	2	1	2	4	12	4
E7	Coldingham- Eyemouth	Borders	1	1	2	1	1	3	3	11	5
B5	Peebles- Romannobridge	Borders	1	1	3	1	1	2	3	11	5
B6	Rommanobridge- West Linton	Borders	1	1	2	1	1	1	4	10	5
NW2	Cambus- Menstrie	Clacks	3	1	2	1	1	1	3	9	5
F4	St Andrews – Crail	Fife	1	1	3	2	1	2	3	12	5
S6	Bilston – Easter Bush	Midlothian	1	1	1	1	1	3	2	9	5

▲

MCA SCORING RESULTS



PHASING

The results of the multi-criteria assessment have been used to divide the network routes into five phases, those routes that will have the greatest benefit being introduced first. The illustration shows the locations and geographical spread on the phasing.

PHASE 1 PHASE 2 PHASE 3 PHASE 4 PHASE 5

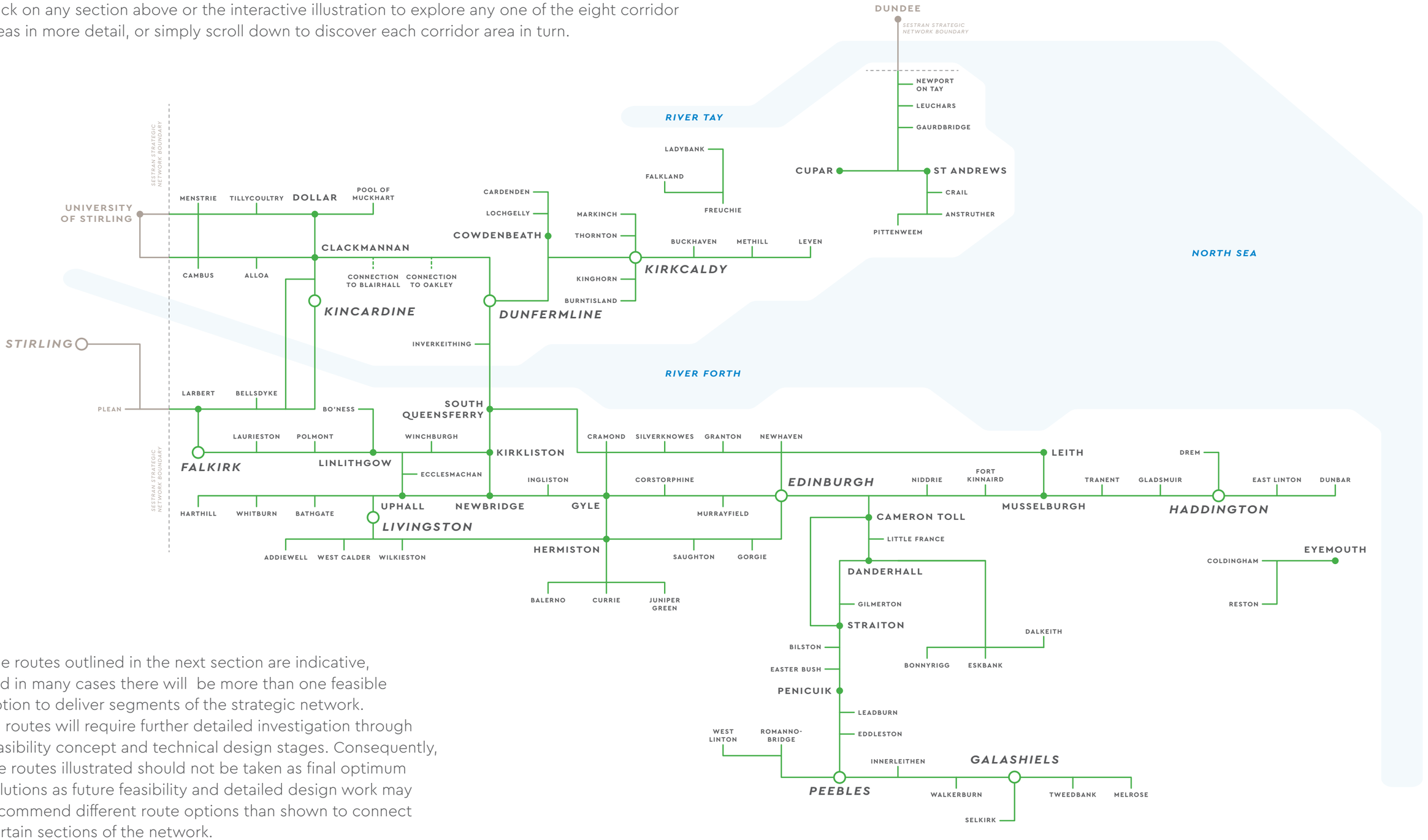
QUICK WINS

Following the assessment of the overall network, several "**quick wins**" have been identified within the network delivery. The quick wins are either cost effective full route sections which are short or parts of a route and connect strategic locations. Additionally, the infilling of a missing gap in the network along a route where there is already infrastructure, albeit not currently to the required standard, but which would be upgraded as part of that route section being implemented as a whole.

PROJECT ID	SECTION NAME	REASONING	DETAILED REQUIREMENTS	LOCATION IMAGE
ED3	South Queensferry to Silverknowes	Path maintenance throughout route and formal crossing points are required where this infrastructure is not currently in place. This is part of the NCN that is well used by commuters and leisure cyclists.	Improved crossing points are required at the junction of B924 and Main Street, in addition to Main Street and Standingstane Road.	
S3	Danderhall to Straiton	Path maintenance required, and lighting provision upgraded on parts of route. Significant adjacent residential development will see an increase in users along this route.	Additional lighting required at route access point at Gilmerton Station Road. Existing crossing island at this location to be upgraded to controlled crossing.	
NW9	Clackmannan to Blairhall	Lighting required along route. Part of the NCN which provides a safe alternative to on road routes which would feel safer with lighting.	Lighting provision required at access points with low level guide lights long length of route.	
NW10	Blairhall to Oakley	Lighting required along route. Part of the NCN which provides a safe alternative to on road routes which would feel safer with lighting.	Lighting provision required at access points with low level guide lights long length of route.	
NW11	Oakley to Dunfermline	Lighting required along route. Part of the NCN which provides a safe alternative to on road routes which would feel safer with lighting.	Lighting provision required at access points with low level guide lights long length of route.	
SW10	Newbridge to Ingliston	Formal crossing points are required where this infrastructure is not currently in place. This route is used by commuter and leisure users and is close to several commercial properties.	Controlled/priority crossing point required at junction of Glasgow Road and Ingliston Road as well as Glasgow Road and Hallyards Road.	
SW11	Gyle to Ingliston	Formal crossing points are required where this infrastructure is not currently in place. Ingliston is a major employment area and future development is planned which will result in higher footfall.	Controlled/priority crossing point required at Gogar Roundabout on Myreton Drive, A720 and South Gyle Broadway arms. Also required at the Glasgow Road/ Airport Access junction roundabouts.	

IDENTIFIED QUICK-WINS

Click on any section above or the interactive illustration to explore any one of the eight corridor areas in more detail, or simply scroll down to discover each corridor area in turn.



The routes outlined in the next section are indicative, and in many cases there will be more than one feasible option to deliver segments of the strategic network. All routes will require further detailed investigation through feasibility concept and technical design stages. Consequently, the routes illustrated should not be taken as final optimum solutions as future feasibility and detailed design work may recommend different route options than shown to connect certain sections of the network.

NORTH-WEST CORRIDOR

Key Headlines

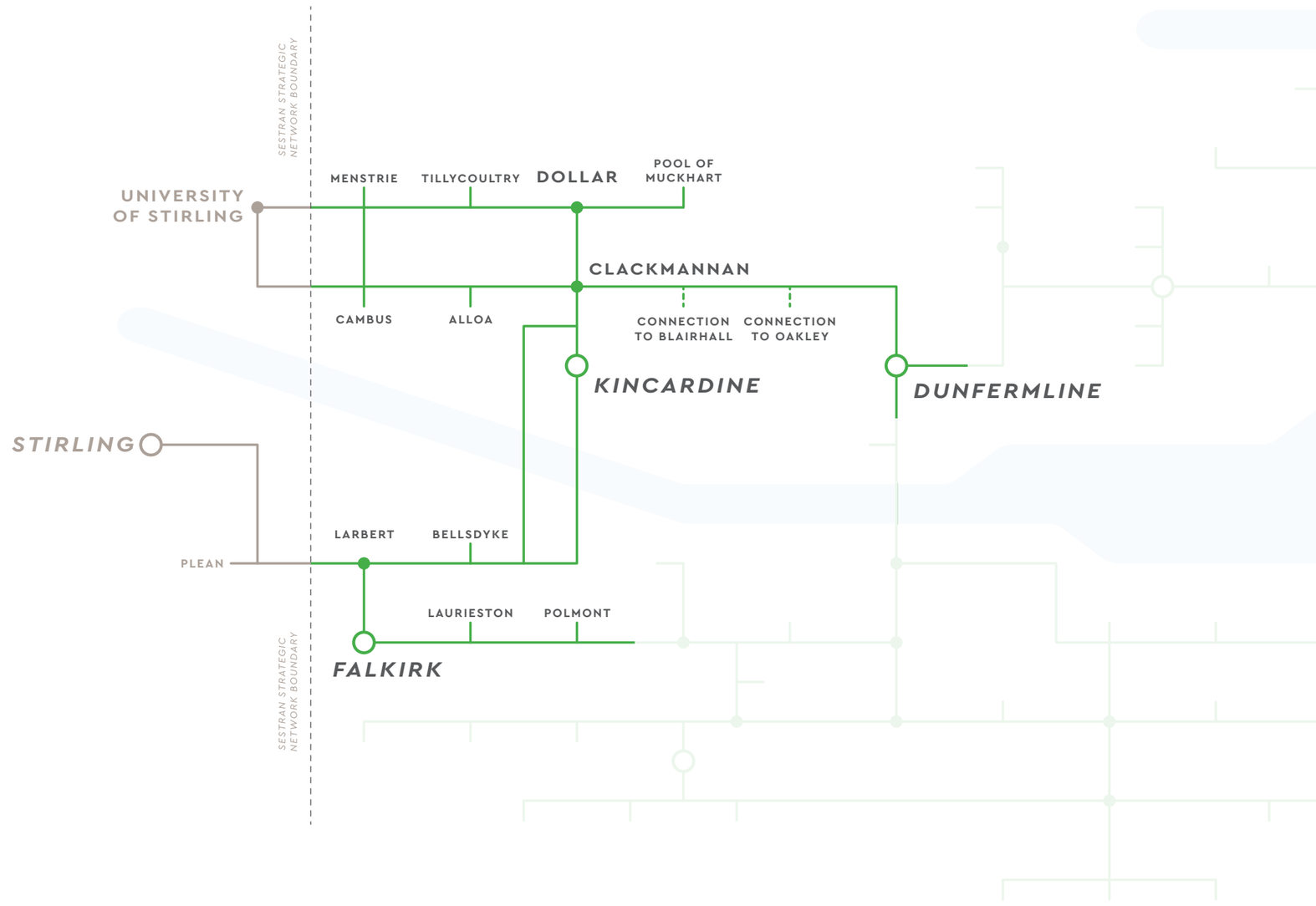
- Very direct linkages between key settlements
- Several local authority boundaries converge in this area
- Forth Valley Hospital is an important site

Links in Corridor

- Missing Links 25 [From 2015 SCBCD Study]
- Missing Links 26 (proposals already) [From 2015 SCBCD Study]
- Proposed Links: Larbert to Falkirk, Alloa to Kincardine via Clackmannan

Detailed Reasoning for Proposed Links

- Census data shows high movement from this sector to Stirling, Kincardine and within Clackmannanshire
- There is significant residential and employment development taking place within this corridor, such as Durieshill and Longannett
- Alloa shares services with Kincardine, Falkirk and Stirling, such as Forth Valley Hospital
- The proposed routes connects railway stations, such as Alloa which is the closest station for those in Clackmannashire



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North-West Corridor detailed map

WESTERN CORRIDOR

Key Headlines

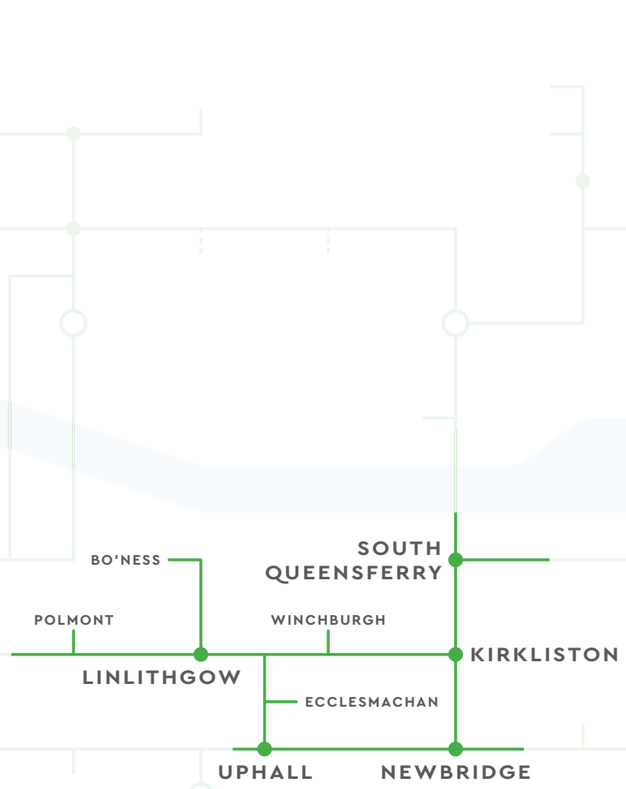
- Very direct linkages between key settlements
- Several local authority boundaries converge in this area
- Commuting corridor for Edinburgh

Links in Corridor

- Missing Links 24 [From 2015 SCBCD Study]
- Proposed Links: South Queensferry to Kirkliston, Linlithgow to Bo'ness, Falkirk to WInchburgh

Detailed Reasoning for Proposed Links

- Stakeholder comments from West Lothian Council highlight the need for a route to link Linlithgow with Bo'ness
- There is significant residential development taking place along this corridor key commuter corridor, at Whitecross, east of Linlithgow and Winchburgh
- The proposed routes capture railway stations, such as Polmont and Linlithgow railway stations
- Significant proposals at the west of Edinburgh for employment and residential development




Bo'ness
Polmont
Linlithgow
Dalmeny
Winchburgh (proposed)
Kirkliston
Newbridge
Uphall
Train Station
P+ Park and Ride
Western Corridor detailed map

SOUTH-WEST CORRIDOR

Key Headlines

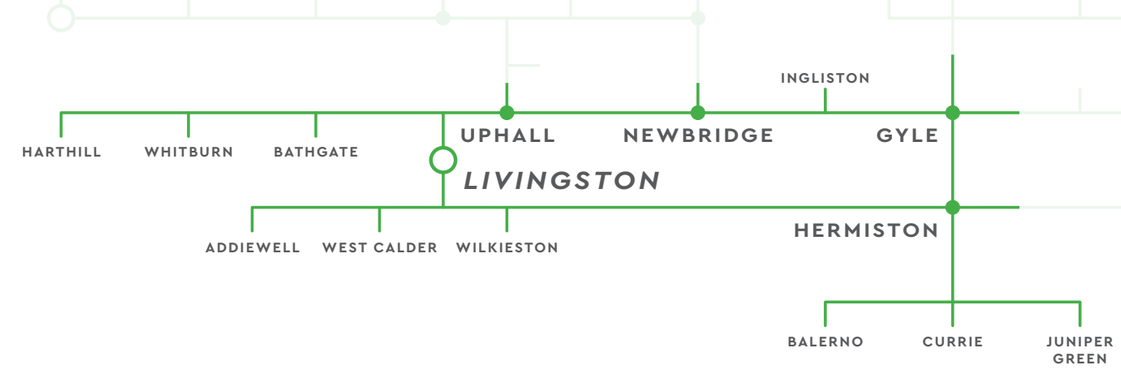
- Very direct linkages between key settlements
- Commuting corridor for Edinburgh
- Strong land use attractors along route

Links in Corridor

- Missing Links 20 [From 2015 SCBCD Study]
- Proposed Links: Addiewell Station linkages, Livingston north to Livingston south

Detailed Reasoning for Proposed Links

- There are several proposed developments within the south-west corridor which would benefit from high quality active travel routes
- The proposed routes capture railway stations along this key commuter corridor
- Stakeholder comments from Heriot-Watt University state a desire to link the A71 and A70 via Riccarton Mains Road
- A defined route running north-south through Livingston linking the two railway stations would aid movement within the town



South-West Corridor detailed map

BORDERS CORRIDOR

Key Headlines

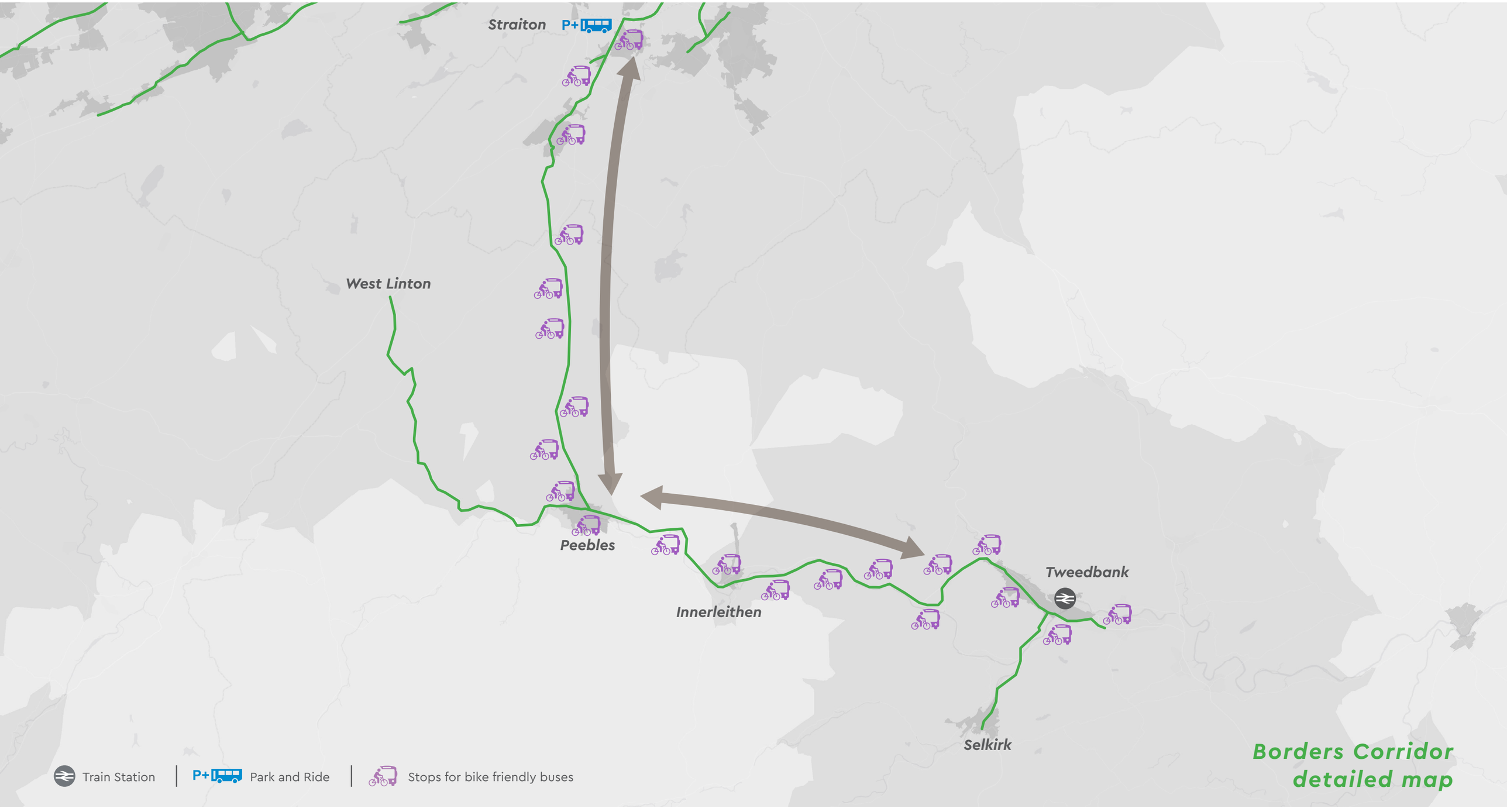
- Direct linkages between key settlements
- Commuting corridor for Edinburgh
- High movement levels between Peebles and West Linton

Links in Corridor

- Proposed Links: Peebles to Penicuik along A703, West Linton to Tweedbank Station via Peebles

Detailed Reasoning for Proposed Links

- Census data shows a high east to west movement, between settlements: West Linton, Peebles, Innerleithen, Tweedbank, Melrose and Selkirk
- The routes links the main train station within the area, Tweedbank, to surrounding areas for direct services into Edinburgh and Midlothian
- The site audit identified pedestrian movement between West Linton and Romannobridge
- Stakeholder comments from Borders Council highlighted that there is good walking and cycling connections north to south but poor routes east to west
- Stakeholder comments highlight a need for connections to the proposed railway station at Reston



Borders Corridor detailed map

SOUTHERN CORRIDOR

Key Headlines

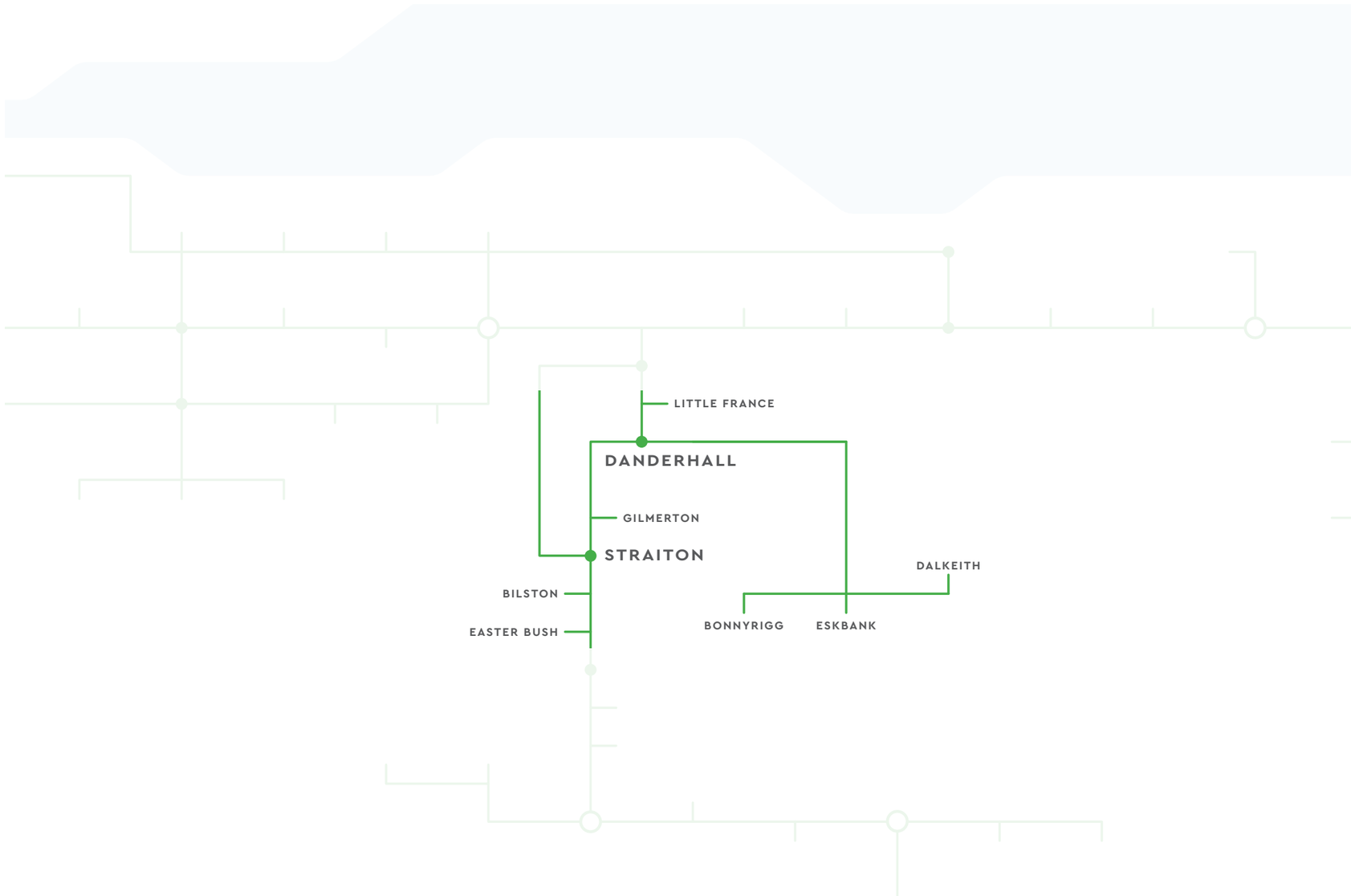
- Significant residential, employment and health care land uses
- Direct linkages between key sites

Links in Corridor

- Missing Links 7, 8,10,12, 13 and 14 [From 2015 SCBCD Study]
- Proposed Links
- Cameron Toll to Fort Kinnaird (Peffermill Road/Niddrie Mains Road)
- Cameron Toll to Meadows and City Centre along Dalkeith Road

Detailed Reasoning for Proposed Links

- Several new development sites are proposed within this sector including residential and employment at Edinburgh Bioquarter
- Several sites at Little France act as key attractors in the area for employment, services and education
- Site audits show that there are several linkages and routes which would benefit from connections to create a strong network
- Straiton is a large employment and leisure destination leading to connections to the Borders
- The route along Peffermill Road provides an alternative to the Innocent railway path which lacks frequent access points and is not overlooked



Southern Corridor detailed map

EASTERN CORRIDOR

Key Headlines

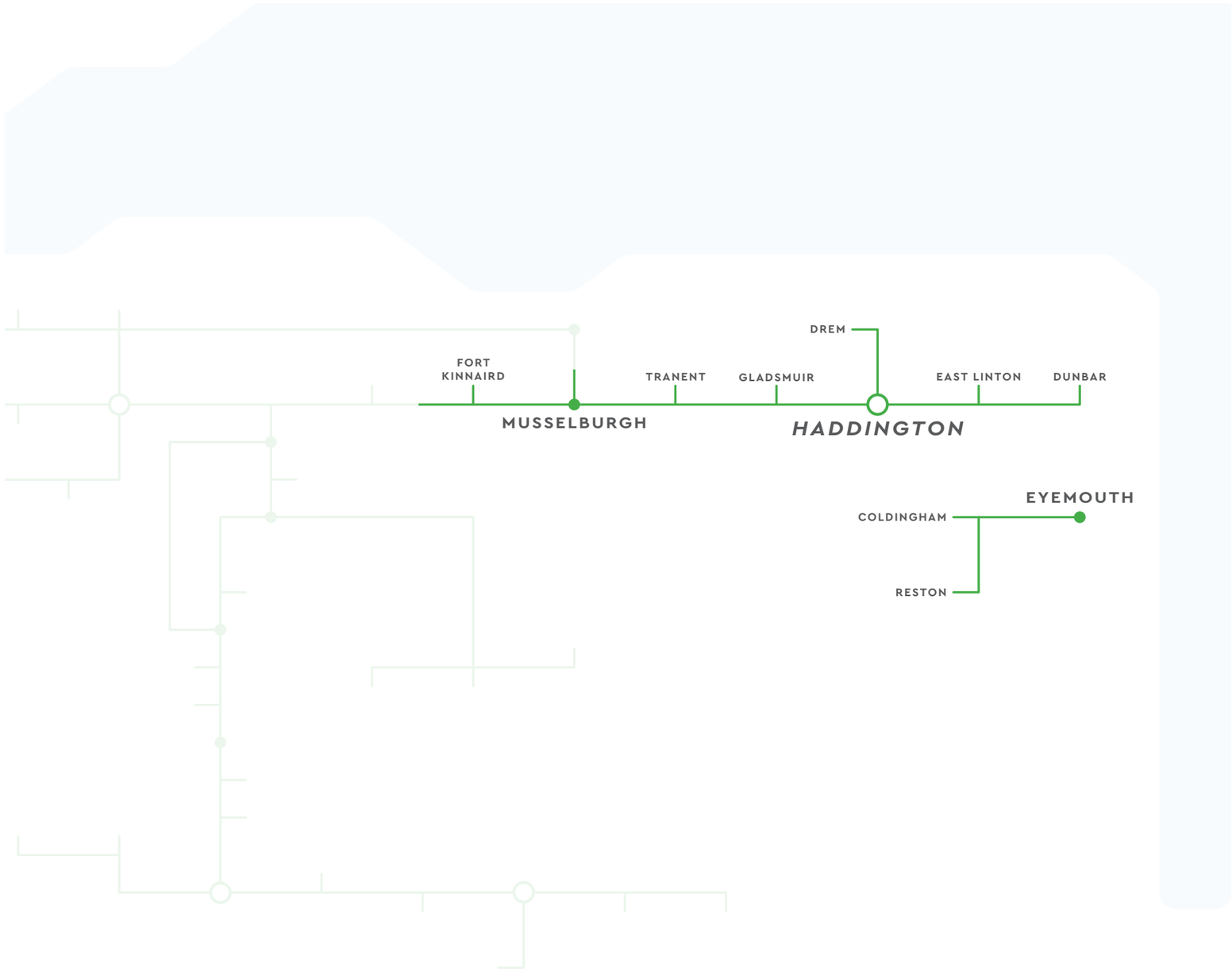
- Many residential settlements along route
- Commuting corridor to Edinburgh
- Relatively flat topography

Links in Corridor

- Missing Links 2/3 [From 2015 SCBCD Study]
- Proposed Links - Haddington to Drem Station
- Reston Station Connections

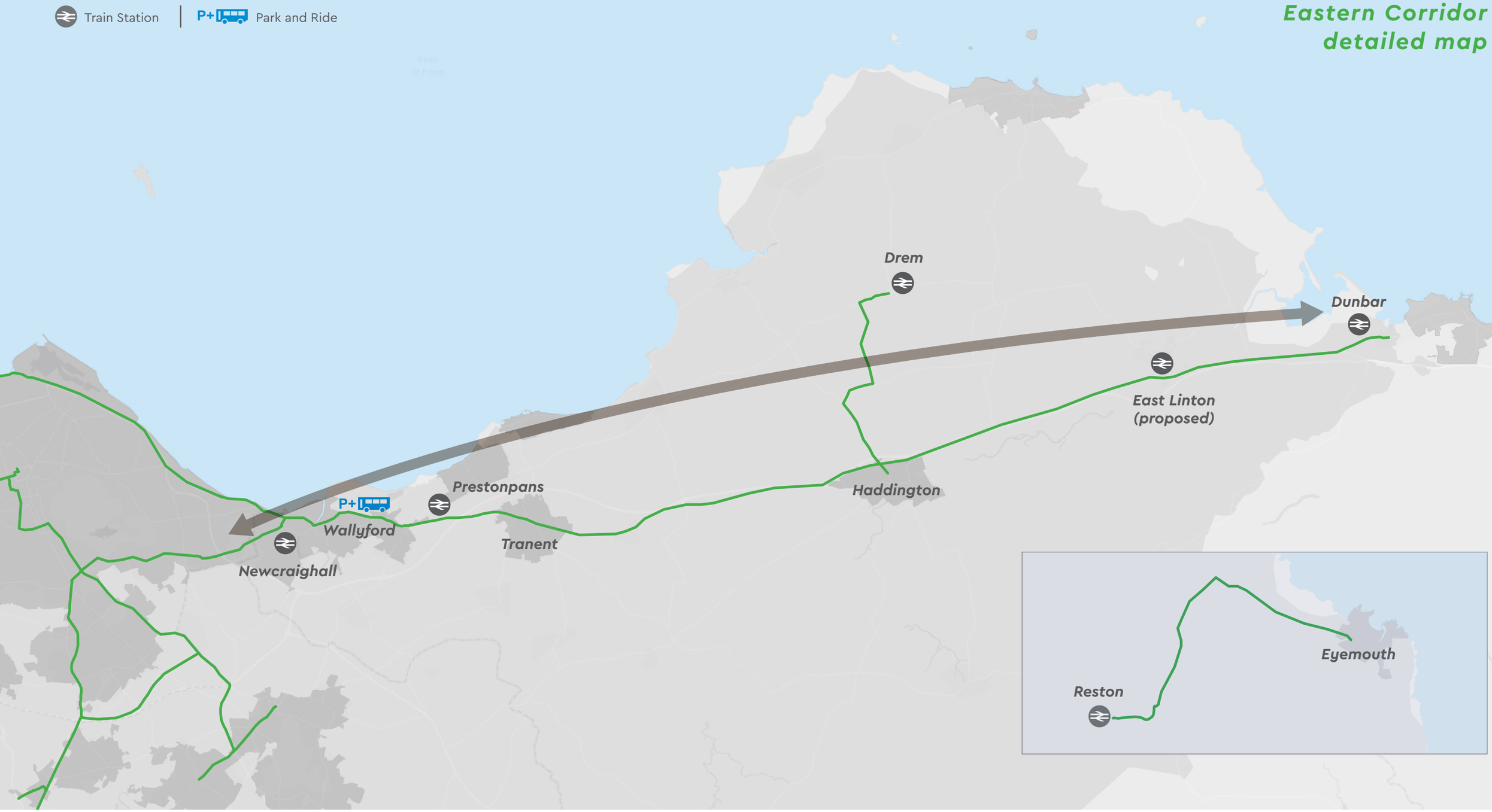
Detailed Reasoning for Proposed Links

- Stakeholders from various organisations expressed a shared view in support of the routes proposed in this area
- Census data highlights that there is a high east-west movement between Edinburgh and towns and villages in East Lothian
- There are several large-scale residential developments proposed or under construction in East Lothian meaning the demand of high-quality active travel routes will need to be met
- The route provides a link to railway station and will connect to the proposed station at East Linton



Train Station | P+ Park and Ride

Eastern Corridor detailed map



FIFE CORRIDOR

Key Headlines

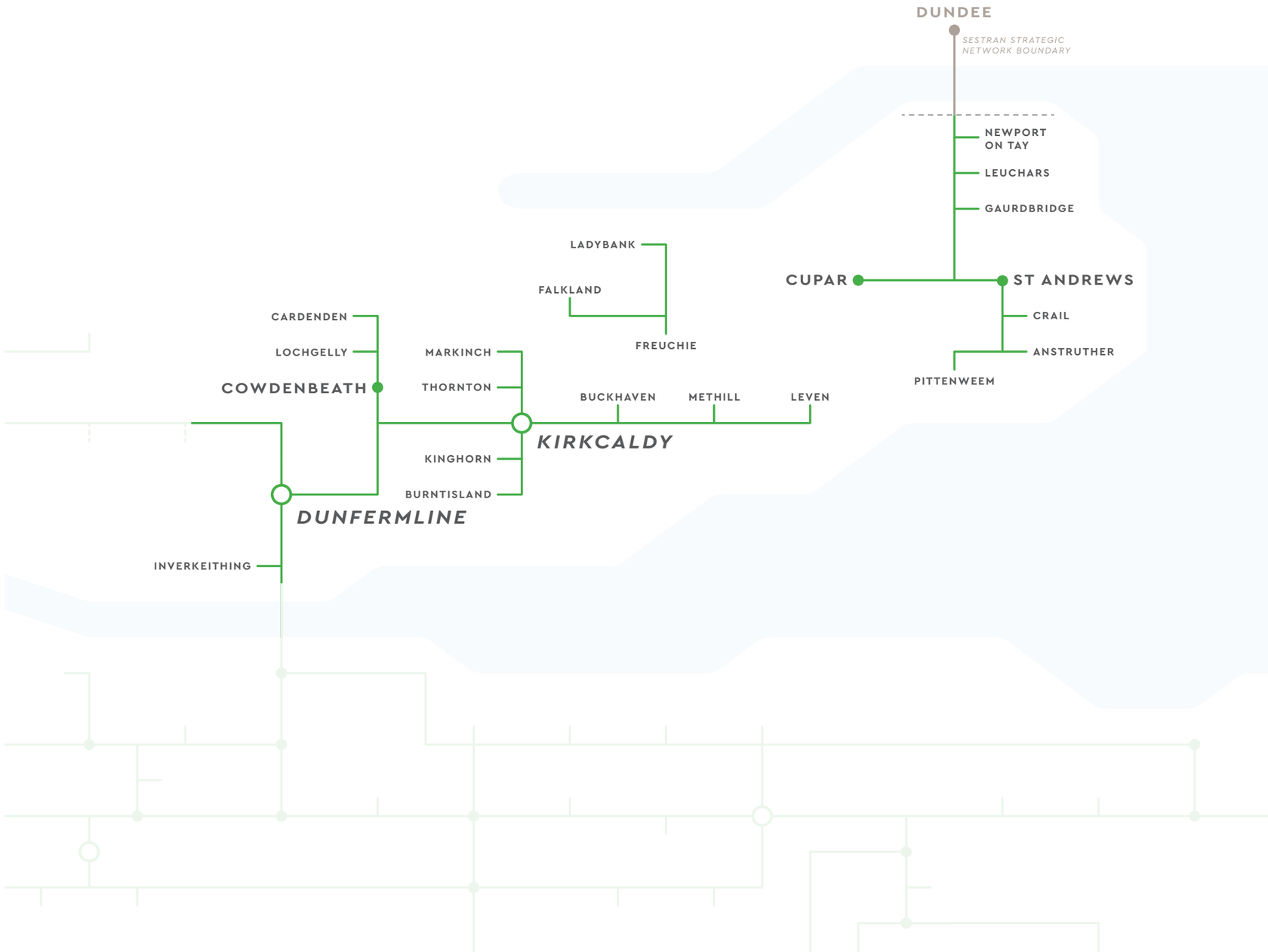
- Many settlements along route
- Direct route to public transport interchange
- Strategic movement between towns

Links in Corridor/Amendments

- Proposed Links:
- Kirkcaldy to Dunfermline
- Cardenden to Dunfermline (via Halbeath)
- Falkland to Ladybank Station
- Dunfermline to Ferrytoll Park and Ride
- St Andrew to Cupar and Dundee via Leuchers Station

Detailed Reasoning for Proposed Links

- Census data shows a high movement from small towns in Fife, such as Cardenden and Lochgelly, to larger towns Dunfermline, Kirkcaldy and Glenrothes
- There is significant residential development taking place within this corridor, to the north of Dunfermline and north-east and south-west of Kirkcaldy
- The routes link the main railway stations and bus interchanges, including Halbeath and Ferrytoll Park & Ride sites. Also link into new station at Leven
- Stakeholder comments from Fife Council highlighted that there is a greater variety of buses services running through Cowdenbeath than anywhere else, the network therefore provides linkages to here from surrounding areas



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Fife Corridor detailed map

EDINBURGH CORRIDOR

Key Headlines

- Many key settlements and services along routes
- Connects to existing routes within Edinburgh

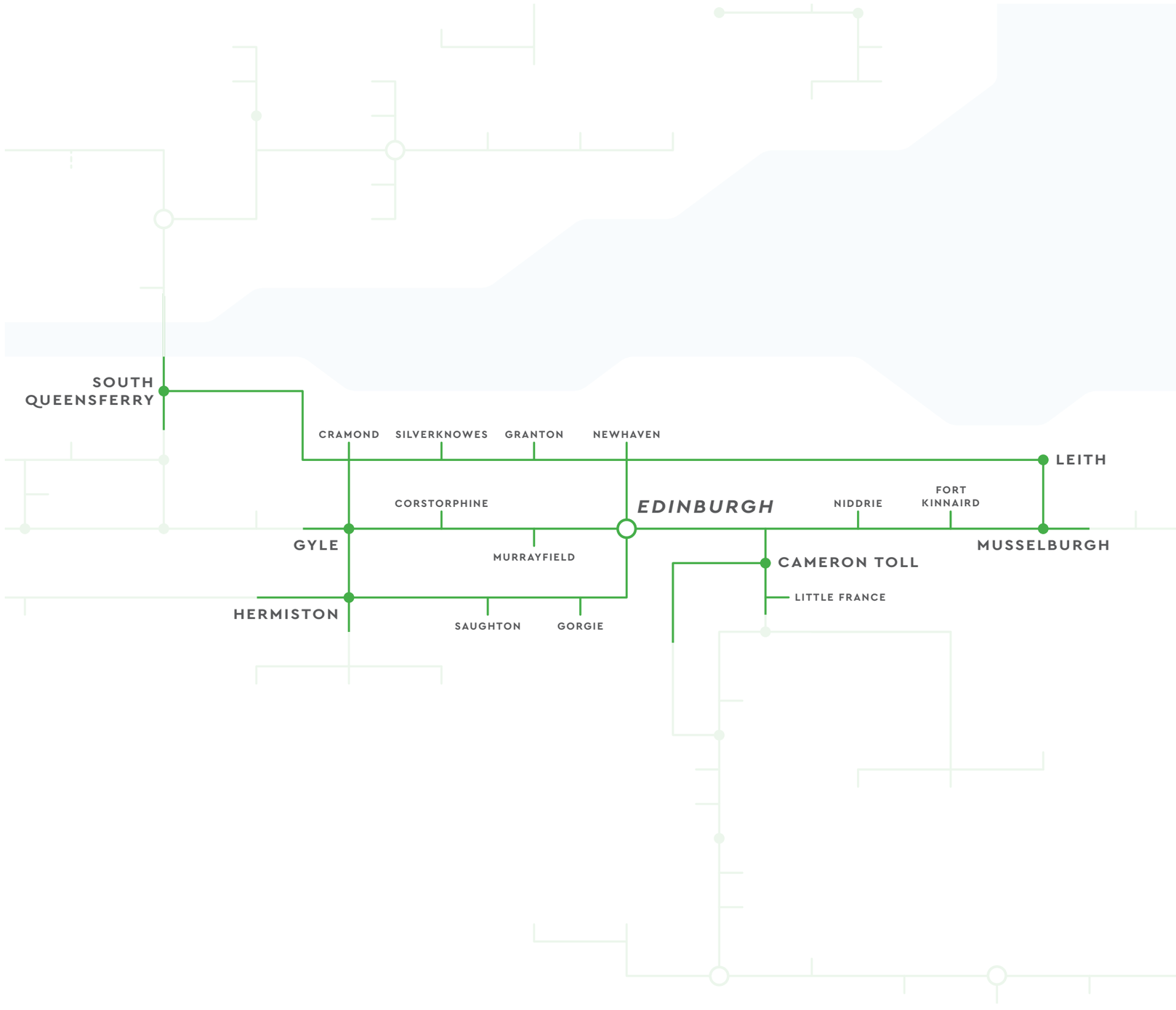
Links in Corridor/Amendments

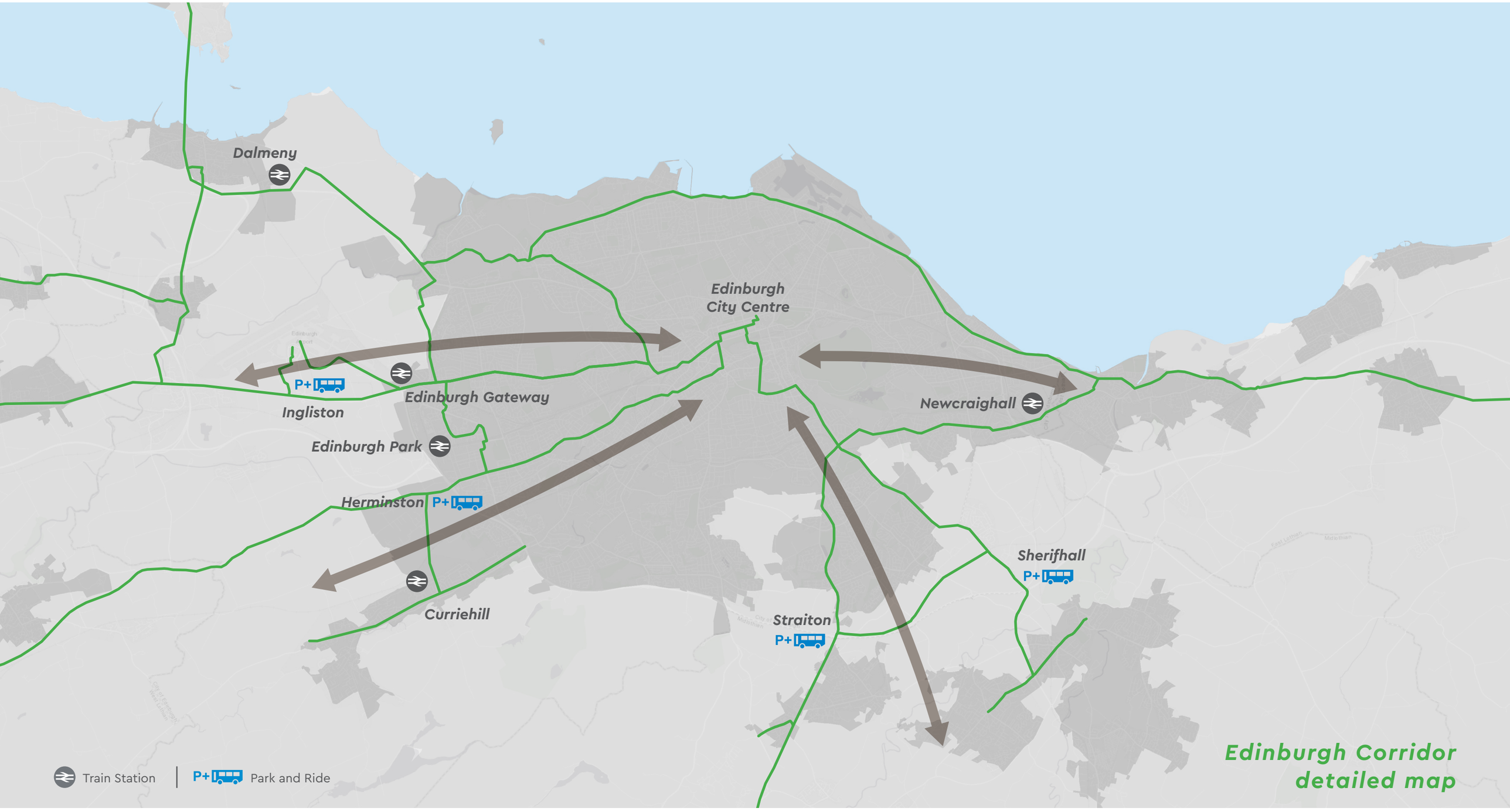
- Proposed Links:
- Gogarburn to Edinburgh City Centre
- Hermiston Gait to Edinburgh City Centre
- Cameron Toll to Einburgh City Centre
- Fort Kinnaird to Cameron Toll

Detailed Reasoning for Proposed Links

- Old Dalkeith Road, linking the city centre and Midlothian to key attractor Edinburgh BioQuarter and the ERI. Existing proposals, filling in the gaps from Cameron Toll to City Centre and Sheriffhall to BioQuater
- Calder Road/Gorgie Road (A71) links several key attractors, such as Edinburgh Napier University. Proposed link extends to Haymaket station, linking new development in the north of Edinburgh
- Niddrie Mains Road connects the east of Edinburgh and Musselburgh to the Edinburgh BioQuarter as well as Fort Kinnaird. It runs parallel with the innocent railway route, which can become congested as it not a strategic route

* Strategic network proposals will tie into ongoing City of Edinburgh Council plans for city centre strategic routes such as George Street to Meadows and CCWEL.





Edinburgh Corridor detailed map

SESTRAN STRATEGIC NETWORK

APPENDIX A – *DESKTOP REVIEW TECHNICAL NOTE*

APPENDIX B – *SITE AUDIT SUMMARY TECHNICAL NOTE*

APPENDIX C – *STAKEHOLDER ENGAGEMENT TECHNICAL NOTE*

APPENDIX D – *MULTI-CRITERIA ASSESSMENT TECHNICAL NOTE*

APPENDIX E – *COST BENEFIT ANALYSIS TECHNICAL NOTE*

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Appendix A

Desktop review technical notes

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1 Desktop Review

The desktop data gathering, review and analysis has been undertaken in a comprehensive manner, building on the work undertaken previously by SEStran in 2009 and 2015. The desktop review assisted in the initial identification of potential opportunities and constraints, helping to tailor and focus the subsequent site audit and stakeholder engagement exercises and ultimately aiding in the development of the strategic network.

As part of our desktop review stage we have carried out a review of the geographical information, including but not limited to the following:

Item	Data	Reviewed
Proprietary maps with active travel details	Open Street Map	✓
	Google Maps and StreetView	✓
	OS Mastermap	✓
Specialist active travel maps	Sustran National Cycle Network route map	✓
	Core Paths plans	✓
	Local walking and cycle maps and leaflets	✓
	National Cycle Network	✓
	CycleStreets Data	✓
	Local Council GIS atlases (including ownership and adoption data)	✓
High-level strategies and investment plans with geographic details	Active Travel Strategies	✓
	Road Safety Plans and Incident data	✓
	Local/Regional Transport Strategy	✓
	Local/Regional Development Plans (including safeguarded routes)	✓

	Capital Renewal Plans	✓
Studies	Active travel commissions by local Councils and SEStran	✓
	Community Street Audits	✓
Masterplans and development proposals	Major development planning applications	**X** – unable to gain access to the Planning Applications Scotland database
	Development Masterplans	✓
Flow data (where published)	Census origin and destination tables and plots (e.g. Datashine)	✓
	Travel plan data (workplaces, housing and schools)	✓
	Local authority data collection (e.g. People's Surveys, Bicycle Accounts)	✓
	See Sense Bike Light flow data	**X** – there is not enough data for the SEStran region to make it reliable
	Available mobile data e.g. Strava heat maps	✓
Context and demographics	Summary of variables that could affect active travel use – population and employment distribution, existing modal splits, socio-economic deprivation	✓
	Zones of formal or anecdotal poor air quality	✓

1.1 Data Added to our GIS Database:

The following data was added to our GIS database, this could then be used in collaboration with our collector app which was used in the site audit and stakeholder stages:

- SEStran Regional Cycling Network
- SEStran Cycling Barriers
- SEStran Cycling Missing Links

Taken from the previous Cross Boundary Cycle Network Study

- SEStran Projects
- Sustrans New Paths/Proposals
- Development Proposals
- Rail Station Passenger Usage
- Cross Boundary Route Corridors

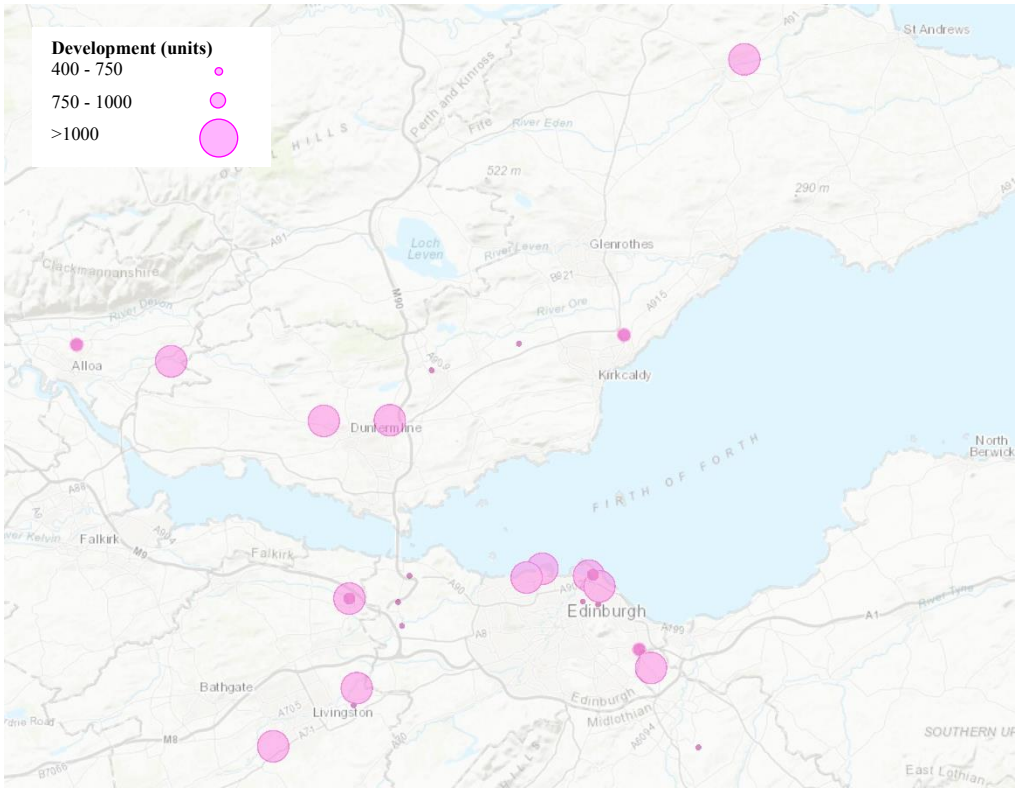
- Sestran NCN Audit Data

The following sections reveal our key findings from the desktop review stage.

2 Masterplan and Development Proposals

When developing the strategic network, consideration was given to major development proposals within the SEStran area identified within the desktop review stage, this information has been gathered from local council development plans and the planning applications Scotland website. The figure shows major development proposals within the SEStran area, those developments that are 400 units or above have been considered when developing the network as anything above this number of units is classed as major development.
Examples of the largest developments include:

- The Shawfair Masterplan which details plans for the Shawfair Rail Station, town centre, 3 schools, community woodland, open space and capacity for 3990 housing units;
- Leith Waterfront, Western Harbour has the capacity for 3000 housing units in the north of Edinburgh; and
- The mixed-use development to the north of Dunfermline with capacity for 4200 units which will include housing, this will also involve an active travel link connecting into the main Dunfermline settlement areas.



3 Public Transport

A review of the existing and proposed key public transport interchanges was undertaken to identify those that are important to include within our strategic network. Given there are longer distances being travelled within the SEStran area, it is recognised that multi-modal journeys are important

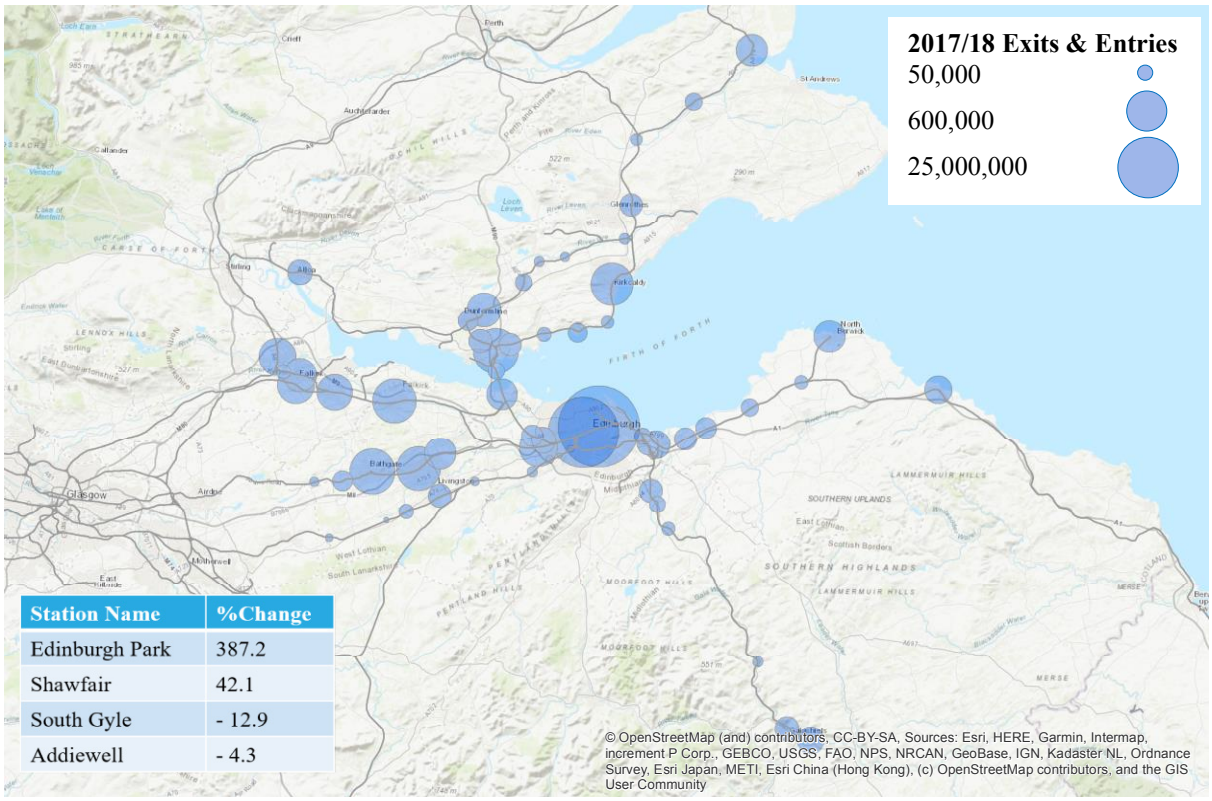
and have therefore ensured that links to key commuter interchanges are included within the network.

3.1 Bus Services

There were a number of locations that were identified as key commuter interchanges for bus travel, this included Halbeath Park and Ride, Inverkeithing Park and Ride, Hermiston Gait Park and Ride, Ingliston Park and Ride, Forth Valley Hospital Bus Stances, Kincardine Bus Stances, Straiton Park and Ride, Sheriffhall Park and Ride and Newcraighall Park and Ride. In addition to this there are a number of bus stops in Peebles, Innerleithen, Walkerburn, Clovenfords, Galashiels and Melrose at which the bus bike service X62.

3.2 Rail Services

The figure shows patronage numbers at rail station across the SEStran region, identifying the popular stations where good active travel linkages, at a standard that meets usage numbers, would be beneficial (for example Edinburgh stations, Kirkcaldy and Inverkeithing) and also identifying those stations which could be better utilised and would benefit from better access in the form of active travel infrastructure (for example Drem and Addiewell Stations). Links to such locations have been included within our strategic network.



4 Air Quality Management Areas

Air Quality Management were obtained through online sources, such as council websites, this was built upon through discussions with council officers in the stakeholder engagement stage. The following Air Quality Management Areas have been selected as examples as they are relevant to key cross boundary movements:

- Glasgow Rd (A8) near Newbridge
- Main Street (A899) in Broxburn
- Edinburgh Central – includes Dalkeith Rd and Dundee Street
- Linlithgow
- Falkirk Town Centre

5 Active Travel Commissions and Proposals

Active Travel Strategies, Local/Regional Transport Strategy documents, feasibility studies and design studies were all sourced and used to identify the following active travel proposals within the SEStran region and have been highlighted as important in the development of the strategic network as they are located within corridors where there are high levels of movement:

Project Title	Stage/Status
East Lothian AT corridor	Feasibility Design
Crail-St Andrews	Feasibility
Musselburgh-Portobello	Feasibility Design
Clovenfords-Walkerburn	Feasibility
A71 West Calder - Hermiston	Feasibility
A7 Wisp - Sheriffhall	Feasibility
Winchburgh - Kirkliston	Feasibility
A9 Stirling - Larbert	Feasibility
A701 Straiton – Gowkley Moss	Feasibility
Musselburgh/ Tranent/ North Berwick	Detailed Design
Kirkcaldy - Buckhaven	Detailed Design
Cameron Toll-Bioquarter	Detailed Design & Consultation
Edinburgh City Centre West-East Link	Detailed Design & Consultation
Meadows to George Street	Detailed Design & Consultation
George Street and First New Town redesign	Feasibility Design

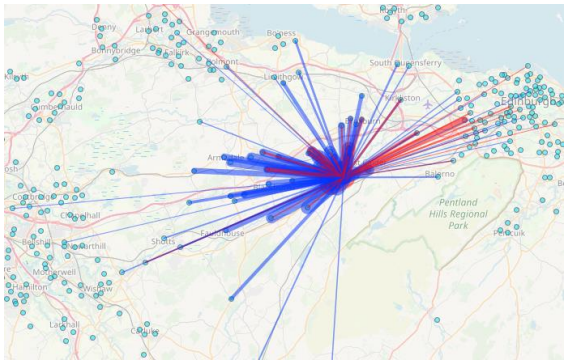
6 Movement Data

In order to review existing movement within the SEStran region and identify desire lines for future active travel provision, the census data source for commuting journeys, Datashine (https://scotlandcommute.datashine.org.uk) was used. Key travel movements within the SEStran region were identified, these movements currently include a high proportion of car travel and would therefore benefit from active travel infrastructure that will provide more sustainable opportunities of travel for people. Some of the key travel movements identified at this stage were as follows:

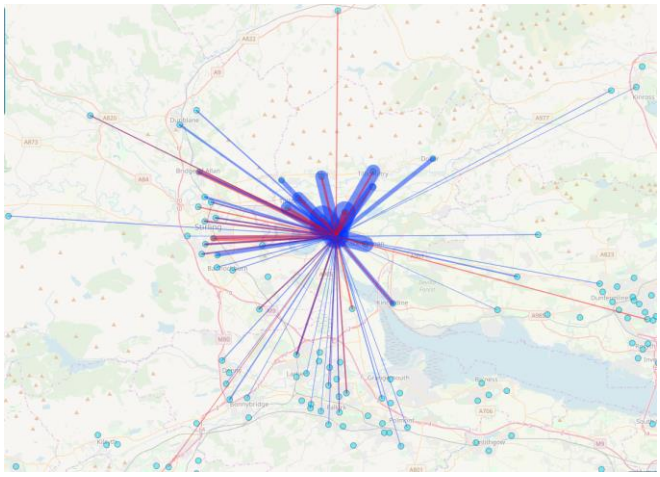
- North Midlothian (Straiton, Dalkeith, Bonnyrigg etc.) to Edinburgh City Centre
- Dalkeith to Edinburgh Bioquarter
- Straiton to Penicuik
- Edinburgh City Centre to Edinburgh Park
- Edinburgh City Centre to Musselburgh (Queen Margaret University)
- Edinburgh City Centre to Currie (Heriot Watt University)
- Dunfermline to Rosyth
- Dunfermline to Edinburgh Park and Edinburgh City Centre
- East Lothian (Haddington, Tranent, Dunbar etc.) to Edinburgh City Centre
- Peebles to West Linton
- Livingston internal movements (north to south)
- Falkirk to Livingston, Edinburgh and Glasgow
- Alloa to Stirling
- Kincardine to Alloa

Using the datashine database, the following were identified as significant movements within the SEStran region (showing all modes of travel in both directions):

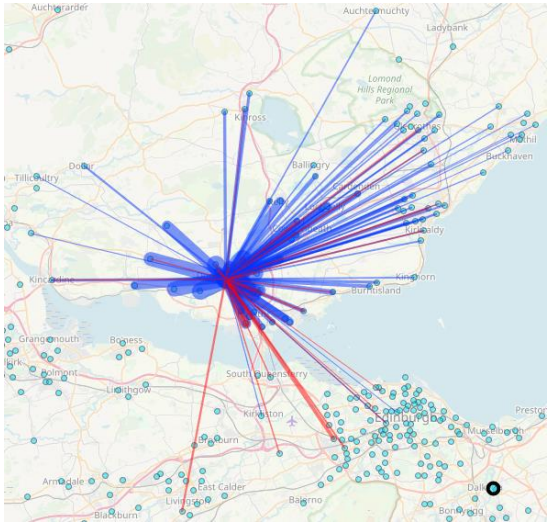
Livingston, West Lothian



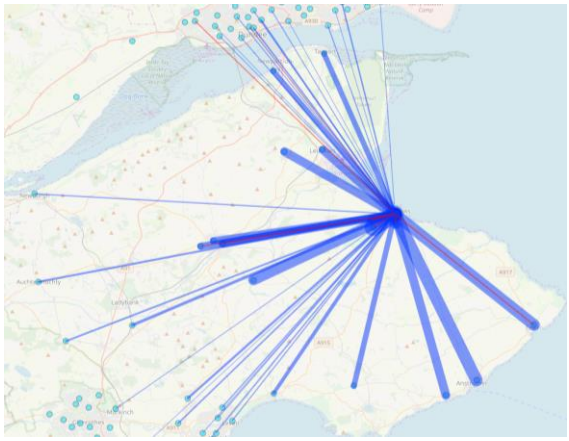
Alloa, Clackmannanshire



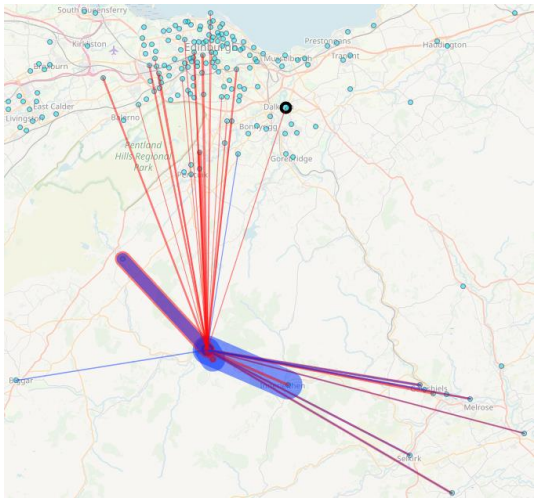
Dunfermline, Fife



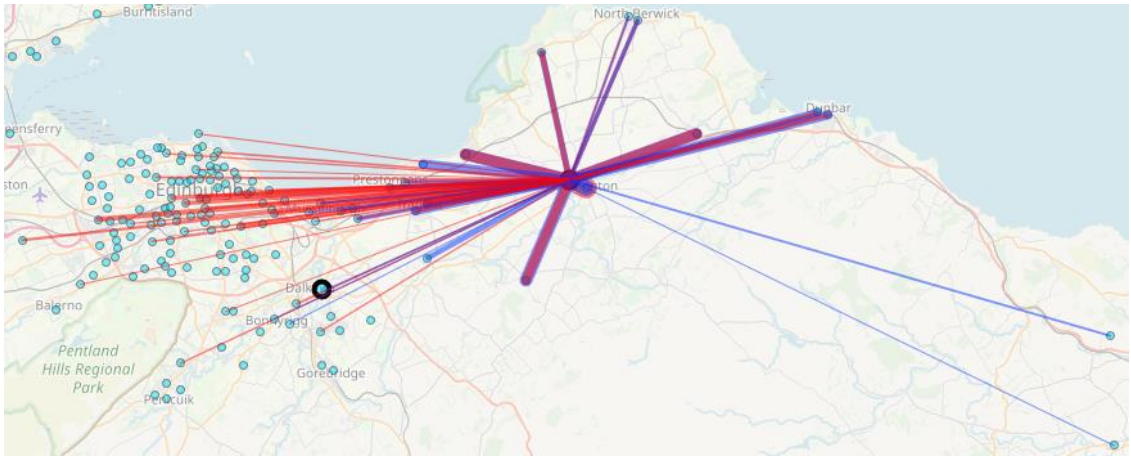
St Andrews, Fife



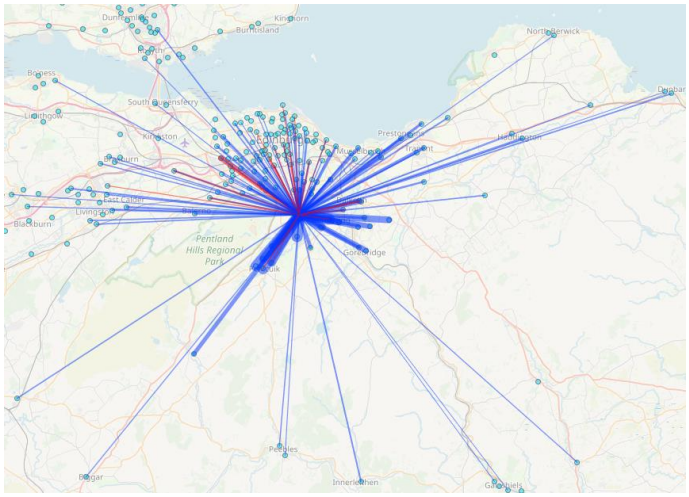
Peebles, Scottish Borders



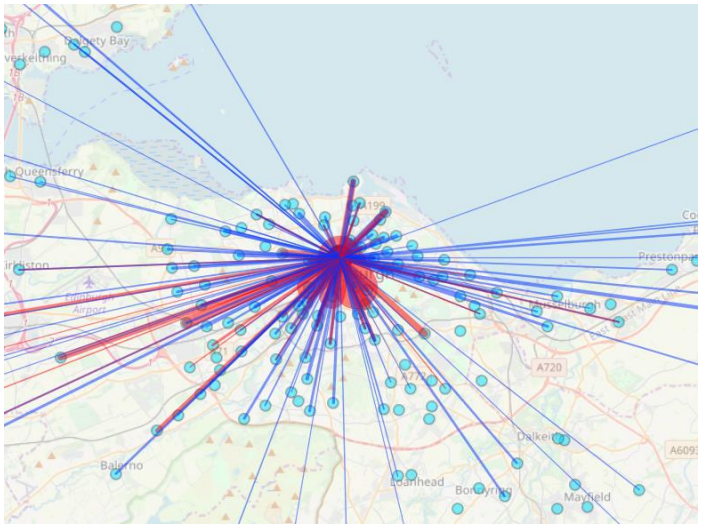
Haddington, East Lothian



Straiton, Midlothian



City Centre, Edinburgh



7 Summary

As previously stated, the desktop review stage helped focus site audit and stakeholder engagement exercises and ultimately aided in the development of the strategic network. A GIS database was compiled with a wealth of information that could be used as reference in the subsequent stages as well as justification for the chosen routes.

Appendix B

Site audit summary technical note

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1 Introduction

The site audit stage of the project is an important one to ensure first hand and accurate observations can be made. The missing gaps and barriers identified in the previous Strategic Cross Boundary report formed a useful starting point to inform which areas to target. This allowed an assessment to be made as to whether any changes had been made on the ground since having been previously identified as lacking suitable active travel infrastructure. In addition to this, the comprehensive desktop review process undertaken prior to the site audits informed several areas to target based on census movement data and joining up additional gaps in the network based on this data.

2 Missing Gaps/Barriers

Outlined below is the existing status of the missing links (Table 1) and barriers (Table 2) identified in the previous cross boundary study. As a result of the desktop review, some of the previously identified missing gaps weren't deemed as strategic routes. Consequently, alternative routes have been proposed where this occurred.

Table 1 – Previously identified missing link revised status

Link	Description	Status	Strategic?
1	Seafield Terrace/Eastfield – no cycling provision between Portobello Promenade to Coillesdene Avenue	Proposals by others	No
2	A199 Wallyford to Tranent – gaps in cycling provision	No change from previous study	Yes
3	A199 – cycle super highway	No change from previous study	Yes
4	Old Dalkeith Road – gaps in cycle lane provision	Proposals by others	Yes
5	Drum Street – no cycling provision and limited scope to do so	No change from previous study	No

6	Gilmerton Road in CEC – gaps in cycle lane provision	No change from previous study	No
7	Loanhead railway track bed – connect Gilmerton shared use path to Lasswade Road shared use path	Route surfaced	Yes
8	A7 Bonnyrigg – shared use path to Gilmerton Road	No change from previous study	Yes
9	Loanhead railway track bed – connect Gilmerton shared use path with Shawfair	Route surfaced	Yes
10	A7 to Sheriffhall – connect with new junction	Proposals by others	Yes
11	Lasswade Road shared use path	No change from previous study	No
12	Loanhead railway path – extension westwards to Straiton and beyond	No change from previous study	Yes
13	A701 – gaps in cycle lane provision	No change from previous study	Yes
14	Seafield Road – cycle lane provision to link with A701	Proposals by others	Yes
15	Cycle route through new Bilston development	No change from previous study	Yes
16	Peebles – Penicuik railway path	No change from previous study	No
17	Riccarton Mains Road – Currie to Heriot Watt	Proposals by others	No
18	Water of Leith path – surface upgrade	No change from previous study	No
19	A71 cycle super highway	No change from previous study	Yes
20	A89 cycle super highway – westwards extension	No change from previous study	Yes
21	A8 to Edinburgh Airport – safe route required	No change from previous study	Yes
22	Maybury Road and Cammo Walk – A8 to NCN1 link	Proposals by others	Yes
23	Dalmeny to Newbridge railway path – widening and surface upgrade required	Proposals by others	No
24	Castlandhill Road – direct route linking Rosyth/Dunfermline with Forth Road Bridge	No change from previous study	Yes
25	Bellsdyke Road – gap in cycling provision – links 3 LAs together	No change from previous study	Yes
26	A9 Stirling to Larbert – missing direct cycle route between these settlements	Proposals by others	Yes
27	Union canal Linlithgow, Polmont, Falkirk – surface upgrade would make this viable commuter route	Proposals by others	No
28	Bo'ness to Linlithgow – better signage and route promotion would encourage cycle and ride	No change from previous study	No

Table 2 - Previously identified barriers revised status

Barrier	Description	Status
A	Brunstane Bridge – steps	No change from previous study
B	Sheriffhall Roundabout – uncontrolled crossings	Proposals by others
C	Gilmerton Station Road – uncontrolled crossing	No change from previous study
D	Straiton Roundabout north – no cycling provision	Arup proposals consider this
E	Airport Roundabout south – uncontrolled crossing	Proposals by others
F	Gogar Roundabout – uncontrolled crossing A8	No change from previous study
G	Gogar Roundabout – uncontrolled crossing A720	No change from previous study
H	Ferrytoll Roundabout – uncontrolled crossing	Now signalised
I	Castlandhill Road – uncontrolled crossing	Now signalised
J	Manor Powis Roundabout – uncontrolled crossing	No change from previous study

3 Additional Routes

Furthermore, several additional routes have been identified as a result of several factors highlighted during the desktop review stage. These consist of the following;

Proposed New Route	Movement Data	Link to Public Transport	Stakeholders Identified	Link to New Development	Link to Key Attractors
West Linton to Tweedbank via Peebles (with Selkirk)	✓				
Straiton to Peebles			✓		
Eyemouth to Reston		✓			
Larbert to Kirkliston	✓	✓	✓	✓	✓
Alloa to Bridges	✓	✓	✓	✓	
Linlithgow to Bo'ness		✓		✓	
Gogarburn to City Centre	✓			✓	✓
Hermiston Gait to City Centre	✓				✓
Cameron Toll to Fort Kinnaird			✓		✓
Kirkliston to South Queensferry	✓	✓			
Cardenden to Dunfermline (via Halbeath)		✓	✓		
Falkland to Ladybank		✓			

Dunfermline to Ferrytoll	✓	✓			
Leuchars to Cupar and Dundee	✓	✓	✓		
Haddington to Drem		✓			✓

4 Audit Findings

This section outlines the findings of the desktop and site audit process. Only links which are deemed as strategic and those which do not have ongoing development proposals have been summarised.

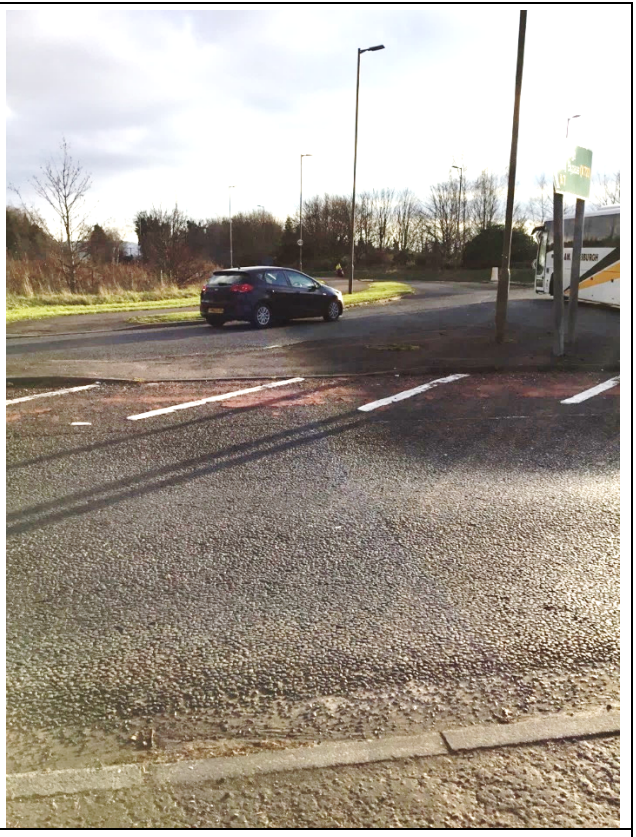
2 – A199 Wallyford to Tranent / 3 – A199 Cycle Super Highway	
Positives	*Negatives*
Strong local attractor	No lighting provision on rural stretch of route
Good lighting provision in urban area	On road cycle lanes in rural stretch of road with derestricted speed
Enough space for segregation in parts	Limited crossing points
Very direct between key sites	Carriageway narrows through town centres
Route feels safe in urban area	
	

4 – Old Dalkeith Road	
Positives	*Negatives*
Strong local attractor	Route feels unsafe
Good lighting provision	Surface quality needs improvement
Enough space for segregation in parts	
Very direct between key sites	
	

5 – Drum Street / 6 – Gilmerton Road	
Positives	*Negatives*
Strong local attractor	Incoherent pedestrian/cycling signage
Good lighting provision in urban area	Carriageway narrows through shopping area
Very direct between key sites	
Route feels safe in urban area	
Medium pedestrian flows	

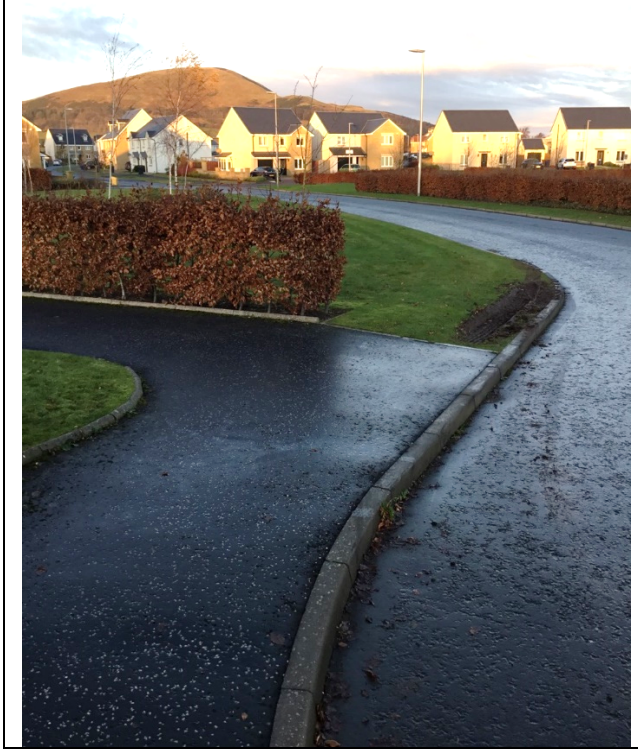
7/9/12 – Loanhead Railway Path	
Positives	*Negatives*
Coherent pedestrian/cycling signage	Uncontrolled crossing facilities
Shared footway/cycleway	
Excellent surface quality	
Railway path is well lit	
Relatively direct between key sites	

8 – A7 Bonnyrigg	
Positives	*Negatives*
Strong local attractor	Unsurfaced
Good lighting provision	Limited crossing points
Very direct between key sites	Route feels unsafe
	Surface quality needs improvement

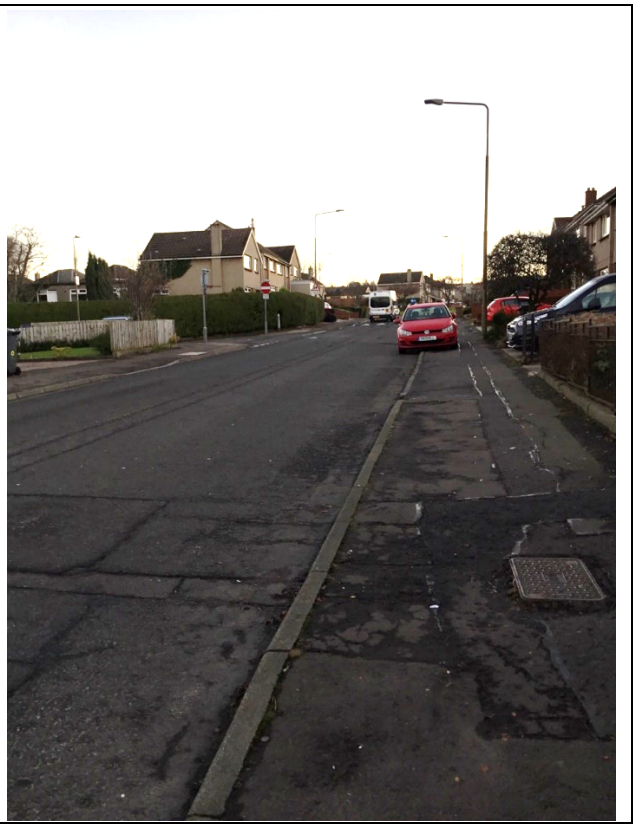
	

14 – Seafield Road	
Positives	*Negatives*
Good lighting provision	Relatively indirect between key sites
Zebra crossing	No pedestrian/cycling signage
Route feels safe overall	

15 – Bilston Development	
Positives	*Negatives*
Good lighting provision	No pedestrian/cycling signage
Route feels safe overall	Relatively indirect between key sites
	Limited crossing points



17 – Riccarton Mains Road	
Positives	*Negatives*
Good lighting provision	Limited crossing points
Route feels safe overall	No pedestrian/cycling signage
Very direct between key sites	



18 – Water of Leith path (A70 on road alternative)	
Positives	*Negatives*
Footway (carriageway edge)	Limited crossing points
Very direct between key sites	Incoherent pedestrian/cycling signage
	Surface quality needs improvement
	No cyclist infrastructure

19 – A71 Cycle Super Highway	
Positives	*Negatives*
Good lighting provision	Limited crossing points
Footway (carriageway edge) through settlements	No pedestrian/cycling signage
Relatively direct between key sites	

20 – A89 Cycle Super Highway	
Positives	*Negatives*
Shared footway/cycleway with some missing gaps	Uncontrolled crossing facilities
Good lighting provision	Route feels unsafe overall
Strong local attractor	
Very direct between key sites	

24 – Castlandhill Road	
Positives	*Negatives*
Good lighting provision	No pedestrian/cycling signage
Very direct between key sites	No cyclist infrastructure

25 – Bellsdyke Road	
Positives	*Negatives*
Shared footway/cycleway through urban area	No lighting provision on rural stretch of route
Good lighting provision in urban area	Incoherent pedestrian/cycling signage
Very direct between key sites	
	

27 – Union Canal (A803 as alternative route)	
Positives	*Negatives*
Footway (carriageway edge) through settlements	No cyclist infrastructure
Good lighting provision in urban area	Limited crossing points
Very direct between key sites	

Appendix C

Stakeholder engagement technical note

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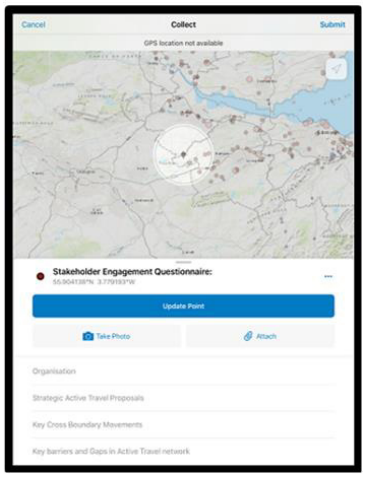
1 Stakeholder Engagement

The consultation events comprised a mix of 1:1 meetings, scheduled structured conversations and a final workshop with all engaged. This stage considered issues faced by people with disabilities or using a non-standard bike (such as a recumbent or trike) throughout e.g. gradients, effective widths, upstands etc.

1.1 Initial Contact

We have held a number of 1:1 meetings and telephone calls with a selection of stakeholders agreed with SEStran and Sustrans, the full list of stakeholders engaged, and their organisation can be seen in the table. Comments were gathered from stakeholders using our digital Collector App tool, this provided an efficient way of engaging with stakeholders where we could easily access all information gathered within our GIS database. All stakeholder comments collected in the Collector App can be found in the Appendix.



1.2 Contact List

Type	Organisation	Contact Name	Update
Local Authority	Clackmannanshire	Lesley Deans	1:1 meeting
		Alan Murray	
	City of Edinburgh	Martyn Lings	1:1 meeting
	East Lothian	Peter Forsyth	1:1 meeting
	Falkirk	Christopher Cox	1:1 meeting
		Kevin Collins	
		Adam Watson	
	Fife	Jane Findlay	1:1 meeting
		John Mitchell	
	Midlothian	David Kenny	1:1 meeting
	Scottish Borders	Ian Aikman	1:1 meeting
	West Lothian	Chris Alcorn	1:1 meeting
		Chris Nicol	
Additional	Scottish Natural Heritage	Carole Wells	Telephone Call
	ScotRail	Kathryn MacKay	Telephone Call

	Edinburgh Airport	Daniel Davidson	Telephone Call
	Transport for Edinburgh	Katherine Soane	Telephone Call
	Sustrans Scotland	Tierney Lovell	Telephone Call
	University of Edinburgh	Emma Crowther	Telephone Call
	Edinburgh Napier University	Carola	Telephone Call
	Heriot Watt University	Chris Larkins	Telephone Call
	Queen Margaret University	Sarah Whelan	Telephone Call
	Forth Valley College	Ciara Newell	Telephone Call

1.3 Key Findings from Initial Engagement

The following headlines have been summarised from the initial conversations had with technical council officers and other interested organisations:

Key Cross Boundary Movements:

- Clackmannanshire ↔ Falkirk
- Clackmannanshire and Falkirk ↔ Stirling
- The Lothians ↔ Edinburgh

High levels of movement within the local authority areas

- Fife ↔ Edinburgh and Dundee
- Borders ↔ Edinburgh

Key Barriers and Gaps in Active Travel network

- Distances of travel can be too far for some people to do so using active travel modes
- Key junctions to negotiate heading into Edinburgh can be barriers
- Junctions heading from Clackmannanshire to Stirling are barriers
- Routes to the Clackmannanshire and Kincardine bridge are barriers
- Awareness of some routes is low, particularly those that are off-road

Active Travel Proposals:

- Many projects within local authority areas promoting short active travel trips
- East Lothian Cycle Highway linking from Dunbar into Edinburgh
- Edinburgh study looking at the feasibility of active travel on arterial routes

Public Transport:

- Proposals for new travel hubs / park and ride sites / new train stations
- There is poor active travel connectivity to some existing stations

Major Development Proposals:

- Large residential developments being built throughout – the largest in the Lothians and Fife
- Large mixed-use developments – the largest of which is the investment zone at Grangemouth, Longannett and West Edinburgh

Additional Comments:

"There is opportunity for cycle routes to link into bus stops or create warrant for new bus stops"
Scottish Borders Council

"In the urban context we do not support shared use footways. However, in more rural areas/smaller populations it is context specific. It depends on the local attractors – some may require segregation (schools etc.). Where pedestrian volume may be high or there is a lot of pedestrian movements, segregation would be required."
Sustrans

"For people to change their travel behaviours, a cultural and mindset change is needed as well as infrastructure"
Fife Council

The full list of stakeholder comments can be found at the end of this document.

2 Stakeholder Workshop

The stakeholder workshop was held on Thursday 23rd January. The purpose of the workshop was for Arup to present and confirm the work completed to date so far using a hands-on approach similar to that of the Greater Manchester Beeline Project. Design standards and approaches to prioritisation were also discussed.

2.1 Attendees

The following stakeholders were in attendance at the workshop:

Contact	Organisation
Tierney Lovell	Sustrans
Alan Murray	Clackmannanshire Council
Sarah Feldman	City of Edinburgh Council
Chris Alcorn	West Lothian Council
Ian Aikman	Borders Council
Emma Crowther	University of Edinburgh
Richard Sharpe	Transport for Edinburgh
Sarah Whelan	Queen Margaret University
Carola Bottcher	Edinburgh Napier University
Daniel Davidson	Edinburgh Airport
Iain Reid	East Lothian Council
Maria Llieva	East Lothian Council

The images below show the hands-on approach being used during the network planning workshop with stakeholders.

2.2 Key Findings from the Stakeholder Workshop

Key Cross Boundary Movements and Internal Links to Stations:

- Connection desired to link Ladybank Train Station to Falkland and Freuchie
- Connection desired to link Leuchers Train Station to St Andrews
- Connection required between Cardenden, Lochgelly, Cowdenbeath to Kirkcaldy for people commuting to work
- Connection desired to link Tweedbank Train Station with settlements to the west, including Peebles, Innerleithen, and Selkirk
- Connection desired to link Living North and Livingston South Train Stations to the centre of Livingston
- Connection desired to link Kirkliston to Winchrbugh, where there will be a new Train Station and shared services
- Connection desired between Alloa/Clackmannan and Kincardine due to shared services and large employment development taking place around Kincardine
- Connection desired between Clackmannanshire and Stirling for people commuting to work and further education (Stirling University)
- Connection desired across the Kincardine and Clackmannanshire bridges due to shared services and travel to work
- Connection desired from Falkirk to Stirling for people commuting to work and further education (Stirling University)
- Connection desired from Edinburgh Airport to the West of Edinburgh through new employment and residential developments
- Connections desired from the west, south and east into Edinburgh City Centre for people commuting to work and further education (University of Edinburgh, Heriot Watt, QMU, Edinburgh College and Edinburgh Napier)

Key Barriers and Gaps in Active Travel network

- There are large distances between settlements in the Borders which people are unlikely to walk or cycle
- The topography in the Borders makes it difficult for people to walk or cycle
- There are good sustainable travel connections north to south in the Borders with the NCN and bus services but very little west to east
- Cyclists avoid using the shared-use paths in the Borders due to high numbers of pedestrians
- The Bathgate Hills are a physical barrier, they provide a steep route from Livingston to Linlithgow

Solutions to Key Barriers:

- Where existing infrastructure is already at capacity, suggest an alternative direct route
- E-bikes can be introduced to enable people to travel longer distances and on varying topographies by bike, this is particularly important in Fife, the Borders and Clackmannanshire

Active Travel Proposals:

- Shared use active travel leisure route following the route of the Tweed, connecting the Borders with northern England
- New link along the B8046 to connect Ecclesmachan to Threemiletown
- The East Lothian cycle highway spanning from Dunbar to Musselburgh
- Edinburgh's City Mobility Plan contains active travel projects for Edinburgh City Centre

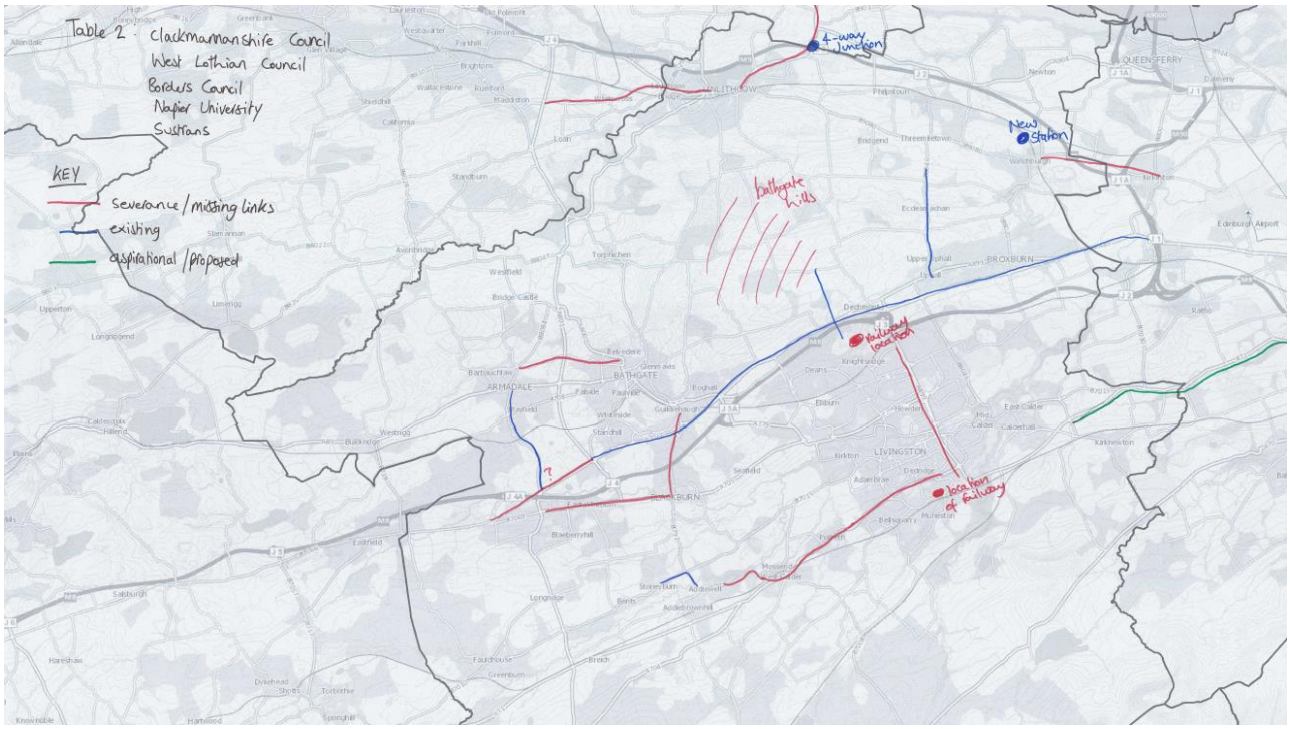
Public Transport:

- New stations at Levenmouth and Newburgh in Fife, connection required from Buckhaven from Leven
- New station at Reston in the Borders, connection required from Eyemouth to Reston
- Explore the opportunity for more bus bike stops to be located within the Borders linking to the network to encourage multi-modal journeys
- New station at the Winchburgh development in West Lothian

Major Development Proposals:

- New residential development taking place to the south west of Livingston, a link between Addiewell and Livingston South Train Station will provide the option for multi modal travel
- Pockets of new residential development in West Lothian, including Winchburgh and Allandale
- Large new developments in the west of Edinburgh, mainly residential and employment
- New residential and employment development taking place in the north of Edinburgh, around Leith in particular

The image below demonstrates an output from the hand-on approach where stakeholders were able to map and sketch their desired network.



3 Summary

All stakeholder comments and information was gathered at this stage using the GIS collector app tool. This allows for the data collected can be easily combined with that in the GIS database (collected in the desktop review and site audit stages, enabling further analysis to aid in the development of our network.

Organisation	rategicActiveTravelProposaeyCrossBoundaryMovementyBarriersinActiveTravelNetwPoorAirQualityZonesRoutes	KeyTransportInterchanges	MajorDevelopmentProposals	Comments
Clackmannanshire Council		Upgrades proposed which will link into Perth, a lot of the active travel links use off road routes which need to be upgraded or better lit but these are direct.		
Clackmannanshire Council	Electric bike stand as part of forty valley scheme			
Clackmannanshire Council	Electric bike stand as part of forty valley scheme			
Clackmannanshire Council			Mixed used large, majorly employment	
Clackmannanshire Council		Steep gradient and is likely to only be used by keen cyclists.		
Clackmannanshire Council	Disused railway bridge Alloa to throsk area			
Clackmannanshire Council			Forestmill development might not be happening but this is a good route between dollar and the bridges.	
Clackmannanshire Council	Toucan crossings			
Clackmannanshire Council	Segregated route through Alva to B908 and onto a off-road route, see plans from council.			
Clackmannanshire Council			Longannet development, there will be a lot of people potentially travelling to this site for employment which will put strain on the train sport network. Active travel will be a key method of travel to and from this point.	
Clackmannanshire Council			Industrial/warehousing development that is likely to happen due to Longannet, looking to be in new revision of the LDP.	
Clackmannanshire Council		Council have not explored the option of this road being used as a route but support proposals for this. There are barriers however at the roundabouts.		
Clackmannanshire Council			Housing	
Clackmannanshire Council		Council have not explored the option of this road being used as a route but support proposals for this. There are barriers however at the roundabouts.		
Clackmannanshire Council	Electric bike stand as part of forty valley scheme			
Clackmannanshire Council		Bus stance existing within this area.		

Clackmannanshire Council			This is a key link to Stirling uni, a lot of people who work at the uni can use this route and it would complete a loop in this area and Stirling.				
Clackmannanshire Council	Sustrans funded.	This is a key route which the council would like to see extended into Stirling centre.	Major barrier, high speeds and poor crossing facilities. Only really suitable for keen cyclists.				
	Active travel proposals in Clackmannanshire, existing and aspirational.						
East Lothian						Blindwells	
QMU	Musselburgh route 6						
East Lothian					Transport hub, bus and bike		
East Lothian					Transport hubs		
QMU					Musselburgh transport hub		
East Lothian					Dunbar transport hub		
QMU	East Lothian's plans for a segregated active travel highway from Dunbar to Musselburgh is planned to connect in with QMU.						
QMU						The business park at QMU, there is a proposal to have a new underpath linking going underneath the A1.	
QMU			There are a lot of students travelling between QMU and the Royal Infirmary, a route a long Niddrie Mains Road would better connect this area to the university.				
QMU					The frequency of services at this station is low at only one train per hour, this needs to be increased to meet demands and to be better used.		
QMU			Brunstane station has a major barrier in crossing the tracks, the existing bridge has stairs and is difficult for all users to cross.				
QMU		The key cross boundary movements are to East Lothian, Edinburgh and Midlothian. However, staff and students are also travelling for, further afield.					
QMU			The national cycle network is difficult to follow through housing and can be confusing for users, it is also not very direct.				

QMU			Currently there is no infrastructure from portobello to Musselburgh and the roads are dangerous. There are proposals for this.				
QMU			Gates on new route to Dalkeith park is ran inconvenience to cyclists and should be removed.				
Napier	Looking to improve their way finding and signage to craiglockhart campus.		A direct route to craiglockhart is needed, the existing is off road (canal) and not very strategic.				
Napier			Just eat bikes needed at Edinburgh park station for those travelling to sight hill campus.				
Midlothian Council	Toucan crossing linking routes together.						
Midlothian Council						Mixed use development planned, likely to include housing.	
Midlothian Council			Hillend barrier junction and roundabouts.				
Midlothian Council			Talks with Dalkeith country park to create link between shawfair and Midlothian.				
Midlothian Council	Cycle friendly junction						
West Lothian Council	Stoneyburn to addiewell station						
West Lothian Council					New blackridge station		
West Lothian Council	A801 Bathgate to Whitburn plans with proposals at roundabout planned						
						Likely to be housing 1000	
West Lothian Council	Sustenance funded route between Whitburn and harthill						
	Proposal 108						
West Lothian Council	Potential route to be solely for walking and cycling						
West Lothian Council	NCN75 from blackridge station to Armadale						
Herriot watt					The university would like to be able to link into edinburgh park and edinburgh gateway - providing more opportunities for staff and students to travel sustainably.		

West Lothian Council	Stoneyburn to fauldhouse junction b7015						
West Lothian Council						Drumshoreland 800 houses	
Fife Council	Commuters parking in Fife and crossing over into Dundee						
West Lothian Council	Link needs upgraded to link into Livingston						
West Lothian Council					Plans to expand uphill station, West Lothian have refused this		
West Lothian Council	Off-road disused railway line from Whitburn to stoneyburn						
West Lothian Council	Proposal for A71 - acom study						
Edinburgh airport	New road being built with a 3m cycleway that will link into Gogar						
West Lothian Council	P109 proposal link to bridge slips						
West Lothian Council	A76/A766 plans from Edinburgh to Lanarkshire through West Lothian						
West Lothian Council						New housing around 400 units	
CEC						West edinburgh development, West Craig's, Cammo, international business park.	
Herriot watt		Majority of students are travelling from Edinburgh, in particular the slate ford and Gorgie area.					
Fife Council					New bus routes now running between Dunfermline and Clackmannanshire which stop at coastal villages and Kincardine		
Herriot watt	Infrastructure is needed along these main arterial routes in order to encourage more students and staff to cycle and create safer routes						
CEC					the council are exploring opportunities for mobility hubs.		
CEC	There is a feasibility study to look at Edinburgh's major roads and see what can be done for active travel						
CEC	Link between Eccles and threemillietown to reach bus services B9080						
CEC	Edinburgh council has long term plans to make niddrie mains road part of the active travel network in the city, there are no proposals for this as of yet.						

West Lothian Council	Missing link here, can this link in with the old railway line						
West Lothian Council			New 200 space park and ride being appealed				
West Lothian Council						Housing development	
West Lothian Council	Tarmac route planned from uphill station through drumshoreland to Calder wood						
West Lothian Council	Cycleway 3m from winchburgh to kirkliston P96						
Fife Council						Housing - pedestrians and cycle link to the north of Dunfermline	
Fife Council						1000 housing development planned, requires an active travel link to balwearie high school which has constrains due to topography	
West Lothian Council	Lane field glen missing link pole the to Livingston						
Herriot watt	Route is needed to link from curriehill (and the station) to Herriot watt university						
Herriot watt						Development of the research centre could provide 2000 more jobs and the expansion of the Orium will attract more active users who would like the opportunity to walk and cycle.	
West Lothian Council						1000 houses and school	
West Lothian	Need proposals on the Falkirk side A904						
Fife Council						Link needed from development to high school	
Fife Council					Residents in wemys are unlikely to use the Kirkcaldy to buckhaven active travel route to get to train station given the opening of the new levenmouth station		

Fife Council							Fife Council have more of a focus on creating active travel linkages within towns to local attractors and public transport interchanges than they do linking far distances
Fife Council	Proposal for bypass around Cupar, see fife council development plan						
Fife Council						Junctions surrounding the new housing development are to become signalised with pedestrian facilities	
Fife Council							For people to change their travel behaviours, a cultural and mindset change is needed as well as infrastructure
Fife Council						Housing development has been given approval of approx 1800 houses	
Fife Council						New railway to link from Kirkcaldy into levenmouth, this will include a new station	
Falkirk Council	Segregated cycle foot way along Grangemouth road to support investment zone at Grangemouth						
Falkirk Council			Constraints on the roads, limited space and there are barriers such as rail bridges.				
Sustrans							In the urban context we do not support shared use footways. However, in more rural areas/smaller populations it is context specific. It depends on the local attractors - some may

Falkirk Council				Air quality monitoring zone due to canyoning from buildings			
Borders Buses					There are bike buses on Peebles Rd, east coast and the A7.		There is opportunity for cycle routes to link into bus stops or create warrant for new bus stops
Falkirk Council						Mixed use development	
Falkirk Council				Air quality monitoring zones due to the close proximity of the motorway			
Falkirk Council						Possible residential development	
East Lothian					New train station to open at East Linton in 2024.		
Falkirk Council						Grangemouth planned investment zone	
Borders Council						Housing development 100s of houses	
Falkirk Council					STAG reappraisal of bonnybridge railway station		
Falkirk Council	Possibilities for cycle route along the Grangemouth flood prevention scheme						
East Lothian	Cycle super highway from Dunbar to Edinburgh, will be segregated.						
Falkirk Council							travelling within the Council area. 40% outwith which
Borders Council			Interchange				
Falkirk Council						Mixed use development, possibly residential	
Borders Council							Lots of money is being spent on cycling alongside the flood prevention scheme.
Falkirk Council					Park and choose - electric bike and bus interchange		
Borders Council	New path						
Falkirk Council					Possible park and choose site		
Falkirk Council						Employment site - office, retail, hotel, leisure	
Borders Council			This route is very hilly and tough for regular cyclists as it's route goes over the granites.				
Falkirk Council	Disused railway line Denny to Falkirk						
Borders Council	Multi use path						
Falkirk Council					Grahmnston station will be public transport interchange		

Appendix D

Multi-criteria assessment technical note

TRANSPORT SCOTLAND
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South East of Scotland Transport Partnership

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Technical Note

Project title	SEStran Strategic Network
Job number	297148-00
File reference	Issue
cc	
Prepared by	Jamie Smith/ Jodie Allan/ Mark Bowman
Date	09 November 2023
Subject	SEStran Local Authority Multi Criteria Assessment Engagement Summary Report

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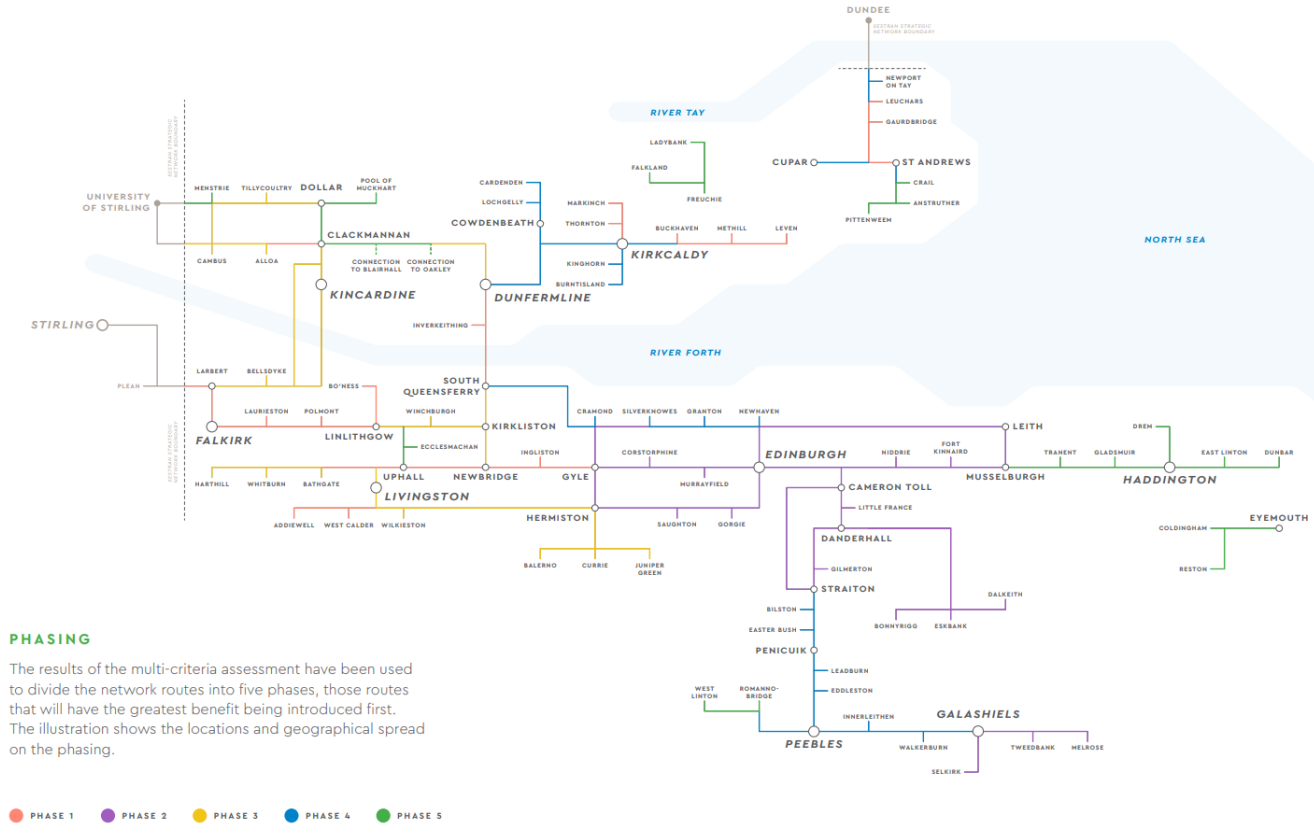
1. Introduction

In 2019/2020, the SEStran Strategic Network (https://sestran.gov.uk/the-game-changer-sestran-strategic-network/) was prepared by Arup and published by SEStran, which identified a vision for a future network of high quality active travel routes across the SEStran area, connecting key settlements, land uses and public transport hubs across the region. The network was identified and split into a total of 81 proposed routes across the region. These routes were divided into 5 phases based on the outcome of a Multi Criteria Assessment (MCA), which aims to inform the future delivery of the network based on the level of benefit of each route and local authority priorities.

Figure 1: SEStran Strategic Network Phasing (2019/2020)



Since the publication of the strategic network, Arup has been working with SEStran to develop routes that form part of the network. Funding from Transport Scotland has supported the development of feasibility studies, concept designs, and the collection of topographic and utility survey data for a number of the routes identified within phase 1 and phase 2 of the network.

Arup was appointed by SEStran in 2023 to undertake a revised Multi Criteria Assessment (MCA) exercise for the strategic network, to inform an updated prioritisation / phasing of routes within the network. This is an update from the original MCA work undertaken in 2019/2020.

This MCA update has been undertaken to reflect changes across the SEStran region since the original publication of the strategic network. These changes include:

- New data available.
- New developments/proposals throughout the region.
- Changes in travel patterns across the region post-covid.
- New guidance and policy to inform MCAs.
- Changes in priorities for local authorities and decision makers.

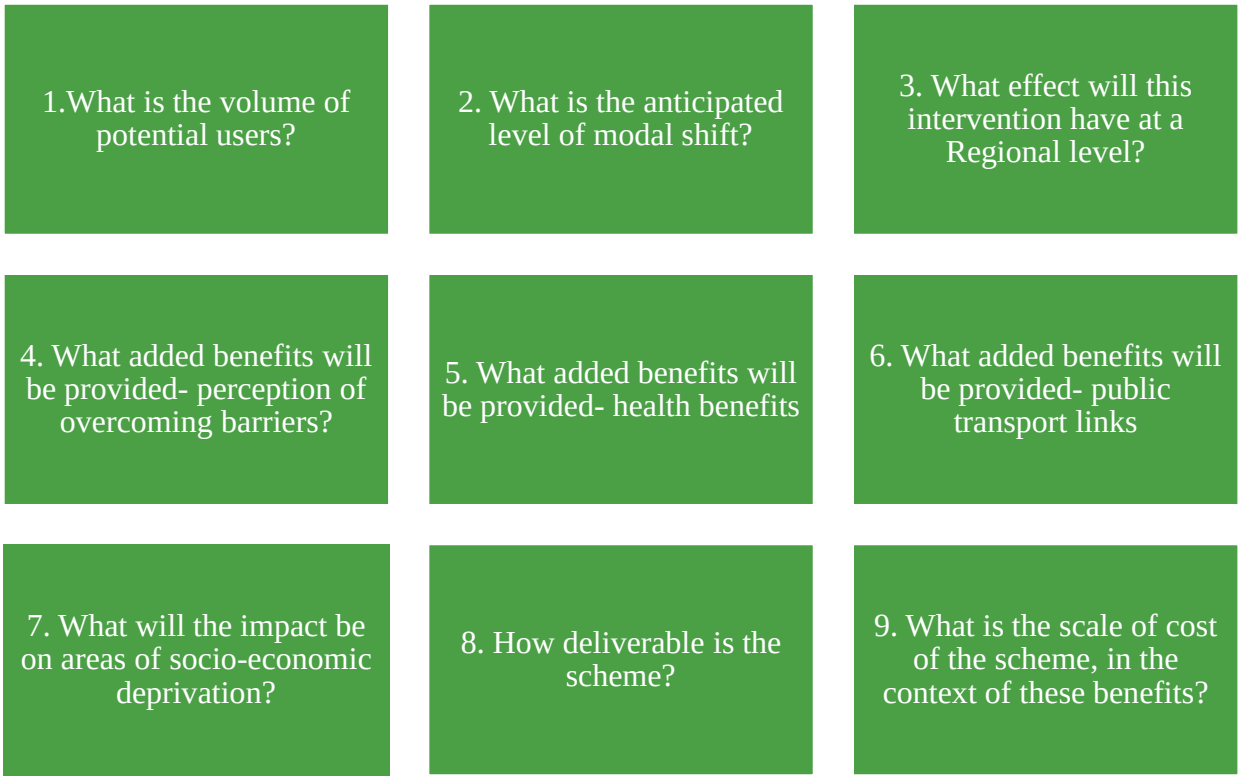
This report provides a summary of the engagement undertaken with the partner local authorities across the SEStran region, and how this engagement has informed the MCA update. This includes any suggested additions/ omissions to the criteria by each local authority, and local data, projects and priorities that have been used to feed into the MCA.

Based on the outcomes of the partner engagement exercise, the MCA has been updated (see **Section 5**). The MCA update has informed updates to the phasing of the network, which is summarised in **Section 6**.

2. Emerging Multi Criteria Assessment

This section provides a summary of the emerging MCA, which was presented to each local authority throughout September 2023. This included a summary of the previous MCA criteria, the emerging MCA criterion and the key updates to data since 2019/2020 that have been used to inform the MCA (see **Table 2**).

The previous MCA criteria used in 2019/2020 was as follows:



Following an initial review of the criteria used in 2019/2020, the emerging update to the MCA criteria shared with each local authority in September 2023 was as follows:

This emerging MCA criteria aims to build on the previous MCA undertaken based on updates to data and policy since 2019/2020 and best practice. This criterion was subject to change following discussions with each local authority.

Table 1 provides a summary of the data changes from 2019 to 2023 for each of the key criteria.

Table 1: MCA data changes

MCA Key Theme	Original MCA Data Source (2019)	Updated MCA Data Source (2023)
1. Demand	Census 2011	Sustrans Network Planning Tool (2023)
2. Fit with strategy/policy	National Transport Strategy, Strategic Transport Projects Review and National Planning Framework 3	Updated based on discussions with each local authority
3. Connectivity to Key Services	Local knowledge, local development plans and local transport strategies	Updated and mapped using GIS
4. Overcoming Barriers	DfT collision data (2015-2019)	DfT collision data (2017 to 2021)

5. Health Benefits	HEAT (Health Economic Assessment Tool) for walking and cycling	Following a review, this criteria is not being included as part of the MCA moving forward. This is due to the uncertainty around the nature of the proposals and the high-level cost estimates being prepared for each route, which creates uncertainty in relation to the associated health benefits/ impacts.
6. Economic Hardship	SIMD (2016) and Census 2011 Car or van availability	SIMD (2020) and Census 2011 car or van availability
7. Deliverability	Typical Costs of Cycling Interventions (2017) and discussions with each local authority	The benefit cost ratio (BCR) analysis prevoiusly undertaken has not been included in the update guidance now moving beyond the use of BCRs for active travel schemes. Typical Costs of Cycling Interventions (2017) with 20% added to account for inflation, open-source land ownership data and discussions with each local authority.

The above items were used to inform and prompt discussions. The outcome of these discussions would inform the development of the final MCA criterion.

3. Summary of Partner Engagement

The SEStran area consists of eight local authorities: Falkirk Council, East Lothian Council, Fife Council, West Lothian Council, Clackmannanshire Council, Midlothian Council, Scottish Border Council and City of Edinburgh Council.

Arup have engaged with all partner local authorities across the SEStran region regarding the strategic network and the MCA updated. This included a 1-hour session on Teams with the Active Travel/ Transport officers for each local authority.

Table 2 outlines the local authorities, details of each engagement session and key contacts engaged in the project.

Table 2: Partner local authorities and contacts

Local Authority	Session Date/Time	Contacts
Falkirk Council	14th September 2023, 10am-11.30am	Adam Watson Koyejo Olugbile
East Lothian Council	21st September 2023, 11am-12noon	Morag Haddow Chris Milne
Fife Council	22nd September 2023, 10am-11.30am	Allan Maclean

West Lothian Council	22nd September 2023, 2.30pm-3.30pm	Victoria Mungall Chris Nicol
Clackmannanshire Council	26th September 2023, 11am-12noon	Stuart Cullen Lesley Deans
Midlothian Council	15th September 2023, 3pm-4pm	Madeline bell Steven Psihramis
Scottish Borders Council	26th September 2023, 2pm-3pm	Graeme Johnstone Denise Brydon Mauqrizio Racket
City of Edinburgh Council	29th September 2023, 2pm-3pm	Martin Lings Michael MacKenzie

This section provides an overview of the key outcomes from discussions with each partner local authority. These discussions have been used to understand local priorities and inform the development of the final MCA. Each discussion has been summarised into the following sub-sections:

- Comments on proposed MCA.
- Local data, projects and priorities that could influence the MCA.
- Insights to any MCA being developed by the local authorities.

This section also outlines the key actions emerging from each discussion, which have since been followed up with each local authority and incorporated into the final MCA.

3.1 Falkirk Council

3.1.1 Comments on Proposed MCA

Falkirk Council officers were generally content with the approach outlined to the MCA.

The council officers outlined that they have undertaken a similar exercise to inform the development of their emerging Active Travel strategy, which they will share when the results are made available by their consultant.

Officers suggested the inclusion of a ‘Green Space/Recreation’ sub-criteria item under the 'Connectivity to Key Services' criteria.

3.1.2 Local Data, Projects and Priorities

Council officers mentioned that they may have traffic survey data at relevant locations which could be used to inform the MCA and future studies. They will review and send over any survey data that may be relevant to the strategic network.

Falkirk Council's Active Travel Strategy and Local Transport Strategy has recently been published and shared. The active travel corridors identified that are a priority within the strategy and align with the Strategic Network include Falkirk to Polmont, Falkirk to Larbert and Larbert to Bellsdyke (Bellsdyke Road).

The main transport project that has the potential to overlap with the Strategic Network includes the Bus Partnership Fund (BPF) Corridors being progressed by the Forth Valley Bus Alliance, such as the A9 Stirling Road and A803 Glasgow Road. BPF proposals should be considered moving forward alongside any future active travel proposals.

3.1.3 Actions

- Falkirk Council officers to review internal traffic data and provide any relevant data to inform the MCA
- Falkirk Council officers to provide information on the MCA which informed their Active Travel Strategy when made available by their consultant.
- Arup to add an additional 'Green Space/Recreation' sub-criteria item under the 'Connectivity to Key Services' criteria.
- Arup to use the Falkirk Active Travel Strategy and Local Transport Strategy, alongside the outcomes of the discussion, to inform the MCA.

3.2 East Lothian Council

3.2.1 Comments on Proposed MCA

East Lothian Council officers were generally content with the emerging MCA presented. They mentioned that there is an overlap between this MCA and the MCA/ prioritisation exercise being prepared as part of the emerging East Lothian Active Travel Strategy.

Council officers suggested that a 'Cross-Boundary' criteria be added to the MCA. This would emphasise the regional approach being taken to the network which should complement the local active travel networks that are being developed by local authorities.

3.2.2 Local Data, Projects and Priorities

East Lothian Council have multi-modal counters across the council that can be shared.

Additionally, a *Paramics Discovery* microsimulation traffic model has been developed for the key urban areas to the west of East Lothian. This model has recently been calibrated and validated.

The corridor between Musselburgh and Dunbar is being delivered through the East Lothian Active Freeways Project, therefore routes along this corridor are a priority for East Lothian Council.

The Haddington to Drem section of the strategic network was outlined as not being a priority for East Lothian Council officers.

3.2.3 Actions

- East Lothian Council officers to provide any relevant multi-modal movement data.
- Arup to add an additional 'Cross-Boundary' criteria to the MCA.
- Arup to use the outcomes of the discussion to inform the MCA.

3.3 Fife Council

3.3.1 Comments on Proposed Multi Criteria Assessment

Fife Council were generally content with the emerging MCA presented.

Fife Council currently do not have a prioritising process for active travel projects. Projects often come forward when they are presented with ideas from communities/key stakeholders.

Fife Council have recently appointed a consultant to identify an active travel network with an MCA to prioritise routes and actions. They are striving to undertaken consultation in November, where there may be an opportunity to combine their work with work being undertaken by Arup/SEStran.

3.3.2 Local Data, Projects and Priorities

Road adoption plans are available within an online GIS database. More detailed land ownership information and local traffic data may be available upon request.

The Cupar to Guardbridge and Kinghorn to Kirkcaldy routes that are being progressed to feasibility stage align well with Fife Council priorities. The Burntisland to Kinghorn and Kirkcaldy to Buckhaven routes have also had feasibility studies undertaken recently.

3.3.3 Actions

- Arup to consider any data they may require and submitted a request to Fife Council if/when appropriate.
- Arup to use the outcomes of the discussion to inform the MCA.

3.4 West Lothian Council

3.4.1 Comments on Proposed Multi Criteria Assessment

The West Lothian Council officer was generally content with the emerging MCA presented.

An Active Travel Strategy is currently being developed for West Lothian which includes an MCA. West Lothian do not have sight of what the MCA consists of yet, however it would be good to compare. West Lothian are happy to share when more information is available.

3.4.2 Local Data, Projects and Priorities

Land ownership data is available upon request from the West Lothian Council estates team. However it is unlikely that there will be any relevant traffic data available.

Local priorities will depend on the results from the West Lothian Active Travel Strategy MCA. The Council officer did however mention that the Livingston to Addiewell route remains part of their strategy.

One local priority is to design part of the National Cycle Network Route 76 between Kirknewton and East Calder.

3.4.3 Actions

- West Lothian Council officers to share more information about their Active Travel Strategy MCA when available.
- Arup to use the outcomes of the discussion to inform the MCA.

3.5 Clackmannanshire Council

3.5.1 Comments on Proposed Multi Criteria Assessment

Clackmannanshire Council officers were generally happy with the approach taken to the MCA.

Clackmannanshire are currently developing the Local Transport Strategy, and they are currently recruiting for an active travel officer who will be likely to take this on. However, the strategy is unlikely to include an MCA.

Clackmannanshire officers suggested adding the following additional criterion to the MCA:

- Environmental factors such as biodiversity / habitat improvements and route resilience to climate change.
- Maintenance of routes, including lighting.

Clackmannanshire officers also provided suggestions around the strategic network when this was presented on screen. This included clarity around which sections of the network have already existing active travel infrastructure, and the communication of any changes to the phasing in Clackmannanshire.

3.5.2 Local Data, Projects and Priorities

Clackmannanshire Council officers noted their priorities in relation to active travel, which are listed below:

- Dollar to Stirling and Alloa to Stirling are priority routes being progressed through the Stirling City Region Deal.
- Links from Fishcross to Alloa, Tillicoultry and onwards to Stirling is also a priority, however Fishcross is not specifically part of the Strategic Network.
- Alloa to Clackmannan is still a route to be considered moving forward, however is a lower priority for the council than the routes from Clackmannanshire into Stirling identified above.
- Dollar to Pool of Muckhart is considered as more of a priority now due to ongoing development and the fact that no bus services now serve this area.

Clackmannanshire officer also consider that one of their main drivers for investment is socio-economic deprivation.

On potential interdependencies with other projects, Clackmannanshire officers acknowledge that there has been very little movement/ communication recently from Network Rail on the proposed Clackmannan Rail Station, therefore an active travel connection to this area should be considered as a lower priority.

The Bus Partnership Fund Corridors being progressed, such as A9 Stirling Road and A803 Glasgow Road, have been considered as potential interdependencies within the MCA.

3.5.3 Actions

- Arup to consider Clackmannanshire Council officers' suggested additional criterion above within the MCA.

3.6 Midlothian Council

3.6.1 Comments on Proposed Multi Criteria Assessment

Midlothian Council are currently in the process of developing a programme of routes which will act as an active travel strategy and include an MCA. They ran through their MCA on screen and compared this to the Strategic Network MCA. The following items were identified for potential consideration as part of the Strategic Network MCA:

- Route elevation.
- Perceived barriers/ safety.
- Car or van ownership - focusing on areas of high car usage.
- E-bike stations/ hubs.
- Level of public support for active travel proposals.
- Visitor/tourism attractions.

3.6.2 Local Data, Projects and Priorities

Midlothian Council potentially have some information on visitor/tourism attraction which they could share to inform the MCA.

The following local projects have been identified by Midlothian Council officers as a priority:

- A7 Active Travel route.
- Safe routes to schools.
- Penicuik to Eddleston Active Travel cross-boundary route.

Other transport projects which are likely to overlap with the strategic network include the Orbital Bus Route project and the Bus Partnership Fund corridors being progressed by the Midlothian Bus Alliance.

3.6.3 Actions

- Midlothian Council officers to share local visitor/tourism attraction information to inform the MCA.
- Arup to consider Midlothian Council officers' suggested additional criterion above within the MCA.

3.7 Scottish Borders Council

3.7.1 Comments on Proposed Multi Criteria Assessment

An Active Travel Strategy for the Scottish Borders is being developed by the Scottish Borders Council's Sustrans embedded officer. They would like this strategy to be community and data-led to inform the prioritisation of proposals across their local authority. There is also currently a consultation exercise ongoing about active travel across the Scottish Borders.

Scottish Borders Council officers identified the potential for a section within the strategic network MCA about how active travel routes may be delivered through new developments.

3.7.2 Local Data, Projects and Priorities

Scottish Borders Council officers stated that they felt cost is an important criterion to consider, therefore this should remain in the MCA under deliverability. The Peebles to Earlston water path has recently been delivered by the Scottish Borders Council with challenging land issues. The cost was approximately £2.5million.

Links between Midlothian and Scottish Borders are a priority, which should be reflected in the MCA update.

Active travel links to Reston Station from surrounding communities is also a priority, as is a connection from Earlston to Melrose and onwards to Galashiels.

The SEStran project dashboard was also discussed. Scottish Borders Council officers would like access to the dashboard to provide updates on the status of their projects.

3.7.3 Actions

- Arup to consider Scottish Borders Council officers' suggested additional criterion above within the MCA.
- Arup to use the outcomes of the discussion to inform the MCA.

3.8 City of Edinburgh Council

3.8.1 Comments on Proposed Multi Criteria Assessment

The City of Edinburgh Council officer was content with the MCA being developed. Their general feedback was that they felt cycling links cross-boundary are more important than walking.

Edinburgh's Active Travel Action Plan is being refreshed using the propensity to cycle tool, which is being developed by the University of Leeds similar to the Sustrans Network Planning Tool. The officer stated that it would be interesting to compare their inputs with the Sustrans Network Planning Tool to check they are representative.

3.8.2 Local Data, Projects and Priorities

The council outlined that the City Mobility Plan is the best document to review in relation to modal shift targets to inform the MCA.

City of Edinburgh Council are working on several projects across the city and are aiming to work more strategically. For example, the City Mobility Plan is prioritising each corridor and its modes and purpose based on space available. This is likely to deliver corridors focused on active travel movement and other corridors focussed on public transport through an integrated approach.

As mentioned above, the city's Active Travel Action Plan is being refreshed, and the current investment programme can be found in page 39 of the Action Plan.

The Musselburgh to Portobello active travel route remains a priority for Edinburgh.

3.8.3 Actions

- Arup to review the documents outlined above, and the findings from the discussion, to inform the MCA.

4. Multi Criteria Assessment Update

As shown throughout **Section 4**, each local authority were generally content with the emerging MCA presented on screen. There were also a number of additional criteria which were suggested for inclusion in the final MCA. **Table 3** provides an overview of the suggested criterion, whether each suggestion will be taken forward as part of the MCA or not and a justification for this decision.

Table 3: Summary of suggested additional MCA criterion

Criteria	To be taken forward (Y/N)	Justification
Green space/ recreation	Y	To be added as a sub-criteria in the 'Connectivity to Key Services' criteria.
Cross boundary routes	Y	To be added as an additional criteria.
Environmental factors	N	Following a review, it was considered that environmental factors such as biodiversity/ habitat improvements and resilience to climate change would be difficult to incorporate at this early route planning stage. These factors should however be considered at future feasibility and concept design stages for each route.
Route maintenance	N	Following a review, it was considered that maintenance of routes and lighting requirements are uncertain at this early route planning stage. These factors should therefore be considered at future feasibility and concept design stages for each route.
Elevation	Y	Elevation is a factor that is forms part of the Sustrans Network Planning Tool, therefore has been considered as part of the 'Demand' criteria. It was considered therefore that having an standalone Elevation criteria within the MCA would lead to double-counting of this item.
Perceived barriers/ safety	N	Following a review, this item will not be included as a as there is not the region wide level of information required to assess all routes and there could be crossover with crtieria already encompassed within 'Overcoming the Barriers'.
Car or van ownership (focusing on areas of high car usage)	Y	To be included as a sub-criteria under the 'Economic Hardship' section. However, the criteria within the MCA considers areas of low car ownership due to the aims and objectives of the strategic network, and the priorities of NTS2, being around reducing inequalities across the region.
E-bike stations/ hubs	N	Following a review, this item will not be included due to the absence of formal e-bike hire schemes across the region other than cycle shops, which are used primarily for visitor/leisure purposes.

		In addition, the only existing e-bike hire scheme in the SEStran area already connects to key services that have already been scored positively as part of the 'Connectivity to Key Services' criteria.
Level of public support	Y	This item is covered as part of the 'Local Policies, Projects and Priorities' criteria, as local authorities provided an indication of community/public support for proposed routes.
Visitor/ tourism attractions	N	Following a review, this item will not be included as a standalone item due to the focus of the strategic network being on everyday trips. However, this item will be covered to a certain extent as part of other sub-criteria such as 'green space/ recreation' under 'connectivity to key services'.

Following the review of additional criteria suggested by each local authority in **Table 3**, the MCA update has been finalised and is summarised below.

1. Demand

2. Local Policies, strategies and priorities

3. Connectivity to key services:
- Public transport
- Healthcare
- Education
- Employment
- Existing routes
- Town centres/retail
- Future development
- Greenspace/ leisure

4. Overcoming barriers:
- Collisions
- Physical barriers

5. Cross boundary

6. Economic Hardship:
- Deprivation
- Car or van ownership

7. Deliverability:
- Costs
- Landownership
- Interdependencies

As explained previously in **Table 1**, the 'Health Benefits' criteria was not taken forward as part of this MCA. This criterion was not a key criterion identified by the partner local authorities during discussions. However, health will be recognised and covered indirectly by other criteria such as demand in getting more people walking, wheeling and cycling, connectivity to key services, overcoming barriers and economic hardship.

4.1 MCA Fit with Updates to National and Regional Policy

As mentioned in **Section 2**, there have been various national and regional policies published since the publication of the original SEStran Strategic Network. These include:

- Scotland's National Transport Strategy 2 (NTS2)
- Scotland's Strategic Transport Projects Review 2 (STPR2)
- SEStran Regional Transport Strategy (RTS) 2035

To confirm that the MCA update is fully aligned with updates to national and regional policy, the MCA criteria has been cross-check against the key objectives and recommendations within each policy. How the MCA fits with the main policy updates since 2019/2020 is summarised below.

4.1.1 Scotland's National Transport Strategy 2

NTS2 was published in 2020, and has four priorities which underpin the strategy. **Table 4** summarises how the MCA update aligns with these priorities.

Table 4: NTS2 Priorities and fit with MCA

NTS2 Priority	Most Relevant MCA Criteria
Reduces Inequalities	2- Local policies, strategies and priorities 3- Connectivity to key services 4- Overcoming barriers 5- Cross-boundary routes 6- Economic hardship
Takes Climate Action	1- Demand 3- Connectivity to key services 5- Cross-boundary routes 6- Economic hardship
Helps deliver Inclusive Economic Growth	1- Demand 3- Connectivity to key services 6- Economic hardship 7- Deliverability
Improves our Health and Wellbeing	1- Demand 2- Local policies, strategies and priorities 3- Connectivity to key services 4- Overcoming barriers 5- Cross-boundary routes 6- Economic hardship

4.1.2 Scotland's Strategic Transport Projects Review 2

STPR2 was published in 2022, and outlines an ambitious plan for investment across Scotland's transport system over the next 20 years across a number of modes and major projects, which has

been informed by the ambitions outlined in NTS2. There are a number of recommendations related to improving active travel infrastructure. **Table 5** provides a summary of how these recommendations related to the MCA update.

Table 5: STPR2 recommendations (improving active travel infrastructure) and fit with MCA

Recommendation (Improving Active Travel Infrastructure)	Most Relevant MCA Criteria
(1) Connected neighbourhoods	3- Connectivity to key services 5- Cross-boundary routes
(2) Active freeways and cycle parking hubs	3- Connectivity to key services 5- Cross-boundary routes
(3) Village-town active travel connections	3- Connectivity to key services 5- cross-boundary routes
(4) Connecting towns by active travel	3- Connectivity to key services 5- Cross-boundary routes 6- Economic hardship
(5) Long-distance active travel network	5- Cross-boundary routes

4.1.3 SEStran Regional Transport Strategy

SEStran published their RTS in 2022, which is "a statutory RTS to provide a strategic framework for transport management and investment" within the SEStran area under the Transport (Scotland) Act 2005. One of the key themes of the RTS is around delivering safe active travel facilities, where a number of actions have been identified, one of which is centred around delivery of the strategic network. **Table 6** summarises how these actions are aligned with MCA update.

Table 6: SEStran RTS Actions (Delivering Safe Active Travel) and fit with MCA

Action (Delivering Safe Active Travel)	Most Relevant MCA Criteria
"Progress the delivery of the SEStran Strategic Network and broader cross boundary networks with partners. Develop further phases of this network to ensure a long-term pipeline of investment"	All
"Review destinations served by the active travel network to identify gaps and locations where cross boundary schemes may be required to ensure an integrated, high quality network exists"	3- Connectivity to key services 5- Cross-boundary routes
"Promotional and communication campaigns to highlight the benefits of active travel across the region and encourage people to adopt it where possible"	N/A
"Deliver road safety measures that enable people to safely use active travel within in the region"	4- Overcoming barriers
"Expand the provision of bike sharing initiatives across the region"	N/A
"Consider the case for amendments to legislation to ensure that the requirements of all users are appropriately taken into	N/A

consideration in the planning and implementation of our active travel network"	

5. Network Phasing Update

Following the MCA update, updates to the phasing of the strategic network have been made based on the MCA scoring results. This supersedes the phasing of the strategic network undertaken in 2019/2020 as shown in **Figure 1**.

Similar to the phasing undertaken in 2019/2020, the network has been split into 5 phases. Phase 1 consists of the routes of highest priority that have yielded the highest scores, and phase 5 comprises the routes of lower priority that have yielded the lowest scores.

The phasing was determined based on the average scores for each of the routes, and have been split into the following score bandings:

- Phase 1- average score above 3.5
- Phase 2- average score between 3 and 3.5
- Phase 3- average score between 2.5 and 3
- Phase 4- average score between 2 and 2.5
- Phase 5- average score below 2

Table 4 provides a summary of the updated network phasing.

Table 7: Updated Network Phasing

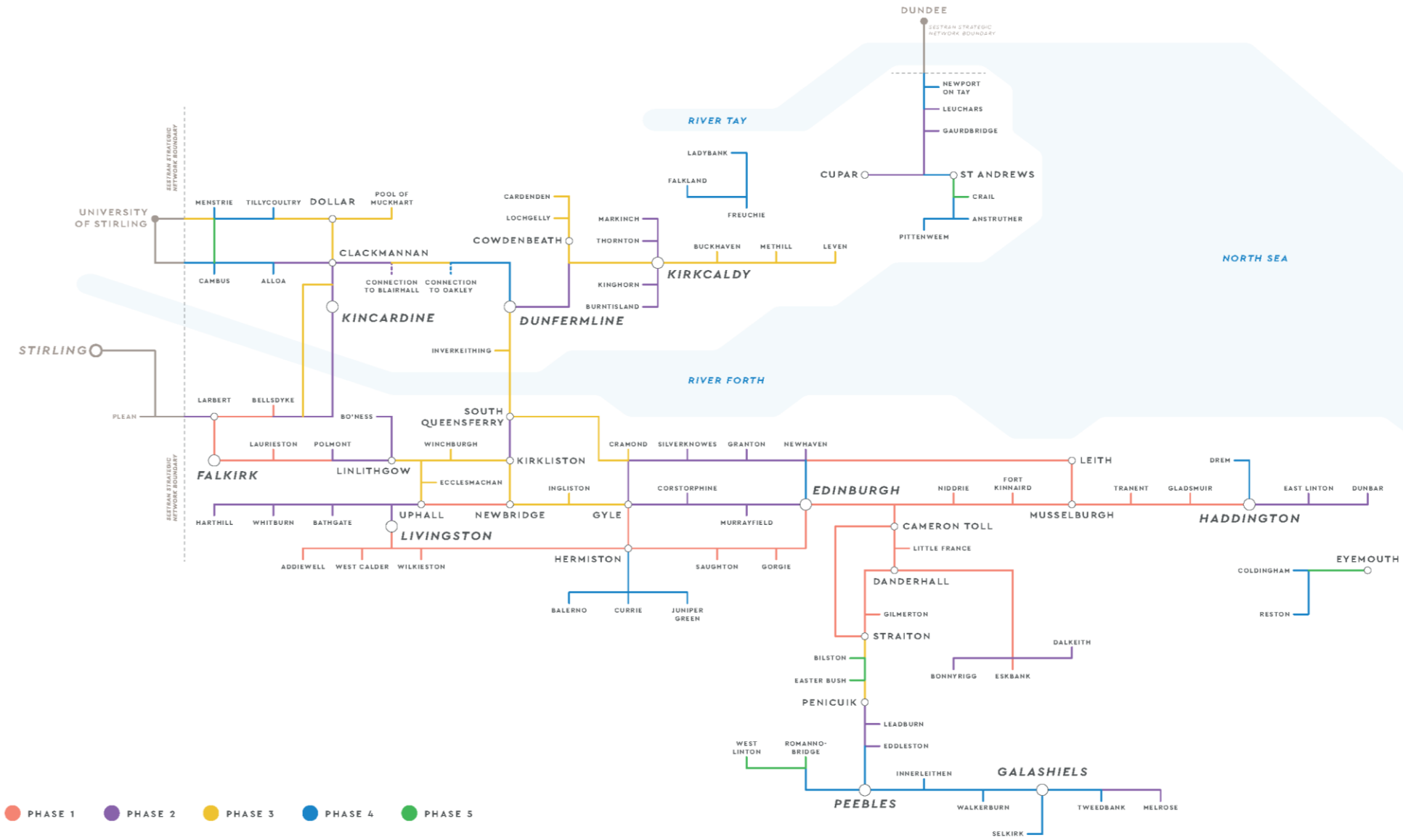
Route Name	Previous Phase	New Phase
Musselburgh - Fort Kinnaird	2	1
Musselburgh- Newhaven	2	1
Fort Kinnaird - Cameron Toll	2	1
Falkirk- Polmont	1	1
Larbert- Falkirk	1	1
Livingston- Addiewell	1	1
Haddington - Musselburgh	5	1
Gyle - Hermiston	2	1
Danderhall - Straiton	2	1
Bellsdyke- Larbert (Bellsdyke Rd)	3	1
Hermiston - Gorgie	2	1
Little France- Edinburgh City Centre	2	1
Straiton - Cameron Toll	2	1
Livingston- Hermiston	3	1
Gorgie - Edinburgh City Centre	2	1
Little France - Eskbank Station	2	1
Uphall- Newbridge	1	1
Uphall- Bathgate	1	2
Alloa- Clackmannan	1	2
Bathgate-Harthill (SEStran boundary)	3	2

Eddleston- Penicuik	4	2
Larbert- Plean (SEStran Boundary)	1	2
Kirkcaldy- Burntisland	4	2
Dalkeith - Bonnyrigg	2	2
Gyle - Edinburgh City Centre	2	2
Newhaven- Cramond	4	2
Leuchars - Cupar	4	2
Uphall- Livingston	1	2
East Linton - Haddington	5	2
Clackmannan- Blairhall	5	2
Dunbar - East Linton	5	2
Bo'ness- Linlithgow (via A804)	1	2
Markinch - Kirkcaldy	1	2
Kirkliston- South Queensferry	3	2
Clackmannan- Bellsdyke (via Kincardine Bridge)	3	2
Cramond - Gyle	2	2
Cowdenbeath - Dunfermline	4	2
Polmont- Linlithgow	1	2
Dollar- Pool of Muckhart (SEStran boundary)	5	3
Clackmannan- Bellsdyke (via Clackmannanshire Bridge)	3	3
Buckhaven-Kirkcaldy	4	3
Gyle - Ingliston	1	3
Kirkliston-Newbridge	3	3
Menstrie - SEStran Boundary	5	3
Winchburgh- Kirkliston	3	3
Dunfermline Town - Inverkeithing (Ferry Toll P&R)	1	3
Inverkeithing (Fery Toll P&R) - South Queensferry	1	3
Buckhaven - Leven	1	3
Linlithgow- Winchburgh	3	3
Cambus- SEStran Boundary	3	3
Newbridge - Ingliston	1	3

Kirkcaldy- Cowndenbeath (avoiding A92)	4	3
Cardenden -Cowdenbeath	4	3
Melrose - Galashiels	3	3
Straiton- Penicuik	4	3
Blairhall - Oakley	5	3
South Queensferry- Cramond	4	3
Winchburgh- Uphall	5	3
Dollar- Clackmannan	5	3
Newhaven - Edinburgh City Centre	2	4
Oakley - Dunfermline	3	4
Hermiston- Currie	3	4
Newport-on-Tay - Leuchars	4	4
Juniper Green- Balerno	3	4
Reston- Coldingham	5	4
St Andrews - Leuchars	1	4
Tillicoultry-Menstrie	3	4
Cambus- Alloa	3	4
Walkerburn- Peebles	4	4
Galashiels- Walkerburn	4	4
Haddington - Drem	5	4
Peebles- Eddleston **	4	4
Crail - Pittenweem	5	4
Tweedbank-Selkirk	2	4
Falkland - Ladybank	5	4
St Andrews - Crail	5	5
Coldingham- Eyemouth	5	5
Peebles- Romannobridge	5	5
Rommanobridge- West Linton	5	5
Bilston - Easter Bush	4	5
Cambus- Menstrie	3	5

Figure 2 provides an updated schematic diagram for the strategic network based on the above updates to the network phasing.

Figure 2: Updated SEStran Strategic Network phasing schematic diagram (2023)



In summary, the results of the MCA update and subsequent changes to the network phasing show that the priority routes identified by each of the local authorities have broadly been reflected in these updates. Changes to the phasing are considered to be subtle across the network, for example some routes have moved from phase 1 to phase 2 and vice versa.

Table 5 summarises some key example routes where the phasing has notably changed from 2019/202 , and potential reasoning behind these changes.

Table 8: Summary of key network phasing changes

Route	Update from 2019/2020	Potential Reasoning
Haddington to Musselburgh	Phase 5 to Phase 1	This route is a priority for East Lothian Council due to being part of the East Lothian Active Freeways project. A more extensive assessment looking at a range of services under 'Connnectivity to Key Services' has contributed to an increased score. This route previously socred low on the BCR analysis which has been removed from the assessment in line with guidance and best practice.
Bellsdyke to Larbert	Phase 3 to Phase 1	This route is a priority for Falkirk Council due to being identified as a key route within their Active Travel Strategy. Looking at both collision data and the notable physical barriers along a route has increased this routes score under 'Overcoming the Barriers'. Looking at both car or van ownership as well as updated SIMD has increased this routes score under 'Economic Hardship'.
Livingston to Hermiston	Phase 3 to Phase 1	The MCA scoring has increased for this route due to the emphasis on cross boundary links, which this route would achieve between West Lothian and Edinburgh. A more extensive assessment looking at a range of services under 'Connnectivity to Key Services' has contributed to an increased score. This route previously socred low on the BCR analysis which has been removed from the assessment in line with guidance and best practice.
Bo'ness to Linlithgow	Phase 1 to Phase 2	This route is a priority for Falkirk Council within their Active Travel Strategy. However, there was no indication from West Lothian Council that this is a priority, which has reduced the scoring of this route albeit on a small scale. This route has scored lower under 'Demand' having used the new Sustrans NPT.

		A more extensive assessment looking at a range of services under 'Connnectivity to Key Services' has contributed to a decreased score.
St Andrews to Leuchars	Phase 1 to Phase 4	The MCA score for this route has reduced as Fife Council indicated that this is not a priority, since there is already existing active travel facilities between these places. A more extensive assessment looking at a range of services under 'Connnectivity to Key Services' has contributed to a decreased score This route previously socred high on the BCR analysis which has been removed from the assessment in line with guidance and best practice.
Buckhaven to Leven	Phase 1 to Phase 3	The MCA score for this route has reduced as there was an identified interdependency between this proposed route and the Levenmouth Connectivity Project. Looking at both collision data and the notable physical barriers along a route has decreased this routes score under 'Overcoming the Barriers'. This route previously socred high on the BCR analysis which has been removed from the assessment in line with guidance and best practice.

6. Summary and Next Steps

6.1 Summary

Arup was appointed by SEStran in 2023 to undertake a revised Multi Criteria Assessment (MCA) exercise for the SEStran Strategic Network, to inform an updated phasing of routes within the network. This is an update from the original MCA work undertaken in 2019/2020 to inform the development of the strategic network.

This MCA update has been undertaken to reflect changes across the SEStran region since the original publication of the strategic network. This included changes in travel patterns due to the covid-19 pandemic, changes to national and local transport policy and conclusions drawn from new data available since the original MCA in 2019/2020. The MCA update has utilised new data sources available such as the Sustrans Network Planning Tool (2023), SIMD (2020) and up to date DfT STATS19 collision data.

This report provides a summary of the engagement undertaken with each of the partner local authorities across the SEStran region, and how this engagement has informed the MCA update. This includes any suggested additions/ omissions to the criteria, and local data, projects and priorities that have been used to feed into the MCA. Updates to the strategic network phasing and schematic diagram have also been summarised.

From discussions with each partner authority, the following key criteria were added to the MCA:

- Local policies, strategies and priorities.
- Greenspace/ leisure facilities.
- Cross boundary routes.

Other potential criterion were suggested and discussed with local authorities, such as environmental factors, route elevation and route maintenance. However, following a review of all suggested criteria, a decision was made not to include these criteria within the MCA for reasons outlined in **Table 3**.

6.2 Next Steps

Following this exercise, Arup will provide a summary of the 'top 3' highest scoring routes per local authority to each of the partner authorities. This will allow each local authority to confirm whether the highest scoring routes from the MCA reflect their priorities.

This exercise has used Census (2011) data to inform the analysis, and the Sustrans Network Planning Tool (2023) is currently informed by Census (2011) data. Census (2021) data is anticipated to be available towards the end of 2023. Therefore it is recommended that, when Census (2021) data is publicly available for the SEStran region, a sensitivity check is undertaken when the Sustrans Network Planning Tool is updated with the Census (2021) data, to determine whether the MCA results would significantly change based on these updates.

It is important to note that the updates to the network phasing should be used as a guide for future projects and funding bids, with a degree of flexibility to determine which routes are progressed moving forward. As noted in the original SEStran Strategic Network report, there are a number of external factors, such as feasibility, environmental issues and political factors, that will always impact on the routes that are progressed and associated timescales.

Appendix E

Cost benefit analysis technical note

TRANSPORT SCOTLAND
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South East of Scotland Transport Partnership

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1 Introduction

The purpose of this technical note is to provide a detailed methodology to understand the potential economic impacts should the South East of Scotland Transport Partnership (SEStran) strategic network be completed. This assessment has been undertaken at a high-level to aid decision making, provide a sense for which schemes are likely to provide the largest return on investment and an estimation of economic impacts should the usage of the scheme be similar to the assumptions within this note.

At its heart, economics is concerned with providing a wider picture of the potential social benefits of a scheme, this is quite important for the cycling sector as there are limited market or financial impacts to the investment – although the case for investing in the community is clear. We wish to make clear that the economic impacts outlined within this note are unlikely to be the full wide range of benefits that might occur, we recommend that a more detailed economic appraisal be undertaken during scheme development using relevant Scottish Government guidance.

The aim of our analysis has been to provide several perspectives, these include:

- Providing a range of economic impacts (i.e. indicators) that characterise the types of economic impacts that might be anticipated, along with the relative scale of impact;
- Outlining the relative benefits for each route, and subsequently each 'bundle' and the wider programme. These should be taken as relative measures of economic efficiency rather than an absolute economic impact – there are large uncertainties at this early stage of development; and
- Whether the anticipated programme impacts are likely to provide value for money.

This assessment will follow international best practice, utilising the World Health Organisation's Health Economic Assessment Tool (HEAT)[1] for cycling and walking.

[1] Health economic assessment tool (HEAT) for cycling and walking, http://www.euro.who.int/en/health-topics/environment-and-health/Transport-and-health/activities/guidance-and-tools/health-economic-assessment-tool-heat-for-cycling-and-walking

1.1 Linking to the wider strategy

It is important to note that we have utilised a high-level approach comparable to the high-level strategy that has been developed. This approach will provide an understanding the economic impacts that a strategic network will have on the surrounding community.

This assessment will follow on from the technical assessment and will be presented alongside the multi-criteria assessment, both being informed by and informing identification of preferred options which may be taken forward once funding is identified. The economic assessment will provide an additional evidence base for this.

Our analysis has marginally diverged from our preferred approach as the HEAT tool is more appropriate given the level of information available[2]. We have detailed our approach in Section 2.

The approach both informs and is informed by the Multi Criteria Analysis which has been undertaken across all options, the economic analysis will use some of these assumptions (i.e. banded figures) to estimate the likely economic impact of each scheme – this is the most appropriate and proportionate approach given the level of information available.

The outcomes provide a standardised set of assumptions feeding into a robust economic assessment utilising international best practice appraisal tools. This assessment provides relative benefits and relative costs to make it easier to understand the rational for each scheme. Given the potential variability in the inputs the primary purpose should be to prioritise schemes and highlight those likely to provide the greatest social return on investment. The results will be provided for each section, but also aggregated to package and total figures. It should be noted that the total might be different from the sum of each segment, because it depends on sequencing, funding horizon and other transport interventions that will occur in the intervening period.

Lastly, any one link should not be interpreted in isolation as they will be part of a package of measures which will increase the demand for cycling throughout the strategic network. In addition, the decision to proceed should be based on the programme-level benefits as this will ensure that routes with high economic return can cross-subsidise lower-use routes.

1.2 Document Structure

This technical note has been structured to provide you with a summary of our approach, methodology, assumptions and outputs, this is then summarised and will be detailed in the final report. This not has been set out as follows:

- **Section 1** provides an introduction to this document;
- **Section 2** explains our approach and methodology;
- **Section 3** outlines our economic assessment; and
- **Section 4** provides a summary and conclusion.

This note is accompanied by an Appendix with the outputs from the WHO HEAT tool.

[2] The Department for Transport Active Mode Appraisal Toolkit is more applicable when more detailed scheme-level data is available, including cycle counts for each section of the route.

2 Methodology

We have approached the economic impacts assessment utilising international best practice, utilising the WHO's Health economic assessment tool (HEAT). This was the most appropriate tool given the nature of the high-level study and the granularity, consistency and availability of route-specific usage data. The tool has been designed to be flexible, depending on data availability it can be used in specific routes or at city-wide scale applications, for example:

- To plan a new piece of cycling or walking infrastructure: it models the impact of different levels of cycling or walking, and attaches a value to the estimated level when the new infrastructure is in place;
- To value the mortality benefits from current levels of cycling or walking, such as benefits from cycling or walking to a specific workplace, across a city or in a country; and
- To provide input into more comprehensive cost–benefit analyses, or prospective health impact assessments: for instance, to estimate the mortality benefits from achieving national targets to increase cycling or walking, or to illustrate potential cost consequences of a decline in current levels of cycling or walking.

The tool has already been applied frequency throughout the United Kingdom, for example:

- Using this approach to enhance cycle-scheme benefit-cost ratios in London[3];
- Making the case for strategic investment in cycling network Greater Manchester[4]; and
- Building the case for Glasgow City Council's Strategic Plan for Cycling[5].

Figure 1: World Health Organisation Health economic assessment tool (HEAT) for walking and cycling

"The health economic assessment tool (HEAT) has been developed from an original idea of Harry Rutter, London School of Hygiene and Tropical Medicine, United Kingdom. It is based on the principles of HEAT for cycling first published in 2007.

"This multi-phase, open-ended project is coordinated by WHO, steered by a core group of multidisciplinary experts and supported by ad-hoc invited international experts from various fields who kindly give input for developing and updating of the tool".

[3] Transport for London, http://www.euro.who.int/en/health-topics/environment-and-health/Transport-and-health/activities/guidance-and-tools/health-economic-assessment-tool-heat-for-cycling-and-walking/examples-of-applications-of-the-health-economic-assessment-tool-heat-for-walking-and-cycling/united-kingdom-england-transport-for-london-uses-heat-to-enhance-benefitcost-ratios-of-cycling-infrastructure

[4] Transport for Greater Manchester, http://www.euro.who.int/en/health-topics/environment-and-health/Transport-and-health/activities/guidance-and-tools/health-economic-assessment-tool-heat-for-cycling-and-walking/examples-of-applications-of-the-health-economic-assessment-tool-heat-for-walking-and-cycling

[5] Glasgow City Council, http://www.euro.who.int/en/health-topics/environment-and-health/Transport-and-health/activities/guidance-and-tools/health-economic-assessment-tool-heat-for-cycling-and-walking/examples-of-applications-of-the-health-economic-assessment-tool-heat-for-walking-and-cycling/united-kingdomscotland-glasgow-values-its-strategic-plan-for-cycling

2.1 Approach

In general, our approach can be summarised in the following ways:

- Identify the potential demand for each route, this will be undertaken using census data to identify population that might use some of the strategic network.
- Identify cycle mode share factors for each partner within SEStran, this will allow us to estimate the current cycle usage of each route, from the demand identified above.
- Flows on each route segment will be identified; we will compare this for any routes where data from existing counts is available.
- Utilising information gathered in the planning phase, including proximity to public transport, number of improved junctions and type of cycling improvements, we will generate an 'uplift' that might be anticipated from improvements to each route.
- Utilise HEAT along with our route-specific information to estimate the economic impact

2.2 Using the Multi Criteria Analysis

The approach has been to take the banded values identified for each of the routes within the multi criteria analysis, which is underpinned by our analysis, to identify three key inputs into this economic assessment, these include:

- The population catchment for each route (i.e. volume of potential users)
- The anticipated level of modal shift
- Potential for multimodal journeys from improved access to public transport; and
- Perception of improving barriers to access

These qualitative figures have been extracted from the multi criteria analysis, as these have been banded we have combined them with relevant uplift figures for each band – this provides a high-level assessment of the anticipated benefits should these assumptions hold true, most importantly it provides the relative ranking of all schemes on a consistent basis.

Table 1: Volume of potential users

MCA Score	Relative Value
5	>20,001
4	
3	10,001 – 20,000
2	
1	<10,000

On top of these values, we have applied a cycling mode share count to capture the local cycling usage, identified from the Cycling Scotland Annual Cycling Monitoring Report 2019[6]. This gave a measure of the number of number of cyclists within the volume of potential users.

[6] Cycling Scotland, https://www.cycling.scot/mediaLibrary/other/english/6353.pdf

Table 2: Cycling Mode Share Data

Region	Council	Journeys under 5km	Access to one or more bikes	No access to private car	Cycle Share (Median)
North-West	Clackmannanshire	51.1%	31.9%	27.4%	5.3%
Western	Falkirk	70.0%	33.0%	26.7%	5.4%
South-West	West Lothian	61.0%	39.3%	25.4%	4.1%
Fife	Fife	61.3%	34.5%	28.9%	4.7%
Borders	Scottish Borders	54.2%	38.0%	19.0%	2.0%
Southern	Midlothian	51.7%	31.4%	21.6%	0.5%
Edinburgh	Edinburgh	71.2%	34.9%	39.3%	11.9%
Eastern	East Lothian	51.0%	35.9%	21.5%	3.6%

Source: Cycling Scotland Annual Cycling Monitoring Report 2019

The calculation requires two cases, a reference case (i.e. existing cyclists) and a with-scheme case (i.e. cyclist numbers after infrastructure is finished). The potential catchment size and mode share for each region was used to calculate the number of existing cyclists for each segment.

The second step is to estimate the 'uplift' from the scheme. The values provided in Table 3, Table 4 and Table 5 have been applied for each segment separately. This provides a percentage 'uplift', when combined with the existing cycling numbers estimated previously, this provides the 'with-scheme' cycling estimate used within HEAT.

It is well recognised that the large majority of economic impacts associated with cycling improvement schemes come from increases in cycling time, the biggest component of this is people shifting from other modes of travel to cycling or existing cyclists exercising more. Therefore, the largest driver of economic benefits are from the 'uplift'. While this is hard to forecast ex ante, observations ex post regularly indicate 50% - 300% increases in cycling participation rates.

The range of uplift for each factor fall in that range, with a maximum uplift of 200% and a minimum uplift of 40%.

The following table outlines values of mode shift applied based on MCA scores for each segment.

Table 3: Anticipated level of modal shift

MCA Score	Relative Value
5	High
4	Med-High
3	Medium
2	Med-Low
1	Low

The following table outlines uplift based on MCA scores for overcoming barriers on each segment.

Table 4: Perception of overcoming barriers

MCA Score	Relative Value
5	High
4	Med-High
3	Medium
2	Med-Low
1	Low

The following table outlines uplift improvements to public transport links on each segment.

Table 5: Linking to public transport

MCA Score	Relative Value
5	High
4	Med-High
3	Medium
2	Med-Low
1	Low

The values from each of the last three tables are added together to give an 'uplift' for each segment. The following section identifies how these inputs were inputted into HEAT.

2.3 Utilising HEAT

The HEAT process requires a significant number of inputs, which can be set as default or amended for local conditions. A balanced approach was utilised ensuring that we amend some of the values to be region specific, while keeping them largely consistent between option.

2.3.1 General Assumptions

The following assumptions were made:

- We have calculated only cycling benefits – not any walking benefits;
- Utilised regional-level parameters – specifically Edinburgh, United Kingdom;
- We have used a 'two-case' approach to understand the 'step change' usage;
- Benefits are estimated with a base year of 2020 and a comparison case of 2030;
- Impacts are calculated over a 10-year period;
- Data for both scenarios was the same, using a 90% return trip assumption;
- Average journey length of 4.7km (Scotland specific value);
- 20-64 year old population; and
- Half of all cycling journeys would be new.

HEAT allows the user to choose what level of regional granularity is used for the assessment, for this assessment we have chosen to use city (or regional) level data as it better represents the scheme at a regional level – this is more appropriate than country-level, as it presents a more realistic level of cycling rates in urban settings, and the sub-city level, which has limitations because it does not include accident data. The most appropriate choice was to use the Edinburgh setting, as it best represents all schemes in the region.

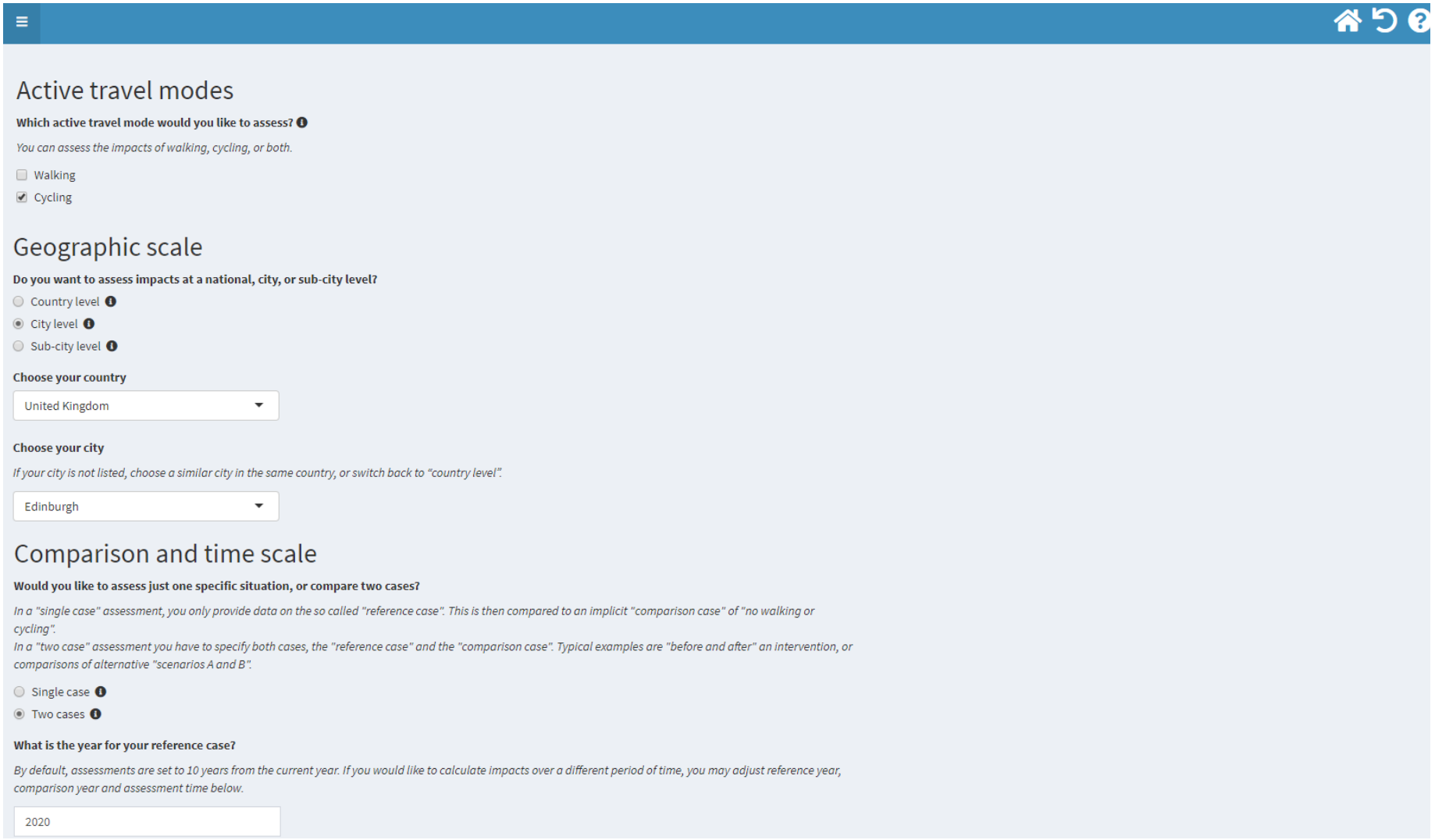
2.3.2 Converting from Euro to Pounds

It should be noted that the benefits noted above have been provided in Euros, with the costs provided in Great British Pounds. To adjust for current issues we have applied a Euro:Pound conversion rate of 1:0.91, this reflects a long-run average. All figures reported by us will be in Great British Pounds (£) unless otherwise stated.

2.3.3 Using the HEAT tool

The following figures provide an outline of how these assumptions were used within HEAT.

Figure 2: HEAT process



What is the year for your comparison case?

2030

Over how many years should the impacts be calculated?

10

Impacts

Which impacts would you like to consider in your assessment?

You can select only one impact pathway (e.g. physical activity like the previous versions of HEAT), or select several impacts to be taken into account simultaneously in your assessment.
If "carbon emissions" are selected, you will be asked additional questions on motorized modes.

- [x] Physical activity
- [x] Air pollution
- [x] Crash risk
- [x] Carbon emissions

Motorized modes

How would you like to consider motorized travel modes in your assessment?

If you do not have data for motorized travel modes, the assessment will be based on default values. If you have data on motorized modes in more refined categories, select "refined" (this will improve the accuracy of calculated impacts).

- (•) No data
- ( ) Basic categories
- ( ) Refined categories

Introduction to data inputs

On the following page(s) you will provide the data HEAT needs for the calculations, namely data about the volume of active travel you are assessing, about the population you are assessing, and, possibly data about motorized modes as well.

To enter your **numbers**, HEAT will need to understand a few additional things about your data: start by specifying the **source of your data**. Provide the **unit** they come in. (Note that you may have to convert some of your figures to reflect the required unit, for example, to reflect travel "per person, per day"). Depending on the source and type of data that you provide, you may be asked to provide some additional information.
After the travel data, provide information about the **population** the data applies to: is it from the **general population** in your study area, or is it a sample of **cyclists or pedestrians** only? What is the **age range** of the assessed population? Finally, provide the size of the assessed population, taking into account type and age range.

If you are assessing carbon emissions you will also be asked to provide data about **motorized modes**.
You will have to specify data for each active mode in each comparison case.

HEAT accomodates the use of multiple data types and units. Pay close attention to how the actual numbers must be entered (e.g. "per person, per day", or "per location, per day".)
Further, make sure to enter the correct population type and size, as they correspond to your volume data and study.
All units will be converted to minutes and kilometers per person, per day, sometimes applying default values. You can later overwrite these default values in the "Calculation parameters" table. Find out more about unit conversion in HEAT here.

Active modes data

Provide your data for each of the active travel modes selected earlier. If conducting a two-case assessment, provide information for both cases (note: HEAT will pre-populated some fields to make it easier for you. Adjust these values as needed).

1. Choose a **data source** you are using (drop down on the left).
2. Specify the **data unit or type**.
Volume data (middle)
3. Provide the actual **amount**. Depending on the unit used, you may need to fill out additional input fields .
Population data (right)
5. Specify the **population type** you are assessing. (note: depending on data source, options may be restricted)
6. Specify the **age range** of your study population.
7. Specify the **population size**, taking into account type and age range of your study population.

Cycling data for the reference case

Data source

Hypothetical scenario

Data unit or type

Trips

Cycling data
Amount

*Must be in specified unit **per person, per day**.*

1.9

Trip length

Specify average length of cycling trips in km, or use the default value provided below.

4.7

Population data
Population type

This specifies what type of population the volume data is based on.

Cyclists

Age range of the assessed population

If the walking or cycling assessed stems predominantely from younger or from older subjects, select the age range accordingly.

Adult population (20-64 years)

Population size

Must correspond to population type and age range.

795

Cycling data for the comparison case

Data source

Hypothetical scenario

Data unit or type

Trips

Cycling data
Amount

*Must be in specified unit **per person, per day**.*

1.9

Trip length

Specify average length of cycling trips in km, or use the default value provided below.

4.7

Population data
Population type

This specifies what type of population the volume data is based on.

Cyclists

Age range of the assessed population

If the walking or cycling assessed stems predominantely from younger or from older subjects, select the age range accordingly.

Adult population (20-64 years)

Population size

Must correspond to population type and age range.

1510

Introduction to data adjustment

Now you will be asked to provide additional information on the active mode(s) that you are assessing. Answer each question for the mode(s) listed.

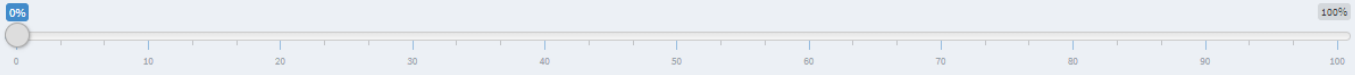
This information is needed to adjust your data for the selected impact calculations.

General adjustments

Cycling

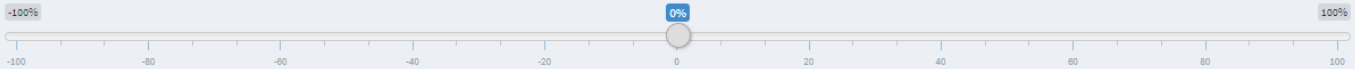
Proportion excluded

Exclude walking or cycling due to factors unrelated to your assessed intervention or scenario here.



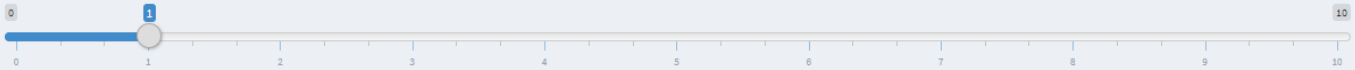
Temporal & spatial adjustment

Adjust your data as necessary to reflect longterm averages. Find out more about data adjustment in HEAT here

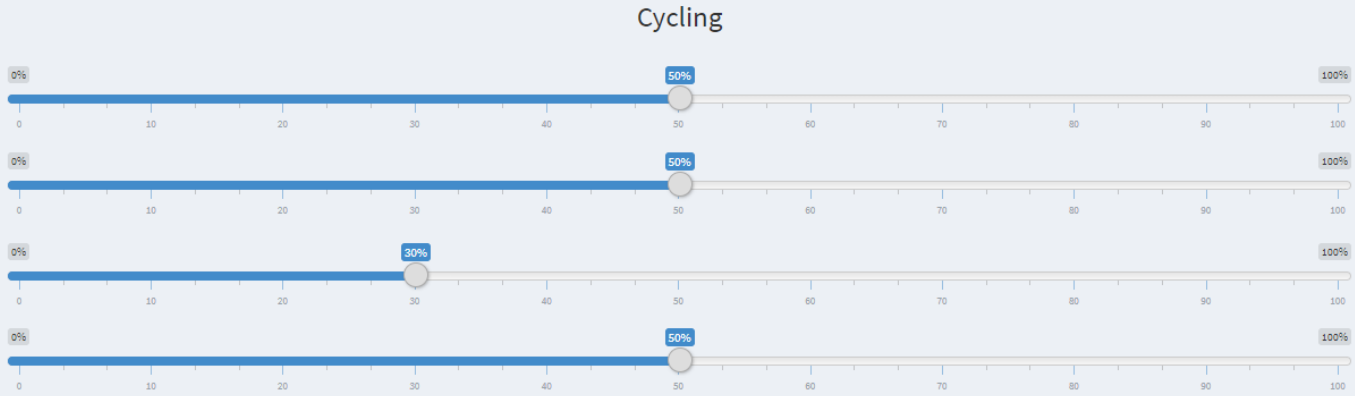


Take-up time for travel demand

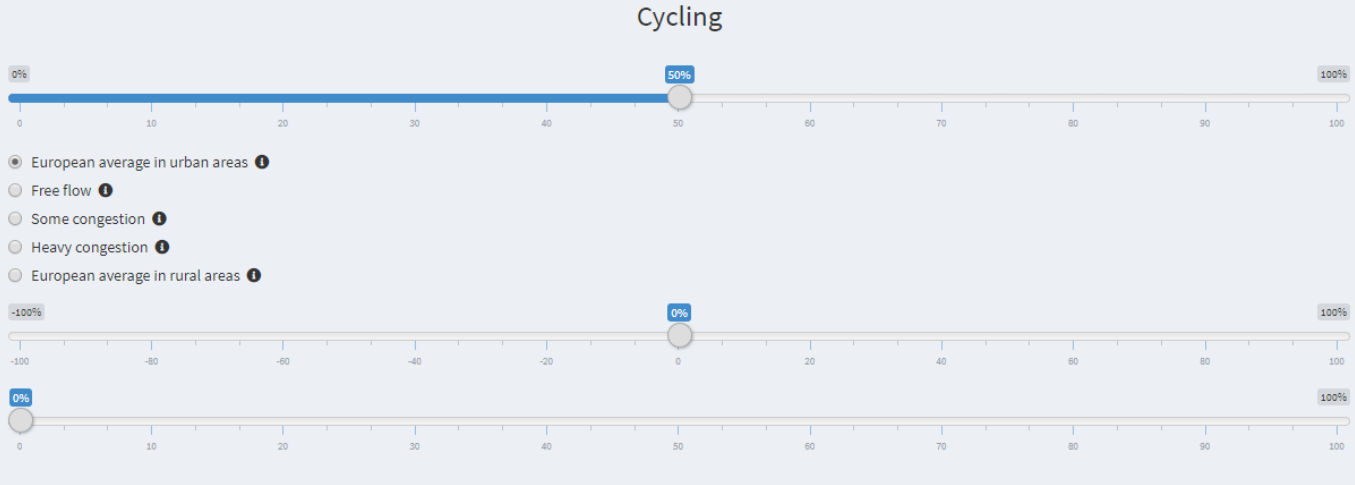
Specify how many years it takes until maximum volume of active travel is reached.



Contrast characteristics



Other adjustments



Monetization parameters

Cycling

Investment costs

To calculate a benefit-cost ratio, provide a cost estimate for investments that led to the assessed active travel (in Euros).

2850225.00

Discount year

Specify the year to which you want discount (or inflate) future (or past) economic values to.

2020

Introduction to parameter review

In this section you can review all parameters used for your assessment. If you would like, you can edit default values to better reflect your local settings. The tool also uses background values which are cannot be changed.

Calculation parameters

The table below provides an overview of the default values used for your assessment. If you would like to use other values, you can edit column "Editable value".

	Parameter description	Default value	Editable value	Unit	Parameter name
1	Default carbon value by country and year (value for United Kingdom in 2021)	106.42	106.42	USD2014/tCO2e	carbon_value_usd_2021
2	Default carbon value by country and year (value for United Kingdom in 2030)	121.9	121.9	USD2014/tCO2e	carbon_value_usd_2030
3	Discount rate	5	5	%	discrate
4	Average cycling speed	14	14	km/h	speed_bike
5	Value of statistical life in euro by country (value for United Kingdom in 2015)	4036471.5254	4036471.5254	euro/death	vsl
6	PM2.5 concentration (value for Edinburgh)	7	7	ug/m3	pollution_concentration_bycity
7	All cause mortality rate for reference case (value for United Kingdom and age group 20-64)	248.9721	248.9721	deaths/inhab	mortality_rates_bike_ref
8	All cause mortality rate for counterfactual case (value for United Kingdom and age group 20-64)	248.9721	248.9721	deaths/inhab	mortality_rates_bike_cf
9	Fatality rate by country for bike (value for United Kingdom)	2.1377	2.1377	fatalities/100mio.km	fatalityrates_national_crash_bike

The table below shows the background values that the tool uses for your assessment. These cannot be modified.

	Parameter description	Background value	Unit	Parameter name
1	Average road traffic speed for European average standards in urban areas for bike	32.00	km/h	speed_road_0_bike
2	Time needed to obtain full health impacts in two cases assessment	5.00	years	builduptime_twocases
3	Time needed to obtain full health impacts in crash module	0.00	years	builduptime_crash

Introduction to results

HEAT provides several options for results viewing. On the next page you will see the overall results, or “grand totals”. These sum up the impacts for all active modes and all impact pathways assessed combined. Thereafter you have the option to select, which detailed results displays you would like to see. Results can be summed up by active modes and by pathways, or both.

General results

Results for your assessment

Summary of your input data

The volume data you have entered corresponds to a decrease of 5 min. per person and day.
Your assessed population of cyclists is 1 510.

Summary of impacts for mortality and carbon emissions

As a result, 0.200 premature deaths are prevented per year.

Over the full assessment period of 10 years, 2.00 premature deaths are prevented.

Carbon emissions are reduced by 33 tons of CO2 equivalents per year.
Over the full assessment period of 10 years, carbon emissions are reduced by 334 tons of CO2 equivalents.

Economic value of impacts

Mortality is monetized using value of statistical life (VSL) of EUR 4 040 000 per premature death.
Carbon emissions are monetized using social costs of carbon (SCC) of EUR 96.1 per ton of CO2 equivalent. This corresponds to an economic value of EUR 952 000 per year.
Over the full assessment period of 10 years, the total economic impact is EUR 9 520 000.
Discounted to 2020 value at an annual discount rate of 5%, the total economic impact is EUR 6 890 000.

Benefit-cost ratio

The benefit-cost ratio for this assessment based on costs of EUR 2 850 225 and impacts of EUR 6 890 000 (discounted to 2020 value) is 2.00000.

Disclaimer
Please bear in mind that HEAT does not calculate risk reductions for individual persons but an average across the population under study. The results should not be misunderstood to represent individual risk reductions. Also note that the "value of statistical life" does not assign a value to the life of one particular person but refers to an average value of a “statistical life”.
It is important to remember that many of the variables used within HEAT are estimates and therefore liable to some degree of uncertainty.
You are reminded that the HEAT tools provide you with an approximation of the order of magnitude of the impacts. To get a better sense for the robustness of the results, you are strongly advised to rerun the model, entering low and high values for variables where you have provided a “best guess”.

2.4 Costs

In addition to the benefits, we have estimated costs based on similar banded rates provided within the MCA. This is based upon more detailed work undertaken by us. The table below outlines those

Table 6: Cost of interventions

MCA Score	Relative Value
5	>£10 million
4	
3	£6-10 million
2	
1	<£5 million

3 Economic Assessment

The assessment of the economic impacts of the scheme has been based on estimating the usage for each segment, in the absence of detailed count data, utilising the same approach as the multi criteria assessment. These parameters have also been used consistently to generate an increase in usage which might be anticipated, which is within a similar range to that which might be anticipated from similar standalone schemes – notionally improvements to the wider network may have transformational effects larger than those estimated. This is not an exact science, more detailed work will be required at a scheme-level to appraise the economic impacts and value for money of each scheme – it is not possible to do so at this time.

3.1 Results

The wider assessment of the benefits of the network followed on from the technical assessment of the network. The high level economic assessment also provides additional evidence, analysis and justification for separate sections and phases of the network.

As this is a strategic network, the benefits assessment, in line with current guidance, considered the difference of benefits which you might expect in a future without the scheme (Without Scheme) and with the scheme (With Scheme). Various parameters have been considered in the economic assessment of the SEStran strategic network, including:

- Data from the Cycling Scotland Annual Cycling Monitoring Report 2019 (for example: % journeys under 5km, % cycling to primary/secondary school and access to one or more bikes)
- Premature deaths per year and causes: lack of physical activity, air pollution and accident risk
- Carbon Emissions CO_2 (tonnes)
- Indicative network costs, taken from the multi-criteria assessment stage

The following headline figures are summarised for each of the phases reveals that there is economic rationale for the whole network scheme. The higher the Net Present Value (NPV), the more return the project will create in monetary terms. A higher Benefit Cost Ration (BCR) signifies that the benefits provided by the scheme to the surrounding areas outweigh the costs involved in construction. It is common practice for those projects with a BCR >1 to be considered justified.

Table 7: Economic Summary, (£, 2020 prices)

Phase	Present Value of Benefits (PVB)	Present Value of Costs (PVC)	Net Present Value (NPV = PVB–PVC)	Benefit Cost Ratio (BCR= PVB/PVC)
1	£358m	£75m	£283m	4.8
2	£570m	£110m	£460m	5.2
3	£211m	£113m	£98m	1.9
4	£296m	£148m	£149m	2.0
5	£56m	£98m	-£41m	0.6
Total	**£1491m**	**£543m**	**£948m**	**2.7**

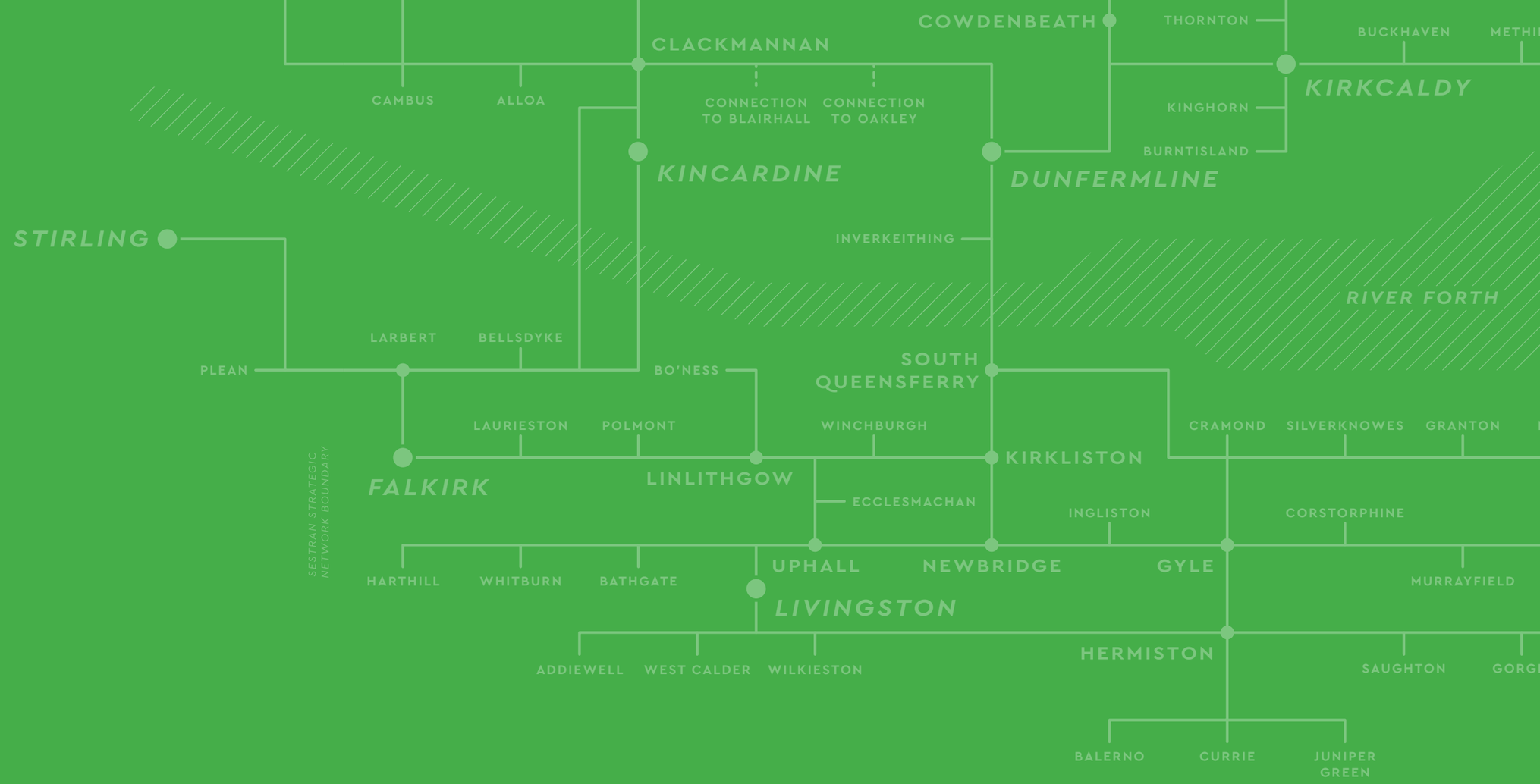
The following table provides further details on the benefits provided by the strategic network. It highlights the scheme has the potential to avoid around fifty-two premature deaths per year by enabling more of the population to walking and cycling more frequently.

Reduced air pollution has the potential to avoid almost two premature deaths per year as a reduction in vehicle emissions due to increased walking and cycling will see cleaner air within the environments in which people live. Likewise, the strategic network has the potential to reduce premature deaths caused by traffic accidents as it will create a safer environment for pedestrians and cyclists.

Table 8: Quantifiable Impacts

Phase	Avoided premature deaths (per year)			Avoided CO_2 tonnes (per year)
	Physical Activity	Air Pollution	Crash	Carbon
1	12.50	0.41	0.16	1746
2	20.36	0.71	0.31	2774
3	7.12	0.22	0.10	1025
4	10.28	0.54	0.23	1439
5	1.94	0.06	0.03	271
Total	**52.20**	**1.95**	**0.82**	**7254**

The economic assessment reflects the scoring carried out in the multi-criteria assessment and supports the logic behind the phasing of the network and the delivery of the individual routes with the proposed phasing. Future feasibility and design studies for sections of the network will require to undertake more in-depth assessment and business case analysis based on more detailed information and data that is available or collected specifically for future individual sections.



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