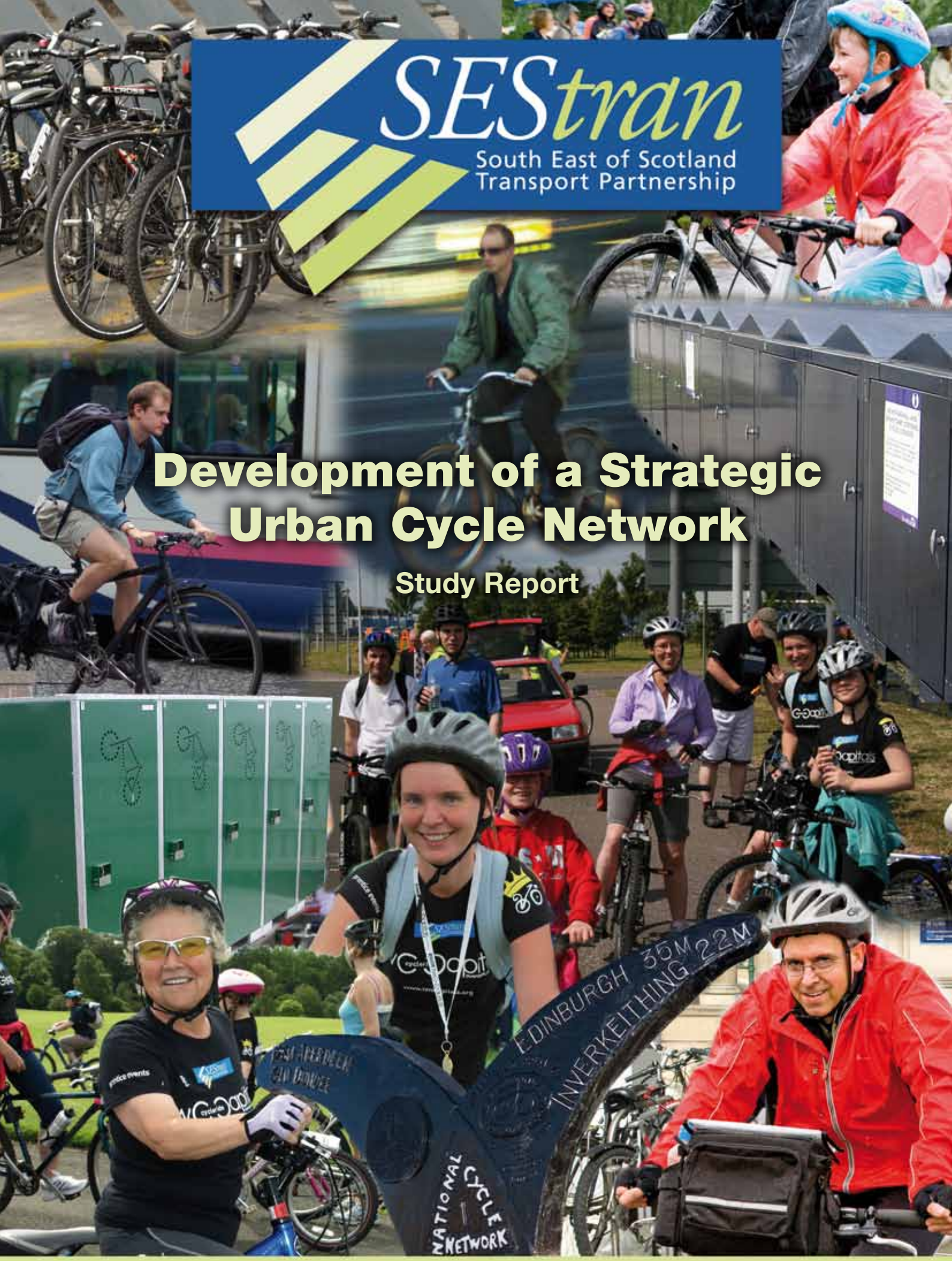
SEStran
South East of Scotland Transport Partnership

Development of a Strategic Urban Cycle Network

Study Report



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Contents

1.1 Background

1.1.1 Colin Buchanan has been commissioned by SEStran to undertake a study into urban cycle networks with a view to producing a strategy for the regional transport area.

1.1.2 The SEStran *Regional Transport Strategy* (RTS) was approved in 2008. The RTS placed a high priority on the promotion of commuter cycling. Whilst there are many agencies involved in promoting cycling and providing cycle related infrastructure, SEStran is in the position to provide a strategic overview for the regional transport area in order to assist in the provision of facilities, the enhancement of existing infrastructure and the general promotion and encouragement of commuter cycling.

Regional Transport Strategy

1.1.3 The development of urban cycle networks that facilitate commuter cycling in the urbanised SEStran area is a high priority of the RTS. Safe and direct cycle routes should be parallel to the main traffic flows.

> *'SEStran to support the development of urban Cycle networks as a **high priority** – these cycle routes would in the main parallel the major transport flows identified in the RTS. (SEStran RTS, 6.8)'*

1.1.4 Networks that permit the efficient interface with transport interchanges, particularly rail stations are also a priority for SEStran because they enhance and extend the commuter network.

Scope of the Study

1.1.5 Five main work streams were examined as part of the study, these were:

- A Best Practice Review
- A desk top review and on-site audit of existing networks and facilities, that would result in identification of areas and issues that could be addressed through future investment in infrastructure and changes to policies and procedures
- A review of cycle parking standards in relation to the urban environment
- The issues relating to cycling and transport interchanges and other public transport stations
- Consultation with key stakeholders

1.1.6 In relation to this study it was agreed there should be a focus on cycle routes and facilities that were in parallel with the Regional Transport Commuter Corridors as defined in the RTS. Within those corridors, urban areas deemed to be relevant for investigation were those with a population greater than 10,000 people.

1.2 Context of Cycling Promotion by SEStran

1.2.1 According to the Scottish Government,[1] the average number of car miles driven per person in Scotland has been increasing by 2% per annum since 1975/76. For short trips, less than 3 km in length, those households that owned a car, used their car. This degree of car use even for short trips suggests that policies which discourage car ownership may help encourage active modes such as cycling.

1.2.2 According to the most recent Scottish Travel statistics, published in 2008:

- 3% (2% to work and 1% to school) of Scottish adults regularly cycled as a means of transport: 5% of men and 2% of women;
- 51% of Scottish drivers always use a car to shop for small amounts of food and 50% of these drivers admit they could easily use another mode;
- on average, 36% of all households had one or more bicycles but bicycle ownership was not consistent across household types: only 8% of single pensioners, 22% of smaller households of pensioners and 29% of single adult households owned bicycles;
- Bicycle ownership increased with increasing net household income. For example, 69% of households> £40,000 per annum owned one or more bicycles; and,
- In large urban areas, 28% of households owned at least one bicycle and in other urban areas, household bicycle ownership was 37%; only 20% of people living in flats/maisonettes owned a bicycle (from 2006 data)

1.3 Format of report.

1.3.1 Chapter 2 of the report outlines the methodology used in relation to the study. Chapter 3 provides details and outcomes of the Best Practice Review and information relating to cycle parking. Chapter 4 provides an overview of the desk top study and on site audits and Chapter 5 provides details of the consultation exercise.

1 *Household Transport in 2006 and Household Transport in 2007*, published by the Scottish Government in October of the following year. Available on the Scottish Government website.

2.1 Best Practice Review

2.1.1 A best practice review was undertaken as part of the study. As similar reviews have been undertaken to produce the "Cycling Infrastructure: Design Guidance and Best Practice Design" document, the review was relatively brief and concentrated on issues relating to urban cycling networks, the promotion of commuter cycling and the encouragement of modal shift.

2.2 Identification of routes for Urban Cycle Networks

2.2.1 The study brief identified that the identification of urban cycle networks within the SEStran area should focus on the major transport corridors serving towns with a population of greater than 10,000.

2.2.2 A copy of these major transport corridors and sub-routes contained within them are detailed below in Figure 2.1 and 2.2. Further details of the cycling facilities identified by the desk top study can be found in Table 2.1 in Appendix 1.

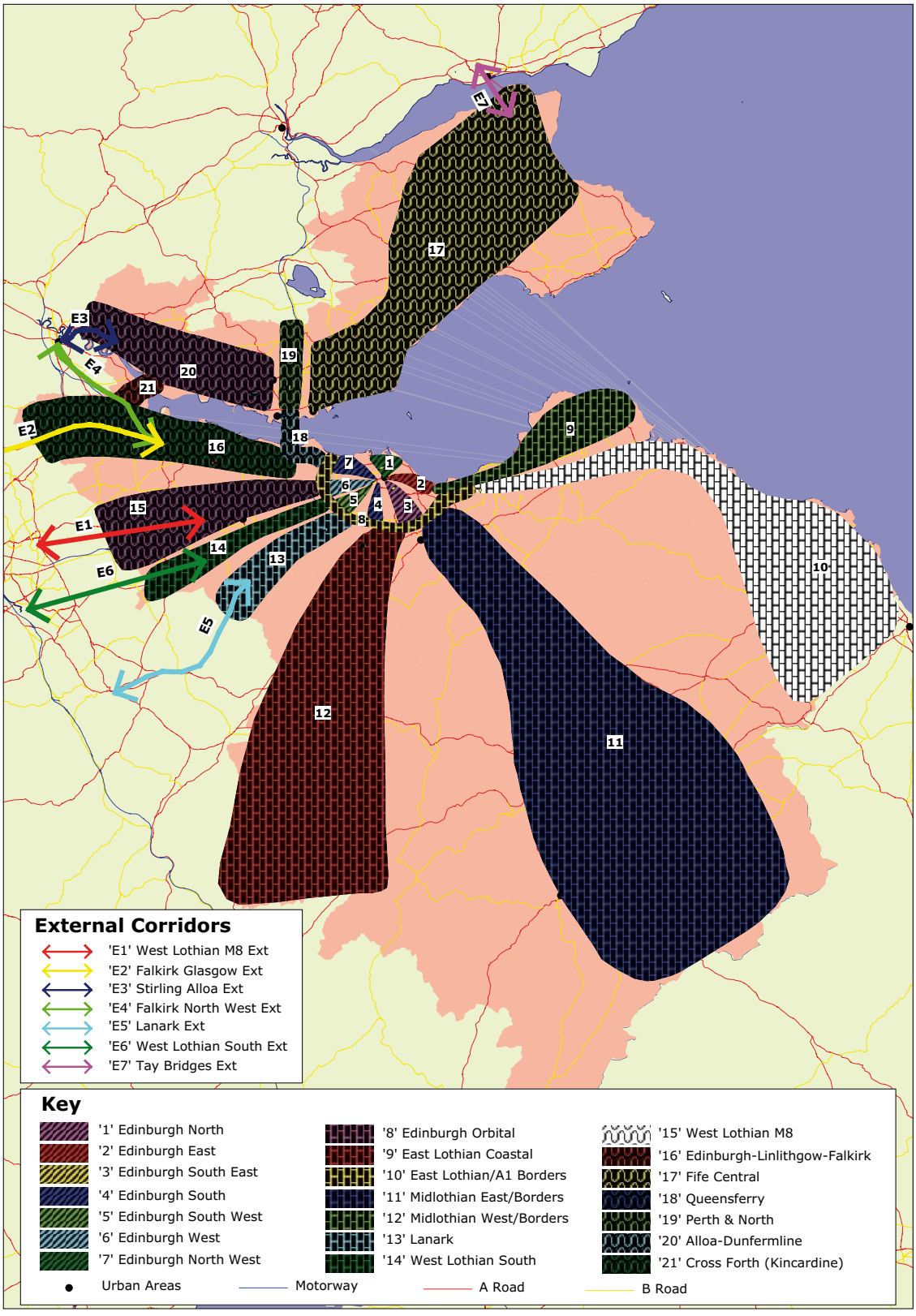

Figure 2.1: *A copy of SEStran RTS – Figure 8.1 SEStran Regional Commuting Corridors*

Corridor	Description
1 – Edinburgh North	Leith Walk, Crewe Road, Inverleith Row
2 – Edinburgh East	Links from Musselburgh, Newcraighall
3 – Edinburgh South East	Liberton Road/Old Dalkeith Road/Gilmerton Road
4 – Edinburgh South	Morningside Road
5 – Edinburgh South West	Lanark Road
6 – Edinburgh West	Corstorphine Road, Calder Road
7 – Edinburgh North West	Queensferry Road
8 – Edinburgh Orbital	Inner and Outer (inc A720)
9 – East Lothian Coastal	A199, North Berwick line
10 – East Lothian A1/Borders	A1, East Coast Main Line
11 – Midlothian East/Borders	A68, A7, A772, inc Waverley Line
12 – Midlothian West/Borders	A701, A702, A703
13 – Lanark	A70
14 – West Lothian south	A71, Shotts Line
15 – West Lothian M8	M8, A89, A899, Bathgate Line
16 – Edinburgh-Linlithgow-Falkirk	M9, A904, Edinburgh – Falkirk Line
17 – Fife central	A92, A921, East Coast Main Line, Fife Circle
18 – Queensferry	A90, A8000, Forth Road Bridge, Inverkeithing Line
19 – Perth & North	M90
20 – Alloa – Dunfermline	A985, A907 inc Stirling-Alloa Line
21 – Cross Forth (Kincardine)	Kincardine Bridge
E1 – West Lothian M8 Ext	M8, A89, Airdrie Bathgate Line
E2 – Falkirk Glasgow Ext	M876, A803, Glasgow Line
E3 – Stirling Alloa Ext	A907, A91, Stirling Alloa Line
E4 – Falkirk North West Ext	M9, A9 Stirling Line
E5 – Lanark Ext	A70
E6 – West Lothian South Ext	A71, Shotts Line
E7 – Tay Bridges Ext	Tay Road and Rail Bridges

Figure 2.2: *A copy of SEStran RTS – Table 8.3 SEStran Strategic Corridor Description*

2.2.3 An examination of populations within the SEStran area resulted in 27 individual towns and settlements being included in the study. Where it was found that neighbouring settlements with populations of less than 10,000 were in close proximity to each other or had natural connections for commuter cycling these areas were also considered as part of the study. Table 2.2 below provides a list of the towns.

Table 2.2: *Towns with Populations of greater than 10,000.*

Town/Settlement	Council Area	2006 Population Estimate	>10k	Population Cluster
Alloa	Clackmannanshire	27,140	✓	
Haddington	East Lothian	8,600		✓
Musselburgh,		21,840	✓	
Prestonpans		7,310		✓
Tranent		9,440	✓	
Edinburgh	The City of Edinburgh	446,110	✓	
Queensferry (South)		9,090		✓
Bo'ness	Falkirk	14,340	✓	
Bonnybridge		24,370	✓	
Falkirk		97,180	✓	
Buckhaven	Fife	31,410	✓	
Cowdenbeath		18,170	✓	
Dunfermline		77,060	✓	
Glenrothes		47,260	✓	
Kirkcaldy		48,090	✓	
St Andrews		16,640	✓	
Dalkeith	Midlothian	38,230	✓	
Loanhead		6,290		✓
Penicuik		15,680	✓	
Galashiels	Scottish Borders	14,090	✓	
Hawick		14,120	✓	
Armadale	West Lothian	10,830	✓	
Bathgate		21,270	✓	
Broxburn		14,140	✓	
Linlithgow		13,180	✓	
Livingston		62,810	✓	
Whitburn		11,890	✓	

2.3 Desk Top Study

2.3.1 Following the initial identification of the routes and areas that could be considered as part of an urban cycling network, a desk top study was undertaken to establish if these routes had already been identified by the various local authorities and if any facilities had been provided for cyclists.

2.3.2 A variety of information was examined as part of the desk top study including Local Transport Strategies, local authority and cycling organisations websites. In addition to this the project team drew their own local knowledge along with experience gained while working on projects in the relevant areas or routes.

2.3.3 From this initial study a list of existing cycle routes was drawn up. The details can be found in Table 2.1 in Appendix 1

2.4 On Site Audits

2.4.1 An Audit checklist was agreed with the client and this was used to examine the existing routes identified within the desk top study and also those identified on site during the auditing process.

2.4.2 The purpose of the audits was

- to review the initial information gathered and confirm the conditions on site
- to gather basic information in relation to
  - the types of facility,
  - suitability of paths,
  - types of signing,
  - crossing facilities
  - links to wider networks,
  - vicinity to major trip generators.
- Identification of potential new routes
- Identification of barriers to cycling and missing links
- Identification of potential solutions.

2.4.3 Site visits were undertaken to examine the facilities and conditions for cyclists on the main routes in each of the 27 towns and areas identified above.

2.4.4 It was not the intention of this work to examine the cycle facilities in detail, however the audit provides a good overview of the existing routes and where there are inadequacies, gaps in provision and where improvements could be made.

3.1 Background

3.1.1 As part of the study, a Best Practice review was undertaken with regard to the issues relating to promoting modal shift and the types of improvements that are required to provide high quality urban cycle networks.

Regional Transport Strategy

3.1.2 The development of urban cycle networks that facilitate commuter cycling in the urbanised SEStran area is a high priority. Safe and direct cycle routes should parallel the main traffic flows.

> *'SEStran to support the development of urban Cycle networks as a **high priority** – these cycle routes would in the main parallel the major transport flows identified in the RTS. (SEStran RTS, 6.8)'*

3.1.3 In relation to this study an urban area was deemed to be one with a population of greater than 10,000 people. Within the SEStran area, there are some 27 towns and urban areas with populations greater than 10,000. These settlement areas have been summarised in Table 3.1 which also includes some details about the nearest rail station. Typically, the bicycle commuter catchment area is contained within a 5 mile (8 km) radius of a rail station. As such, routes to stations and transport interchanges will form part of the wider study into urban cycle networks.

Settlement	Council Area	2006 Population Estimate	Nearest Rail Station		
			Name	Distance from Town, (miles)	Cycle Storage Capacity
Alloa	Clackmannanshire	27,140	Alloa	–	10 Cycle Racks; Storage CCTV
Armadale	West Lothian	10,830	Bathgate	–	14 Cycle Racks; Sheltered
Bathgate	West Lothian	21,270	Bathgate	–	14 Cycle Racks; Sheltered
Bo'ness	Falkirk	14,340	Linlithgow	2.5	14 Cycle Racks
Bonnybridge	Falkirk	24,370	Larbert	2.7	4 Cycle Racks/ 23 Cycle Lockers CCTV
			Camelon	2.8	4 Cycle Racks
			Falkirk High	3.8	4 Cycle Racks/ 10 Cycle Lockers CCTV
Broxburn	West Lothian	14,140	Uphall	–	5 Cycle Racks; Storage CCTV

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Settlement	Council Area	2006 Population Estimate	Nearest Rail Station		
			Name	Distance from Town, (miles)	Cycle Storage Capacity
Buckhaven	Fife	31,410	Markinch	4.3	12 Cycle Racks
			Glenrothes with Thornton Station	4.3	4 Cycle Racks/ 5 Cycle Lockers
Cowdenbeath	Fife	18,170	Cowdenbeath	–	5 Cycle Racks
Dalkeith	Midlothian	38,230	Musselburgh	2.7	3 Cycle Racks
Dunfermline	Fife	77,060 (includes Inverkeithing and Dalgety Bay)	Dunfermline Town	–	8 Cycle Racks/ 20 Cycle Lockers
			Dunfermline Queen Margaret	–	5 Cycle Racks/ 10 Cycle Lockers
Musselburgh	East Lothian	21,840	Musselburgh	–	3 Cycle Racks
Edinburgh	Edinbuirgh, City of	446,110	Edinburgh Waverley	–	Sheltered cycle racks with Storage CCTV
			Edinburgh Park	–	10 Cycle Racks/ 5 Cycle Lockers
			Haymarket	–	8 Cycle Racks
			Brunstane	–	6 Cycle Racks/ 2 Cycle Lockers
			Kingsknowe	–	5 Cycle Racks
			Curriehill	–	4 Cycle Racks
			Wallyford	–	4 Cycle Racks/ 2 Cycle Lockers
			South Gyle	–	4 Cycle Racks
			NewCraighall	–	20 cycle Racks/10 Cycle Lockers

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Settlement	Council Area	2006 Population Estimate	Nearest Rail Station		
			Name	Distance from Town, (miles)	Cycle Storage Capacity
Falkirk	Falkirk	97,180	Falkirk High	–	4 Cycle Racks/ 8 Cycle Lockers
			Falkirk Grahamston	–	4 Cycle Racks/ 2 cycle Lockers
Galashiels	Scottish Borders	14,090	No nearby station		
Glenrothes	Fife	47,260	Markinch	–	12 Cycle Racks
			Glenrothes with Thornton	–	4 Cycle Racks/ 5 Cycle Lockers
Hawick	Scottish Borders	14,120	No nearby station		
Inverkeithing and Dalgety Bay	Fife	28,953 *2001 Census Data	Inverkeithing	–	9 Cycle Racks/ 10 Cycle Lockers
			Dalgety Bay	–	10 Cycle Racks and 20 Cycle Lockers
Kirkcaldy	Fife	48,090	Kirkcaldy	–	6 Cycle Racks/ 19 Cycle Lockers
Linlithgow	West Lothian	13,180	Linlithgow	–	14 Cycle Racks
Livingston	West Lothian	62,810	Livingston North	–	8 Cycle Racks
			Livingston South	–	8 Cycle Racks
Penicuik	Midlothian	15,680	No nearby station		
St Andrews	Fife	16,640	Leuchars	8miles	6 Cycle Racks/ 8 Cycle Lockers
			Cupar	8miles	6 Cycle Racks/ 8 Cycle Lockers
Whitburn	West Lothian	11,890	Fauldhouse	–	3 Cycle Racks
			Breich	–	3 Cycle Racks

3.2 SEStran Best Practice[2]

3.2.1 The SEStran document, *Cycling Infrastructure: Design Guidance and Best Practice* summarises the recommended design guidelines for enhancing the cycling experience. Four SEStran initiatives are intended to guide investment in the built environment for enhancing cycling:

- Urban cycle networks- paralleling major strategic flows across the region (High priority). The aim is to gradually retrofit safe and direct cycle routes into the existing urban fabric, as well as ensuring that new development caters for cyclists.
- Rural cycle networks, including delivery of Round the Forth route (Medium priority). National Cycle Network route development should also lead to increased cycling levels as well as encouraging tourism.
- Cycling infrastructure best practice (Medium priority). This document is a key step in ensuring new and existing infrastructure helps rather than hinders cycling.
- Links to stations and cycle parking (Medium priority). The aim is to ensure there is safe and high quality cycle access to, and cycle parking at, stations, major bus stops and interchanges across the region, starting with the most heavily used stops and stations. Minimum standards are being suggested in this document.

3.2.2 A fundamental goal of all these region-wide initiatives is to develop facilities which enable cycling to integrate with other transport modes. This document outlines many useful design considerations which could be used to audit existing facilities or in the design of new facilities.

3.2.3 The Design Guidance recognises that different cyclists often have differing needs and desires in relation to the design and location of cycle facilities. In Appendix 1 of the document there is a table that summarises four cycle user groups, these are Group A (Leisure Cyclists and Families), Group B (Risk Averse and Child Utility Cyclists), Group C (Risk Tolerant/ Experienced 'Utility' Cyclists, including many commuters) and Group D (Sports Cyclists). As the Regional Transport Strategy has a desire to promote modal shift from private car to bike, it can be assumed that those undertaking the shift are likely to be new or irregular cyclists. Although not explicitly stated, it is likely that new cyclists that are making the change from a less active mode will belong in Group B initially until they transition to Group C.

3.2.4 It is therefore important that a strategy acknowledges the needs and desires of both Group B and Group C cyclists.

3.2.5 The design priorities for Group B are as follows:

- Safety and coherence are the first priorities. 'Social safety', for example routes supervised by being overlooked, is important.
- Comfort and directness are secondary priorities, directness is more important than for leisure cyclists.
- Attractiveness is desirable but less important than the other factors.

2 *SEStran Cycling Infrastructure: Design Guidance and Best Practice*

3.2.6 The design priorities for Group C are as follows:

- Directness is paramount as indirect routes will not be used. Gradients are a factor.
- Comfort, as speeds are likely to be higher.
- Safety is important but slow 'safe' facilities are likely to be ignored
- Coherence is important and degree of exposure to traffic can be greater than Group B
- Attractiveness is desirable but not of key importance.

3.3 Making Cycling Irresistible[3]

3.3.1 One of the references in the SEStran document was an article from Transport Reviews entitled, *Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany*. The article has many useful suggestions for promoting mode shift, particularly amongst those groups that do not normally cycle in the UK and USA: women and the elderly. Although, these two groups are more sensitive to perceived traffic danger, there is a strong relationship between cycling safety and cycling levels amongst all user groups. Currently, only 1% of all trips in the UK are made by cycle versus more than 10% in countries such as Germany, Finland, Sweden, Denmark and the Netherlands.

3.3.2 Urban sprawl and the resulting longer trip lengths have a significant influence on attracting new cyclists from less active modes. In cycling countries such as Denmark, Netherlands and Germany, a high percentage of cycle trips are local, 2.5 km or less and are not always work based trips.

3.3.3 In the Netherlands, Denmark and Germany, cycling is integrated into the fabric of everyday life, compared to the UK and North America where the car is part of the fabric of everyday life. The National Bicycling Master Plans in the Netherlands, Denmark and Germany include the following strategies for promoting cycling:

- Better design of lanes, paths and intersections
- More and better bicycle parking
- Co-ordination with public transport
- Cycling safety and promotion.

3.3.4 A co-ordinated, multi-faceted approach seems to be the best practice for promoting mode change to cycling. For example, in addition to land use densification which promotes the short and local trips more likely to be made by cycling, discouraging the use of the car has a secondary effect of encouraging the active modes such as cycling and walking. Some of the changes to the specific cycling infrastructure which have been effective at shifting mode include:

3 Pucher, John and Buehler, Ralph; *Making Cycling Irresistible: Lessons from The Netherlands, Denmark and Germany* in Transport Reviews, 28:4, 495 — 528.

Extensive systems of separate cycling facilities

- Well-maintained, fully integrated paths, lanes and special bicycle streets in cities and surrounding regions
- Fully coordinated system of colour-coded directional signs for cyclists
- Off-street short-cuts, such as links between buildings and passages through cul-de sacs for cyclists

Junction Modifications And Priority Traffic Signals

- Advance green lights for cyclists at most junctions
- Advanced cyclist waiting positions (ahead of cars) fed by special bike lanes facilitate safer and quicker crossings and turns
- Cyclist short-cuts to make right-hand (left hand if in the UK) turns before junctions and exemption from red traffic signals at T-junctions, thus increasing cyclist speed and safety
- Cycle paths turn into brightly coloured cycle lanes when crossing junctions
- Traffic signals are synchronized at cyclist speeds assuring consecutive green lights for cyclists (green wave)
- Bollards with flashing lights along bike routes signal cyclists the right speed to reach the next intersection at a green light

Traffic Calming

- Traffic calming of all residential neighbourhoods via speed limit (20mph) and physical infrastructure deterrents for cars
- Bicycle streets, narrow roads where bikes have absolute priority over cars
- 'Home Zones' with 10mph speed limit, where cars must yield to pedestrians and cyclists using the road

Cycle Parking

- Large supply of good cycle parking throughout the city including at suburban bus stops
- Improved lighting and security of cycle parking facilities often featuring guards, video-surveillance and priority parking for women

Coordination With Public Transport

- Extensive bike parking at all metro, suburban and regional train stations
- 'Call a Bike' programmes: bikes can be rented by mobile phone at public transport stops, paid for by the minute and left at any busy junctions in the city
- Bike rentals at most train stations
- Deluxe cycle parking garages at some train stations, with video-surveillance, special lighting, music, repair services and bike rentals

Traffic Education And Training

- Comprehensive cycling training courses for virtually all school children with a test by traffic police
- Special cycling training test tracks for children
- Stringent training of motorists to respect pedestrians and cyclists and avoid hitting them

Traffic Laws

- Special legal protection for children and elderly cyclists
- Motorists assumed by law to be responsible for almost all crashes with cyclists
- Strict enforcement of cyclist rights by police and courts

3.3.5 Other non-capital investment ideas include providing access to bikes, bike trip planning (including websites that people can use to plan their bike trip), public awareness campaigns and public participation in cycle planning.

3.4 Bicycle Policy Audit (BYPAD) for Dublin City Council[4]

3.4.1 Colin Buchanan's Dublin office prepared an audit of the strengths and weaknesses of Dublin's cycling policy based upon international benchmarking standards known as BYPAD. Dublin does not have a bicycle policy document so the general goal of the audit was to increase the number of cyclists by exploring ways to make Dublin bicycle-friendly.

3.4.2 Although the study explores the various aspects of how cycling can be promoted, including the 'softer' aspects of cycle planning such as promotional schemes and other programmes, the discussion here will focus on the infrastructure changes that will help increase the number of cyclists.

3.4.3 Infrastructure changes that are discussed in the BYPAD report attempt to promote cycling as a viable mode of urban travel by physical changes that address four aspects of promoting cycling.

3.4.4 As with similar best practice and bench marking exercises the BYPAD project highlighted a range of similar issues relating to potential improvements to road infrastructure to create more acceptable and continuous cycle facilities for the range of users.

3.4.5 One of the key issues being discussed in the BYPAD project was cycle safety with some useful information from research into attitudes to cycling and road user behaviour.

Safety Of Cyclists

3.4.6 Based upon discussions with cycling groups in Dublin, on-road routes that cyclists tend to avoid because they are considered less safe than other routes include routes on wide, fast streets, particularly one-way streets, wide junctions (including roundabouts), heavy goods routes and cycling infrastructure that is poorly signed or maintained or both. Ideally, 30 km/h speed limits and shorter traffic signal cycles are safer for pedestrians, cyclists and vehicles because vehicular traffic moves slower and motorised traffic is less aggressive at signalised junctions.

4 Colin Buchanan and Partners, Bicycle Policy Audit in Dublin City Council, January 2007.

3.4.7 Motorist behaviour was found to have a significant influence on the frequency of collisions involving pedestrians and cyclists, according to a 2003 study[5] which compared the bicycle and pedestrian volume and safety in Europe and in California. This study found that the rate of collisions involving pedestrians and cyclists dropped as the numbers of pedestrians and cyclists increased and the finding suggests that motorists adjusted their level of driving aggression according to the number of pedestrians and cyclists. Consequently, to encourage pedestrians and cyclists in an area, policies that reduce the level of motorist aggression and improve the visibility of pedestrians and cyclists need to be pursued at the same time.

3.4.8 Widening the cycling user group to include new users from underrepresented cycling groups (in the UK) such as the elderly, women and children may require changes to routes that are perceived to be only used by more risk tolerant cyclists. An Australian study[6] randomly observed over 6,500 cyclists, 79% men and 21% women, at 15 commuter locations in Melbourne. Although the researchers acknowledge that other non-route variables are determinants in gender-based cycling choice, the study concluded that women commuter cyclists have a preference for off-road cycle facilities and that dedicated cycle lanes on heavily used arterials may be avoided by women cyclists. The study did acknowledge that it was often very difficult to provide new, off-road facilities in heavily built-up areas.

Enhancing The Image Of Cycling

3.4.9 The BYPAD project also highlighted the fact that the need to enhance the image of cycling by ensuring that cycle facilities are organised, maintained, are well signed and lit is integral to presenting a positive image of cycling, particularly to car drivers. Well planned and visible cycle parking areas must be prominent and conveniently located. Bicycles that are locked to fencing or other appurtenances should be limited in number and bicycles that have been abandoned also need to be dealt with to make room for bicycles in use and to prevent unsightliness.

3.4.10 In addition to infrastructure improvements and maintenance the BYPAD project also emphasised the need for relevant authorities to develop a range of cycling events and promotional activities to ensure that cycling was given a higher degree of prominence. Included in this was the development of communication tools, such as a well maintained and up to date web-site along with regular newsletters to keep both practitioners and the public informed of cycling developments and initiatives.

3.5 London Cycle Network

3.5.1 In the UK, the London Cycle Network (LCN) has the longest urban network of strategic cycle links. Colin Buchanan has been actively involved in undertaking a range of works on the network including surveys, consultations and feasibility studies.

3.5.2 For the LCN Plus a network of some 900km has been identified and procedures have been put in place to improve conditions on the multitude of links that make up the network.

5 Jacobsen, PL; *Safety in Numbers: more walkers and bicyclists, safer walking and bicycling in Injury Prevention*, 2003; 9-2005-2009.

6 Garrard, Rose and Lo; *Promoting Transportation Cycling for Women: The Role of Bicycle Infrastructure* in Preventive Medicine 46 (2008) 55-59.

3.5.3 In terms of improving conditions for cyclists an emphasis has been placed on identifying and resolving the various barriers to cycling. In examining barriers to cycling on the LCN it was considered inappropriate to identify all barriers to cycling, however some broad classifications have been developed. These are as follows:

- A – Access permeability issues preventing direct passage for cyclists
- C – Corridors with adverse moving motor traffic conditions and/or and kerbside amenity complexities
- G– Busy/complex Gyratories with poor conditions for cyclists
- J – Busy/complex junctions with poor conditions for cyclists
- L – Legal restrictions preventing legitimate access for cycling
- S – Severance causing discontinuity or long deviation of cycle route
- W –Width/space restrictions preventing good conditions for cycling.

3.5.4 In terms of progressing with the provision and upgrading of the LCN the above barriers can be examined and identified on the various routes and then ranked using a Risk Rating based on the probability of non-delivery of the removal of the barrier and the impact of that non-delivery. This risk rating provides a subjective measure of how difficult it will be to overcome the barrier. The system is then used to highlight areas on the existing and proposed routes that need particular attention to ensure a suitable and continuous route is provided in the long term. High Risk barriers are ones that require a high degree of attention with early strategies, design proposals and identification of funding mechanisms considered from an early stage. Medium Risk barriers may be solved relatively simply but still require a degree of forward planning and finally Low Risk barriers can be easily overcome or, alternatively, may have minimal impact on the level of service provided if it is not removed. In such cases it may be that the barrier will be monitored to establish if works are required.

3.5.5 The use of this barrier identification system also goes hand in hand with a process known as CRISP

3.5.6 A CRISP (Cycle Route Implementation and Stakeholder Plan) is an enhanced feasibility study that supports scheme planning, programming and the design and implementation of improvements along a cycle link.

- The main aims of the CRISP Process are to
- Raise the profile of cycling across London
- Substantially increase levels of cycling
- Improve the quality of the network
- Provide a cohesive network and a coherent approach to implementation
- Provide the optimal route for cyclists
- Include stakeholders at an early stage
- Provide a costed programme and encourage long term project planning
- Prioritise work along links
- Tackle ‘tough’ issues along a link (along with potential funding).

3.5.7 The CRISP process includes three basic stages. First a pre CRIM (Cycle Route Inspection Meeting) report is prepared for a route. This examines base information on a route such as traffic and cycle flow data, accident records, developments on the link, trip generators and potential alternative routes.

3.5.8 The second stage is the CRIM itself which brings together the relevant stakeholders and examines the Pre-CRIM report along with the on-site conditions, barriers to cycling and route options. Finally a CRISP report is prepared that includes the output information from the earlier stages along with a clear identification of the constraints/barriers, the stakeholder feedback, route opportunities and potential costs. From this a programme for implementation can be identified, costed and prioritised.

3.5.9 Using both the barrier identification and the CRISP system the LCN has been allowed to develop with the support of all relevant stakeholders and in a manner that provides a degree of standardisation to the types of facilities and measures being provided throughout the route.

3.5.10 Given the size of the network and the fact that it spreads across the various London Boroughs a web site has been developed to provide a resource to both practitioners and the public alike. (**http://www.londoncyclenetwork.org.uk/**)

3.5.11 In addition to the web site, newsletters for practitioners are also produced and these provide a range of information including information on individual scheme development, technical information updates on events/seminars and general updates and overviews of progress and relevant news relating to the network.

3.6 Specific issues relating to best practice

Dilemmas for designers of cycle facilities

3.6.2 It is noted that in examining some of the best practice in other urban locations there is a major issue relating to providing cycle facilities for a range of cyclists with varying abilities.

3.6.3 Cycling organisations such as the Cycle Touring Club (CTC) recognises that 'cyclists' do not constitute a homogenous group and that no particular facilities are likely to be acceptable to all cyclists. However the CTC and other cycling bodies do favour the provision of on road cycle facilities as outlined in the recent Local Transport Note 2/08:[7]

> *"The road network is the most basic (and important) cycling facility available, and the preferred way of providing for cyclists is to create conditions on the carriageway where cyclists are content to use it, particularly in urban areas. There is seldom the opportunity to provide an off-carriageway route within the highway boundary that does not compromise pedestrian facilities or create potential hazards for cyclists, particularly at side roads. Measures that reduce the volume or speed of motor traffic benefit other road users by making the roads safer and more pleasant for them to use.'*

7 Local Transport Note 2/08: Cycle Infrastructure Design

3.6.4 However in examining the existing and historic road networks in urban areas, there can be a significant number of barriers to cycling that need to be overcome. If some of these barriers cannot be resolved using some of the techniques mentioned above, then this may lead to a discontinuous route or a particular section of route that may still be regarded as unsuitable or unsafe by some cyclists.

3.6.5 While those cycling at present require their needs and problems to be addressed, if there is a desire to encourage more cycling and modal shift, especially in relation to commuting trips, it is the less experienced and more risk averse cyclists that need to be given a degree of confidence in the cycle network.

3.6.6 In some cases it may be that off road facilities and routes through quiet streets need to be identified to help build up confidence and experience for these less experienced cyclists before they transfer to the more experienced risk tolerant cyclists that are more comfortable cycling on road in different traffic conditions.

3.6.7 It is recognised that in using best practice these types of issues need to be resolved through an audit of existing and potential routes, the identification of problems and barriers to cycling and a strategy to develop solutions and layouts that are acceptable to both designers and user groups.

Integration Of Cycling With Other Modes Of Public Transport

3.6.8 Effective integration with public transport will extend the feasible cycle trip length from 3 km to more than 8-10 km. Integration with public transport could include cycle racks at bus stops on the fringes of urban development, cycle parking at rail stations, rail carriages that can accommodate cycles, cycle clubs operating at rail stations. It is important that bicycle parking areas be sheltered, in a prominent location, well lit and regularly checked.

3.6.9 According to *Bike and Rail: A Good Practice Guide*,[8] the Sheffield stand is by far the simplest and preferred cycle rack that can be used in many conditions. Two bicycles can easily be attached to each stand. It may not be appropriate for very dense parking and care must be taken to not obstruct pedestrian flow.

3.6.10 Other engineering treatments such as wheeling channels at stairs or ramps not only make stair accesses to rail stations and platforms accessible for bicycles but are also applicable for subways.

3.6.11 Improving cycle routes to stations is as important as secure cycle parking. SUSTRANS has produced a leaflet discussing how to encourage walking and cycling to rail stations.[9] Checklists for appropriate facilities for pedestrians and cyclists are included in the leaflet. For example, important considerations for cyclists include:

- Continuity of the cycle path all the way to the cycle parking area: redevelopment of stations or the construction of existing stations should ensure that the surrounding cycle and pedestrian networks are extended to the station. At many stations, the cycle and pedestrian pathways to the station entrance are broken up by taxi ranks and roadways with few crossing points;

8 Department for Transport, The Countryside Agency; *Bike and Rail: A Good Practice Guide*, 2004.

9 SUSTRANS; *Safe Routes to Stations*, Information Sheet FF40; October 2003

- Poor signage: signage both for pedestrians and cyclists is particularly important for stations that have many first time customers arriving. For cyclists, it is important for them to be directed to cycle routes as quickly as possible and it may be appropriate to have cycle maps available at the station, itself. Both cyclists and pedestrians find it useful to have distances on signs, particularly when the station is located outside of the town or city centre;
- Cycle Parking: the security and convenience aspects of providing cycle parking have already been discussed but the importance of ensuring the cycling and walking are priority modes of transportation cannot be overemphasised: for the land cost of parking one vehicle next to the station, 12 bicycles could be accommodated. Since many trips to stations are made within 5 km of the station and could easily be made by bicycle, promoting cycling through the provision of a well-organised, well-signed network can influence mode split.

3.6.12 From a Scottish perspective it has been noted that where new rail and bus stations have been provided or refurbished appropriate links to cycle routes have been provided and often a high quality of cycle parking and lockers have been provided from the out set. It is also the case that stations such as Edinburgh Park and Newcraighall in Edinburgh and Markinch in Fife (see Figure 2.1) link into cycle networks and also form part of a transport interchange including park and ride facilities and links to local bus services.

Figure 3.1: *Markinch Railway Station & Transport Interchange, Fife*

(Scheme incorporated National Cycle Network, links to local networks and cycle lockers)

Cycling As An Alternative Mode For Shopping Trips

3.6.13 Shopping trips are a common trip type and many of these trips are unnecessarily made by car, based upon the Scottish Household Data referred to in section 1.2. Ensuring that the needs of cyclists are accommodated within retail or employment destinations, both on-site and off-site will help to maximise the use of the site by cyclists.

3.7 Where can cycle parking be located?

3.7.1 "Cycling by Design"[10] published by the Scottish Executive (now the Scottish Government) in 1999 gives a clear summary of the locations where cycle parking may legally be located:

> *Part IV of the Road Traffic Regulation Act 1984 enables the provision of off-street parking places for vehicles and authorises the use of any part of a road as a parking place.*
>
> *These powers are extended by Section 63 of the Act to enable the provision, in roads and elsewhere, of stands and racks for cycles. This section also applies to roads which have been pedestrianised by an Order under Section 203 of the Town and Country Planning (Scotland) Act 1997.*
>
> *Where there are existing waiting and loading restrictions in force, cycles, like other vehicles, may not be parked on the carriageway or the footway of a road.*
>
> *However, on-street cycle parking can be accommodated either through an exemption to the existing waiting and loading Orders or by additional Orders designating part of the road for cycle parking only.*

10 Cycling by Design, Scottish Executive Publications, 1999

3.7.2 This means that Local Authorities may site cycle parking facilities at any location though there may have to be special arrangements made where waiting and/or loading restrictions are in force. Cycle parking facilities can also be located at any location on privately owned land.

3.8 Estimating requirements

3.8.1 Requirements can be estimated in three key ways:

1. count the bikes parked at a particular location
2. conduct surveys amongst staff and other potential users
3. use SEStran's cycle parking standards

3.8.2 The first method in particular is likely to underestimate requirements as a lack of cycle parking is often a key factor discouraging cycling. However, at a location which has some existing parking this is a good method of estimating the amount of increased provision which is needed.

3.8.3 The second method is likely to be expensive unless surveys are already being routinely carried out but does offer the advantage that it allows both the questions, "do you cycle to … ?" and, "would you cycle to … if there was good cycle parking?" to be asked. This may allow an estimate of both existing and suppressed demand. Such results do need to be treated with caution however as a proportion of those who indicate that they would cycle if there was good parking may find, in the event of the provision of good parking, that there are other barriers which still discourage them from cycling.

3.8.4 The third method has the advantage of being quick and straightforward. SEStran's cycle parking standards give the minimum level of provision expected at a range of development types and values for specialist uses can be derived by taking the nearest equivalent land use. The values are minima though and so the values derived need to be considered carefully in order to check that they are likely to be sufficient

3.9 Overprovision

3.9.1 Overprovision of cycle parking is often found to attract cyclists[11] and so, if space is available, it is likely to be advantageous to aim to supply somewhat more cycle parking than is calculated as being necessary. Transport for London (TfL) suggests supplying 50% on top of known current requirements while the Cambridge Cycling Campaign recommends 20% to 50% over estimated requirements.

3.10 Expansion

3.10.1 TfL[12] recommend an increase in cycle parking provision of 20% every time usage reaches 80%.

11 Cambridge Cycling Campaign, Cambridge Cycle Parking Guide: How to provide Cycle Parking: a step-by-step guide for planners and providers, 2008

12 Transport for London, Cycle Parking Standards, TfL Proposed Guidelines, circa 1998

3.11 Types of cycle parking

3.11.1 Precisely what will be required in terms of cycle parking will depend on the type of usage at any one location. "Cycling by Design" notes that cycle parking is generally required for 3 time periods:

- short Term: < 2 hours;
- medium Term: 2-12 Hours;
- long Term: > 12 Hours.

3.11.2 Short to medium term parking facilities are generally found and required at:

- public transport interchanges (railway stations, light rail stations, guided bus stations, coach stations, major bus stops);
- public buildings (central government, local government, health facilities);
- workplaces (public, private and voluntary organisations);
- education facilities (primary, secondary and further education);
- shops and shopping centres;
- parks and leisure facilities; and,
- places of entertainment.

3.11.3 At locations of this type a standard level of provision is perfectly acceptable.

3.11.4 Medium to long term parking facilities are generally found and required at:

- major transport interchanges (railway stations, coach stations, airports, ferry ports);
- student halls of residence;
- private residences;
- hotels and hostels; and,
- camping and holiday sites.

3.11.5 At these locations it would be anticipated that, in addition to the requirements for short to medium stay parking, designs should aim to provide:-

- a higher level of security;
- weather protection, and
- storage areas.

3.12 General principles

3.12.1 "Cycling by Design" recommends that, on general principles cycle parking should be:

- conveniently located;
- secure;
- easy to use;
- adequately lit;
- well signed and, preferably,
- sheltered.

3.12.2 Each of these considerations is dealt with below along with a number of additional matters which should also be borne in mind.

3.13 Convenient location

3.13.1 Although the location of cycle parking will always be a compromise between the needs of cyclists and other users of a location all sources agree that cycle parking should be located close to the entrances to buildings, preferably closer than the nearest car parking and absolutely not in dark corners or at the rear of car parks.

Figure 3.2: *Convenient but unsightly cycle parking*

3.13.2 Transport for London (TfL) recommend that parking should be within 50m of a destination while the Cambridge Cycling Campaign (CCC) recommends a maximum of 25m for short stay uses (shopping for example) and 50m for long stay uses.

3.13.3 The Department for Transport (DfT)[13] and TfL note that where parking is needed for short periods, for example in shopping areas, small clusters of stands at frequent intervals will generally provide a better level of service than larger groupings at fewer sites. This is also true of large employment sites where staff are based in different buildings.

3.13.4 The means by which cycle parking can be reached is also important. Routes into any site should be cycle friendly. Cyclists should ideally be able to cycle right up to their parking space though CCC state that the need to push a bicycle for the last 10m is not unreasonable but 20m will be enough to discourage use of the parking facilities provided in favour of more readily accessed lampposts and railings.

3.13.5 Though it may appear to be obvious it is also important that cycle parking is at ground level and, where this is not possible, that any ramps used to access it are wide enough and shallow enough to make access easy. If lifts are present then these should also be of a suitable size and able to take non-standard designs of bikes (like tandems for example) if necessary.

3.13.6 Most residential cycle parking will be found in garages or garden sheds controlled by individual householders and need not be specifically supplied. However, in flatted developments and other locations where residents are not in a position to store their bicycles conveniently in their own space then designated, covered and secure spaces with appropriate stands for cycles to be locked to should be provided for each building or small group of buildings.

3.13.7 Finally TfL note that parked bicycles should not obstruct emergency exits or access to plant or equipment stores.

3.14 Security

3.14.1 Cyclists need to feel personally safe and secure as they approach cycle parking, lock up their bicycles and complete their journeys on foot. They also need to be confident that their bicycle will not be damaged or stolen while they are away from it.

3.14.2 All sources agree that the best, and most straightforward means of achieving this is through natural surveillance by positioning cycle parking so that people coming to and from the buildings walk past it and/or so that occupants of the buildings can see it from their windows. It should definitely not be tucked into out of the way corners or poorly overlooked areas of car parks.

3.14.3 CCTV may be necessary in certain contexts where natural surveillance is likely to be insufficient and if it is installed already then it should cover areas of cycle parking. Signposting of CCTV where it is present is a useful extra source of reassurance for users and deterrent to thieves.

3.14.4 Security on the approaches to cycle parking is more easily overlooked with CCC noting that these approaches should be light, open and attractive, and designed to the appropriate standard. The route from the parking area to any final destination should be similarly light, open, attractive and well designed.

13 Department for Transport, Local Transport Note 2/08: Cycle Infrastructure Design, 2008

3.14.5 Less obvious considerations are that stands must be sited sufficiently far from a road that users moving bicycles in and out or bending over to lock them are not at risk from passing vehicles and parked bicycles are not a hazard for passing traffic.

3.14.6 Parking areas need to be kept in a clean, well-maintained state in order to discourage anti-social behaviour and crime and to encourage use. Abandoned bikes should also be removed swiftly.

3.14.7 For long-term workplace parking and, particularly shared residential parking a higher level of security may be appropriate within cycle lockers or code locked outbuildings or similar.

3.15 Ease of use

3.15.1 In most cases stands of standard design installed according to guidelines should be easy enough to use. Two tier stands where cycles have to be lifted into the upper level are more awkward and should only be used where a lack of space makes more usual stands inappropriate.

3.15.2 Cycle parking should be on level ground if at all possible but where stands have to be placed on a slope they should be at 90 degrees to it so that bicycles do not roll away from their support and into pedestrian or other vehicle space.

3.16 Lighting

3.16.1 All sources agree that approaches to parking, the parking itself and routes from parking to any final destination should be lit.

3.17 Signage

3.17.1 If cycle parking is clearly and prominently located on the approach to a destination then signage to help cyclists find it may well be unnecessary. However, signs can still act as a valuable marketing and promotional tool. If parking is not immediately obvious on the approach to a building then signs to help users find it should be provided. However, if parking is hard to find because it is not conveniently located then it should be relocation is a better approach than signposting.

3.18 Shelter

3.18.1 The amount of shelter from the weather which is required will depend both on the local climate and on the expected usage of the parking provided. For shared residential parking it would be anticipated that provision would usually be indoors in a location analogous to the garage in a private house. Covered provision would be the minimum required. For most commuter locations indoor provision would be good and covered provision should be more than adequate. For short-stay locations shelter is usually not required. At some locations providing a level of additional shelter may well increase levels of usage. Examples would include seafront, or other very exposed spots.

3.18.2 Cover needs to be carefully designed to avoid limiting the natural surveillance of the site. Most modern designs incorporate bus shelter type clear panels and so do not limit surveillance. Indoor parking will be difficult to cover with natural surveillance and indoor parking would usually be combined with some system to ensure limited access.

3.19 Risks to other users

3.19.1 The most widely noted risk to other users from cycle parking is the potential risk to blind and partially sighted pedestrians and much of this risk can be avoided by placing cycle parking out of the way of direct pedestrian desire lines or other routes likely to be used by blind or partially sighted persons.

3.19.2 To further reduce the risks of conflict CCC recommend the following:

- place cycle parking in build outs in the roadway or align with planting and street furniture;
- fit a tapping rail to the first and last stand;
- use strongly contrasting colours as a visual warning (stainless steel stands should have a brushed finish);
- use contrasting coloured and textured paving either formal hazard warning (corduroy) paving or a more subtle use of material such as introducing cobbles or setts.

3.19.3 Cycle parking should also not conflict with the movements of other vehicles. For example Sheffield stands located near a kerb should be located at least 0.6m from the edge of kerb so that bicycle wheels are not less than around 0.5m from the same point and do not overhang into the road. This does not mean that cycle parking cannot be in the carriageway but where it is it will need to be protected by build outs, bollards or similar.

3.19.4 Finally, cycle parking should not:

- obstruct emergency exists or access to plant or equipment stores;
- obscure view of car drivers at junctions or near zebra crossings;
- block access to traffic signal controllers, lamp columns, illuminated boards and similar;
- prevent car doors from opening; or,
- prevent deliveries to shops and similar.

3.20 Aesthetic considerations

3.20.1 Poorly planned cycle parking can be aesthetically unattractive particularly if litter and abandoned bicycles are allowed to accumulate. "Cycling by Design" recommends placing stands carefully and, if possible incorporating them into wider environmental improvement schemes.

3.20.2 Regular maintenance is necessary to stop litter from accumulating, to remove unsightly, abandoned bicycles and to replace any damaged facilities.

3.21 Short to medium stay stand designs

3.21.1 There are a great many cycle stand designs in current usage. These include Sheffield stands, wall mounted bars, hooks and rings, butterfly stands and other designs offering support via the wheels only and space saving vertical and two tier racks.

3.21.2 All sources agree that unless there is a pressing case for doing otherwise then standard Sheffield stands should be used. Wall mounted designs may be appropriate where there is insufficient width available for Sheffield stands and vertical and two tier racks are most commonly found in locations where space is very limited. Wheel gripping designs are not recommended as bicycles are not well supported and the frame cannot be readily locked to the stand.

3.21.3 Specially designed stands are often an attractive option outside high status buildings or in conservation areas. Though superficially attractive many such designs are near impossible to use for the purpose for which they are designed. It is recommended that such designs are implemented only when they can be based on existing designs which have been demonstrated to be popular with users. The installation of attractive but impractical stands will result in bicycles chained to lamp-posts, trees and railings and causing a much greater level of visual intrusion than was anticipated.

3.21.4 Standard Sheffield stand consist of a simple curved tube forming an inverted "n" shape. There are a number of variations on this general theme with the most useful having an additional crossbar which provides extra security and support for smaller bicycles and acts as a low level tapping rail for visually impaired people. Chapter 11 of "Cycling by Design" offers practical guidance on the correct sizing and spacing required for Sheffield stands.

3.22 Long stay/secure storage options

3.22.1 Any of the stand designs mentioned above can be combined into compounds or cycle centres. Compounds would typically be covered or indoor facilities to which access is restricted and are fairly frequently found in shared residential facilities or at large workplaces. Cycle centres are sometimes found at busy locations like large stations and typically offer secure parking along with additional services like maintenance.

3.22.2 Cycle lockers are also an increasingly popular option at long stay locations. These allow bags, lights and other accessories to be left with the bicycle, provide weather protection and storage space for helmets, panniers and clothing. However, they are expensive to install, can be visually intrusive and require a much higher level of maintenance and administration than is the case for typical stands. For appropriate locations such as stations though there are a number of standard designs available.

3.23 General Observations

3.23.1 While the existing cycle networks across the SEStran region will vary in terms of standard and continuity, it is assumed that it is currently being used by an intact cycling community. What may be difficult to determine at this stage and in certain areas, is the level and split between commuter cycling and leisure cycling. If there is to be an increase in the use of the urban cycle networks as a whole and a particular emphasis on increasing the number of urban commuter cycling trips there is a need to invest in infrastructure and programmes which promote cycling and encourage modal shift.

3.23.2 While existing experienced cyclists will benefit from any improvements, consideration also needs to be given to those cyclists identified earlier in this report as being risk averse along with those groups that are currently under-represented as cyclists.

3.23.3 The literature and best practice review carried out for this study indicates some of the key issues relating to cycle facilities and the needs of cyclists. These issues have been identified over a number of years and are generally accepted by all involved with the provision and use of cycle facilities. However it is recognised that these issues are not always addressed or conditions improved for cyclists in a strategic manner.

3.23.4 The work being undertaken on the LCN has developed a system for identifying problems and barriers to cycling. This includes formal auditing and design processes across strategic networks. A key element of this process is the involvement of a range of practitioners and stakeholders to reach agreed solutions and a prioritised programme of works.

3.23.5 In relation to developing a strategy for Urban Cycle Networks in the SEStran region, the following key areas should be considered within a future strategy. The following sections of the report highlight the key issues related to each heading and provide a summary of lessons learnt and potential initiatives and measures that can be taken forward with the final strategy for urban cycle networks. These are highlighted in italics.

3.24 Catering for the existing cycling community

3.24.1 It is the case that many urban areas will have an existing cycling community who will tend to be made up of Group C experienced and risk tolerant cyclists. In some cases it is these cyclists who are most visible in terms of using on-road urban cycle networks and therefore have a key role to play in promoting cycling as viable and sustainable mode of transport.

3.24.2 While a good number of these cyclists will be experienced and highly skilled bike riders, they will also have a range of concerns and issues with regard to the provision of cycle facilities and how cyclists are catered for in the urban road environment in general.

3.24.3 The need to improve conditions and facilities for this group of cyclists is equally as important for provided facilities for less experienced and risk averse cyclists. It is of course the case that an improvement of on-road facilities in areas of high traffic volumes will ultimately assist those inexperienced cyclists as they gain confidence in themselves and the cycle network and facilities being provided.

Lessons learnt: Initiatives should include all ranges of cycling abilities and the views of experienced risk tolerant cyclists need to be taken account of with regard to infrastructure improvements and the removal of barriers to cycling. Just because more experienced cyclists can be seen in relatively high numbers on certain routes does not mean that improvements cannot be made to enhance safety and cycle journey times.

3.25 Cycle parking

3.25.1 The issue of adequate cycle parking is one that affects both regular and irregular cyclists alike. While some regular cyclists may be content and somewhat resigned to securing their bicycles to various items of street furniture, the random and informal nature of cycle parking may tend to discourage some people from leaving their bicycles unattended for reasonable lengths of time.

3.25.2 It is also the case that the lack of confidence of having a cycle parking facility at a destination my result in potential cyclists opting to take another mode of transport.

Lesson learnt: In conjunction with the SEStran standards for cycle parking at new developments, a review of cycle parking at existing trip destinations requires to be undertaken and a regional cycle parking strategy be developed to improve the number and quality of cycle parking facilities, especially in town centres.

3.26 Encouraging Modal Shift

3.26.1 Research and survey work indicates that there is a relatively high bicycle ownership across the general population, however this ownership does not necessarily transfer to regular usage for urban journeys, such as commuting and other activities.

3.26.2 If a modal shift is to be achieved than this will need a twin approach in terms of improvements to both infrastructure and information.

3.26.3 It is also the case that certain user groups are under represented in terms of the overall numbers of people cycling and it may be that specific measures and initiatives will need to be developed to encourage these groups to take up cycling or cycle more for regular commuting trips.

Promotion Of Cycling To Car-Drivers

3.26.4 As a mode of transport, cycling is in competition with a very convenient mode of transport, namely the car. The car is a part of the fabric of people's lives in the UK and to replace that mode with cycling will take a tandem effort of promoting cycling and discouraging the use of the car. Initiatives could include;

- Ensuring that cycle networks in urban areas are continuous, well-signed and integrated with the rest of the network, as appropriate. Bicycle parking areas of varying sizes should be located throughout urban areas both for the convenience of cyclists who need parking at their destination or near their homes, for the encouragement of non-commuter type trips and to make the cycling mode visible to non-cyclists. Prompt removal of abandoned bicycles and ensuring these areas are well-maintained will further promote the appearance of cycling to the non-cyclist.
- Websites that provide users with a customised cycling route based on a pair of trip ends may help to reduce the fear of the unknown that non-cyclists have about making a certain trip.
- Strictly enforcing reduced speed areas in urban locations, shortening signal cycle times, providing cycle and toucan crossings are all means of de-emphasising the car in urban areas. De-emphasising the car and finding ways to encourage cycling will further enhance the safety of cyclists because drivers respond to environments that do not cater exclusively to them.

Lessons Learnt: Promote the ease, convenience and enjoyment of cycling as a mode to non-cyclists by providing a range of continuous and well-signed cycle routes in urban areas. Encourage longer cycling trips by creating cycle parking and ensuring that cycle paths link to transportation interchanges. Make it easy to use the bicycle by providing frequent cycle parking opportunities, online services which provide cycle travel advice. and, reduce the risk of a cycling accident by modifying driver behaviour to be less aggressive, particularly in urban areas.

Encouraging Specific User Groups

3.26.5 It is recognised that there may be certain user groups that are under-represented in terms of cycling and there may be potential to encourage more cycling and modal shift amongst these groups.

Women Cyclists

3.26.6 Women are typically under-represented as cycle owners, according to the Scottish Government, and are under-represented as routine cyclists. Some studies have been undertaken with regard to different attitudes to cycling shown by women and it has been found that women in general are shown to be risk averse, studies have shown that they could take up cycling if sufficient off-road cycle facilities or on-road facilities on non-arterial roads were provided.

3.26.7 It is also recognised that women still undertake a high percentage of child care activities and trips related to school travel and as such it may be that some attention needs to be given to the aspect of time pressures relating to multi-purpose trips and where cycling can be accommodated with such a schedule or personalised travel plan.

Initiative: Examine in more detail the types of issues that are relevant to certain user groups on the urban cycle networks and ensure that representation is made

Urban Flat Dwellers

3.26.8 Convincing flat dwellers in large urban areas to cycle more will be difficult without convenient cycle parking facilities both at home and at the destination. Furthermore, roads are often busy and wide and conducive as cycle routes for the more risk tolerant.

Lesson learnt: Where possible, and to serve existing high travel demand (all mode) origin/destination pairs between 1km and 4 km apart, consider provision of good quality facilities to entice under-represented groups into cycling and increase their confidence in cycling. Look at ways of enticing these groups in the larger urban areas but focus in the smaller to mid-size urban areas. In the short term, consider placing bus stops with cycle parking at the terminus points of existing off-road cycle facilities so that risk averse cyclists can complete their journeys on public transport.

Non-Commuter Trips

3.26.9 School and shopping trips constitute a significant number of non-commuter trips; many school trips and approximately half of all shopping could be made by bicycle. Shopping and school trips are generally not long distance trips compared to what commuter trips tend to be. Consequently, typical cycling clothing is unnecessary. Furthermore, with panniers and other carriers, shopping can be easily transported home.

3.26.10 For school trips (which perhaps should be regarded as a child commuter journey), the provision of off-road cycle paths, as per the previous discussion, as well as safe, secure, sheltered bicycle parking at the entrance of each school may encourage more young cyclists. It is important that cycle paths to schools be convenient and continuous.

3.26.11 For shopping trips, of critical importance is the provision of safe, secure and sheltered bicycle parking that is located adjacent to the shopping centre entrance. Cycle paths to these bicycle parking areas should be continuous and the cycle parking itself should be well-marked.

Lessons learnt: That developers and local authorities ensure that retail centres and schools, in particular, provide safe, secure and sheltered bicycle parking of a consistent standard and convenient to building entrances and in numbers according to current standards.

3.27 Multi-modal journeys and the role of transport interchanges

3.27.1 It is recognised that cycling can be a very efficient and sustainable mode of transport within urban areas, especially for short journeys in the region of 2-4km. However the changing travel patterns brought about by urban sprawl and people living some distance for their workplace can make cycling appear unattractive as a travel mode. However, in recent years more consideration has been given to the role of multi-modal trips with the provision of park and ride sites and improved cycle facilities at some train stations.

3.27.2 It is clear that much more could be done to allow cyclists better access to other transport services, whether that be through improved parking and bicycle storage facilities or by an increased ability to take bicycles onto other modes of transport, including trains, buses and trams.

Lessons learnt: Cycling can be made to seem more attractive for longer commuter journeys if cyclists are given a degree of confidence in the range of facilities provided and the security and ease of cycle parking arrangements to make interchanges between different transport modes.

4.1 General

4.1.1 The Cycling Action Plan for Scotland (CAPS) document was published in draft format on 28th May 2009 for a period of public consultation that will end on 20 August 2009.

4.1.2 The main aim of the plan is "to get more people cycling more often"

4.1.3 The document and plan are the result of a series on consultations with a variety of stakeholders and focus groups and outlines the following vision and strategic objectives

- Scotland's Vision for Cycling
  - By 2020, we will have created communities where people of all ages and
  - abilities can cycle safely and comfortably.
  - Everyone will have access to information, materials and incentives to make
  - day to day cycling a realistic choice.
  - Our legal powers and investment will assist in achieving a target of 10%
  - modal share for cycling and will reduce carbon emissions.
  - We will live longer, healthier lives
- Objective 1
  - To create communities where people of all ages and abilities can cycle safely and comfortably
- Objective 2
  - For cycling to be the natural choice for your daily journeys
- Objective 3
  - For people to have the confidence and the right information to make cycling a realistic choice for some journeys
- Objective 4
  - Legal powers will promote access and keep people safe and active

4.1.4 The vision and objectives in CAPS are fully complimentary to the visions outlined in the SEStran Urban Cycle Network Strategy, these being

- Vision
  - Cyclists as equals
  - Cycling – The first choice for urban travel
- Objectives
  - Improve cycle facilities and infrastructure aiming to meet the five infrastructure objectives on cycle routes (coherent, direct, attractive, safe comfortable)
  - Improve cyclist safety
  - Improve cyclist security
  - Promote a cycle friendly culture
  - Integrate cycling with other policies and objectives

4.1.5 In terms of taking measures to encourage more cycling it is noted that the stakeholder consultations reveal many of the same issues as uncovered in this project. In addition to this the CAPS also highlights the problems presented by the differing views on how best to cater for the different groups of cyclists. These are perhaps best highlighted in the following focus group quotes

- "So, sometimes planners will put a particular cycle route in place, but its actually counter productive, better to just have enough room for cars and bikes to share the same bit of road."
- "Cycle paths, cycle paths! (Should be a) designated place for cyclists. I mean, it could be next to it (the road), but not actually part of the road."

4.1.6 When considering the urban environment, with its mixed land uses, density of development and lack of open space it is not always possible or indeed desirable to provide off road routes. Therefore where appropriate both the CAPS and the Urban Cycling Network Strategy emphasis the need to identify appropriate cycle networks that may include a mixture of on-road and off road facilities. Where required there is also the need examine methods of re-assigning road space, reducing traffic volumes and providing appropriate singing and other information for cyclists.

4.1.7 For each of the Objectives in CAPS the list of action points also compliments the actions and initiatives highlighted in this project. Issue include

- Improving existing facilities and routes,
- Ensuring cyclists are taken account of in deign of new roads and developments,
- Identify and promote cycle networks, along with possible grading of routes,
- Improve cycle parking,
- Provide better cycle facilities and links at transport interchanges.
- Promotional and training activities to show cycling as an everyday travel mode,
- Linking cycling to other initiatives, such as health promotion,
- Improved information for cyclists, including online journey planner,
- Promotion of the Cycle Friendly Employer Scheme,
- Improved driver education,
- Promote right of access and passage.

4.1.8 It is therefore considered that both this project and the CAPS compliment each other and that the local authorities in the SEStran partnership will benefit form having two policy documents that can be used to promote urban cycling in their areas.

5.1 General

5.1.1 The following chapter provides an overview of each of the identified town's cycle facilities in relation to the desk top study and audits undertaken along the main transport corridors as identified by SEStran. In some cases towns have been grouped together given the short distance between them and the possibility for inter-town commuter trips.

5.1.2 Plans of the routes audited along with the suggested action plan items can be found in Appendix 1

5.1.3 Print outs of the key information from the audit checklists can be found in Appendix 2

5.2 Alloa

5.2.1 The town of Alloa lies to the north of the Firth of Forth and in terms of cycling facilities benefits from having the NCN 76 run east to west to the south of the A907. The route is a mixture of on road sections (some with advisory cycle lanes) and off road sections. The facility was found to be well signed and the surface conditions relatively good throughout.

5.2.2 The NCN 76 provides a link towards Stirling to the west, however some improvements are required in the vicinity of the A91/A907 to provide a route that links into the Cambuskenneth Bridge. It is understood this is currently being pursued but the project is reliant on land owner negotiations.

5.2.3 Within Alloa a north south shared path route leads from the NCN 76 in the vicinity of North Castle Street towards the rail station located in the centre of the town. At the time of the audit the path to the north of the railway station and Argyle Street was still under construction. This route provides a useful north–south link running to the east of the B908.

5.2.4 Further to the east lies the A908 that leads to Sauchie and then Fishcross at the B9140. No specific cycle facilities are provided on this route and it is noted that there are sections where central hatching is provided and this reduces the possibility of providing cycle lanes on the sections of road where the width would allow.

5.2.5 From the town centre there are two main routes heading to the west. The northern most route is the B9096 Tullibody Road and this has no specific cycle facilities.

5.2.6 The southern most route is the A907 and again there are no specific facilities provided for cyclists on this route.

5.2.7 Other than NCN 76 there is no cycle network identified within the town. Given the improvements on the Devon Way route to Fishcross there appears to be an opportunity to begin to designate a cycle network for the town.

5.3 Haddington towards Edinburgh

5.3.1 While just under the criterion of a town with a population of less than 10,000, Haddington was seen as being within commuting distance by bike (8 miles) of Tranent and the Prestonpans area. The A199 heading east has been provided with advisory cycle lanes in both directions as this offers a degree of separation from general traffic that is subject to the national speed limit. As the route passes through the town of Macmerry there are no specific cycle facilities provided. Once on the west side of Macmerry the advisory lane commences again and continues into Tranent.

Figure 5.1: *Oakfield Roundabout – opportunity to provide cycle bypass in verge*

5.3.2 In Tranent there are no specific cycle facilities within the town centre due to the narrow streets. Formalised parking and loading areas along with other streetscape works tend to produce slow traffic speeds that are welcomed by cyclists.

5.3.3 Outwith the main east-west corridor of the A199, the remainder of Tranent tends to be made up of relatively quiet residential streets. The traffic volumes are relatively low and conditions for cycling could be described as relatively safe. There are a number of paths through open parkland that provide useful links and short cuts between the various residential areas. When heading north towards the Prestonpans area there are two options for cyclists. Cyclists can travel on road via the B6371 Church Street which crosses the A1 and then heads towards Cockenzie and Port Seton. Other routes include an off-road path that commences on the south side of the A199 Edinburgh Road where the B6414 terminates. This facility heads north and then passes under the A1 and continues northwards to the B1361 (past the Meadowmill Sports Centre) which then provides access into the residential areas of Prestonpans and the rail station to the west. The surfacing on this route is of varying quality but suitable for the volumes of cyclists using it. The route could however be better signed as a route between the two towns and access to the NCN 76.

5.3.4 On the west of Tranent advisory lanes commence again on the A199 and continue on until the roundabout with the A6094 (Wallyford Toll), where the road splits and leads to Wallyford to the south-west (including the Park & Ride railway station) and Musselburgh to the North-west. The route into Musselburgh is provided with advisory cycle lanes to the Pinkie Road Roundabout.

5.3.5 On heading north from the west side of Haddington an off road path (Longniddry to Haddington Railway path) through farmland forms part of the NCN 76 route. This leads directly to Longniddry Rail Station (approximately 4 miles from Haddington) and then onwards to the coastal route along the A198 and Port Seton, Cockenzie, Prestonpans and Musselburgh.

5.4 Musselburgh and Prestonpans

5.4.1 To the north of both the A1 and the A199 lie the towns of Cockenzie, Port Seton and Prestonpans. There are obvious links with Tranent as described above and also to Musselburgh to the west. From the west end of Longniddry a shared use path is provided alongside the B1348 into Cockenzie and from there the NCN 76 is signed along the coastal route using on road sections and off road paths that travel around the north of Musselburgh Racecourse. A feasibility study has recently been undertaken to examine routing the North Sea Cycle Route around the coast of East Lothian. If this is implemented, it will provide a link between the coastal communities of the county for both utility and leisure cyclists.

Figure 5.2: *Traffic calmed street (New Street) that forms part of cycle network*

5.4.2 In Musselburgh there are no cycle facilities on the main streets running through the town centre other than Advance Stop Lines (ASL) which are provided at traffic signals. The main off-road facilities relate to the NCN 1 and NCN 76 to the south and north of the town respectively. The NCN 1 route is well signed and provides a pleasant quiet route to Musselburgh railway station. From here the route ties into the Queen Margaret College campus and the new shared use path network leading to Newcraighall. A branch to the River Esk path links the route into the town centre.

Figure 5.3: *Innovative solar lighting provided at Newcraighall to QMU path*

5.4.3 The NCN 76 route follows a coastal route westwards from Prestonpans, through the Levenhall Links and onwards to the Fisherrow harbour where it connects onto the road network.

5.5 Edinburgh

General

5.5.1 Edinburgh has, for a long time, had a reputation for being cycle friendly. The local authority has promoted cycling through a range of initiatives and policy decisions relating to transport planning. The provision of Advance Stop Lines (ASL) at traffic signals, the provision of Toucan crossings, Greenways Bus Lanes and the promotion of old railway lines and other path networks for use by cyclists has resulted in a range of facilities across the city. In addition to this the introduction of 20mph zones with traffic calming in residential streets has assisted in creating many quiet streets where inexperienced and less confident cyclists can undertake journeys without encountering large volumes of traffic.

Edinburgh North

5.5.2 The Edinburgh North area is currently well served by the North Edinburgh Cycle route that runs along the old railway network. The route links well with the NCN 1 & 75, new development areas such as Edinburgh's Waterfront and Western Harbour and local streets. This facility provides an excellent commuter and leisure facility. It is however the case that while information signs are provided along the route, there is very little signing or branding visible at entry points to the off-road path or indeed signs from other main routes directing cyclists to the facility. Many of the access points are provided with steps and therefore some people may have difficulty accessing the route. The situation could be improved if wheel channels were provided at all locations where steps need to be negotiated. The North Edinburgh Cycle Route is well used by cyclists but it may be that outwith regular users, potential cyclists may be unaware of the facility and the relatively short journey times between key destinations on the route and links to other routes and the general road network.

5.5.3 In relation to the Leith Walk corridor the ongoing tram project did not allow for an audit to be carried out. It is however recognised that the route was previously provided with a Greenway Bus lane that could be used by cyclists and that cycle lane facilities are included within the overall design for the tram.

5.5.4 In relation to Crewe Road, East Fettes Avenue and Inverleith Row. All these roads provide north-south routes towards the city centre from Ferry Road. Both Crewe Road and East Fettes Avenue would appear to have adequate width to allow cycle lanes to be provided. Even if this was in an uphill, northbound direction, cyclists would still benefit from the segregation from the main traffic flow. On Inverleith Row the provision of cycle lanes is less likely as the road width on the southern section is relatively narrow.

5.5.5 On the East-West Ferry Road corridor cycle lanes have been provided from Crewe Toll to Arboretum Road, however there are no facilities to the east. While the road width does narrow on this easterly section there may be some sections where cycle lanes could be provided, such as between Inverleith Row and Newhaven Road.

Edinburgh East

5.5.6 Heading into Edinburgh city centre from the A1 corridor cyclists have two options. The first is to use the NCN 1 route along the Brunstane Burn and then the Innocent Railway Path to reach the south side of the city centre and the Holyrood Park Area. The route has a number of access points that provide good links to Brunstane Railway Station, Bingham, Craigmillar and Niddrie residential areas along with a link via Craigmillar Castle Road to the Royal Infirmary of Edinburgh and the proposed Bio-Quarter. The alternative route uses Milton Road and Milton Road West, Willowbrae Road and London Road, where relatively recent bus priority measures have provided a Greenways corridor that can be used by cyclists. The facilities are not continuous for cyclists (or buses) given width restrictions at junctions and other locations. This route provides good access to and from the adjoining residential areas, where streets have relatively low traffic volumes, are provided with traffic calming and are therefore highly suitable for general cycling.

5.5.7 On the A199 corridor cyclists can use Milton Road East to access the routes mentioned above. An alternative off-road route is available along the Brunstane Burn path that runs parallel to Daiches Braes. This path could be upgraded to provide a sealed running surface and as such be a branch extension to NCN 1. However some directional signing would be required promote its usage.

5.5.8 To the north Musselburgh Road heads westwards towards Portobello where links are available to tie into networks in North Edinburgh. The key issue here is the use of the eastern portion of Portobello Promenade by cyclists. This facility provides an excellent off road route, however there are local concerns with regard to inappropriate use of the facility by cyclists given the high volumes of pedestrians in general and the types of crossing movements they make from the numerous side streets to the beach. If this situation could be resolved then a long continuous off-road facility would be provided that would allow inexperienced cyclists to avoid Portobello High Street.

Edinburgh South East

5.5.9 Cycle facilities in Edinburgh South East area are mostly confined to the on road advisory cycle lanes (sometimes combined with Greenways bus priority lanes) on main transport corridors, the A701, the A772 Gilmerton Road and the A7 Old Dalkeith and Dalkeith Road. The facilities on these roads are not always continuous due the localised narrowing of the road and the need to provide capacity for general traffic at junctions. Cyclists can be hampered by the number of parked cars on the advisory cycle lanes on these routes. Given these facilities are relatively old then there appears to be merit in reviewing the overall provision and potential to introduce waiting restrictions (where required).

Figure 5.4: *Parking on cycle lanes Dalkeith Road*

5.5.10 It is noted that the University of Edinburgh generates a high number of cycle trips and the university has sites within the Edinburgh South East corridor extending from the city centre to the King's Buildings, the Royal Infirmary of Edinburgh and beyond to Easter Bush at Roslin. In addition to these sites, the Pollock Halls residential complex houses around 2000 students who have to access the above sites. Given the volumes of cyclists in the area, it would appear that there is an opportunity, in collaboration with the university to identify a number of key routes to these major sites and to provide appropriate signing and upgrading of the network.

5.5.11 In addition to this there is an opportunity to provide a more cycle friendly 'space' in the George Square and Potterrow/Teviot area where there are large numbers of pedestrians and cyclists using the various streets. During the wider consultation exercise undertaken for this project, Sustrans were keen to see if the concept 'Bike Boulevards' could be examined and explored. It is considered that given the existing cycle usage the George Square – Potterrow area along with the adjacent facilities on Middle Meadow Walk may be suited to the development of a pilot project.

5.5.12 It is noted that the aforementioned link from Craigmillar Castle Road to the Royal Infirmary of Edinburgh currently ends in a series of steps. It is understood that the City of Edinburgh Council may be looking into this matter, however the removal of the steps would assist in providing a better facility for cyclists, who currently bump their way down the steps or ride on the grass verge.

Edinburgh South

5.5.13 There are very few specific cycle facilities in the Edinburgh South area. The main route through the area is the A702 Comiston Road/Morningside Road corridor. Unlike the main routes in the South East area, Comiston Road still provides two general traffic lanes in either direction and there some bus lanes on the route. There would appear to be an opportunity to re-examine conditions for cyclist on this route with a view to providing cycle lanes or more bus priority on sections where the width allows. This would mainly be on the Comiston Road section.

5.5.14 It is noted that there are paths that run alongside the Braid Burn and into the Braidburn Valley Park. Ongoing flood defence works will possibly improve conditions for cyclists and pedestrians on this route and as such consideration should be given to whether or not this route can be signed as a cycle route in the future.

Edinburgh South West

5.5.15 On the Edinburgh South West corridor the main cycle facilities provided are the NCN 75 Water of Leith Walkway and the Union Canal. This route runs all the way from Balerno into the canal basin at Tollcross in the city centre. While the canal towpath has recently been upgraded to a sealed surface the Water of Leith Walkway has a surface of varying quality. It must be accepted that a sealed surface alongside the Water of Leith would not be suitable on this route, however regular maintenance should be undertaken to ensure that the standard of surface is adequate for cycling.

5.5.16 It is also the case that while there are numerous access points, there is an element of on-road cycling required to reach these. It is also the case that for some cyclists the delay in getting onto the routes may result in them keeping to the main traffic routes.

5.5.17 Similar to the North Edinburgh Cycleway there is a need for the routes themselves to be branded with improved signing at access points and routes leading to them to help increase usage by existing cyclists and potential cyclists.

Edinburgh West

5.5.18 The Edinburgh West corridor contains the two main routes of the A71 Calder Road/ Gorgie Road and the A8 Glasgow Road/Corstorphine Road. Both run west to east into the city centre. In between the two main corridors there is a route running from Hermiston Gait to the Gorgie Area which is currently provided with an off-road shared footway/cycleway alongside the Edinburgh to Glasgow railway line and the proposed route for the Edinburgh Tram. At Stevenson Drive, cyclists can use the Greenways bus lanes to reach the Balgreen area.

5.5.19 The Calder Road is provided with Greenways bus lanes, however the speed limit on the road is 40mph and as such some cyclist may find this road intimidating, even with the degree of segregation being provided. In addition to this there are a series of large roundabouts which can pose difficulties for cyclists. The provision of segregated facilities for cyclists at these roundabouts is a difficult matter since opening up new gaps may encourage pedestrians to cross the road at-grade. This is already a problem in the area as some pedestrians do not like using the existing underpasses provided at each roundabout. However the roundabouts are considered a barrier to cycling and alternative routes of facilities for cyclists should be investigated.

5.5.20 The Glasgow Road and Corstorphine Road corridor is provided with Greenways Bus lanes for most of its length into the city centre. It is recognised that there is a width restriction at St Johns Road between Manse Road and Kaimes Road and as such cycle and bus lanes have not been provided. Issues for cyclists on this route are more related to the volume of traffic than the provision of facilities.

5.5.21 To avoid the heavily trafficked route there are alternative routes using quieter side streets and the off road routes through The Gyle Park and along side Carrickknowe Golf Course. At Balgreen access can be made to the route through Roseburn Park and then onto the North Edinburgh Cycleway. This quiet route could easily be identified and signed as an alternative to the main A8 route. Some work may be required to investigate potential barriers, however this route has the potential to be used by less risk tolerant cyclists.

Edinburgh North West

5.5.22 The main corridor in the Edinburgh North West area is the A90 Queensferry Road. This route runs from the city centre to Cramond Brig then beyond to South Queensferry. Facilities for cyclists are limited to localised sections of advisory cycle lane between Craigleith Road and Queensferry Terrace and a west bound bus lane between Craigcrook Road and Telford Road. Similar to Comiston Road in the south much of the route to the west of Craigleith Road caters for two traffic lanes in either direction. This is a heavily trafficked corridor that caters for traffic heading to and from the Forth Road Bridge. In peak hours the traffic is very heavy and cyclists tend to find it difficult to make progress due to both the volume of traffic and the road width available.

5.5.23 In terms of alternative routes, the NCN 1 runs to the north of the A90 through residential streets before joining up with the North Edinburgh cycleway. This then provides links to the north area of Edinburgh as described above. When heading south the NCN 1 links into the A8 corridor at Roseburn and therefore relatively easy progress can be made to Haymarket and the West End of the City Centre. It is however the case that while the route is relatively well signed when one is on it, there is limited signing to direct people to the facility from other routes.

5.5.24 An alternative quiet route to a busy section of the A90 is available via Craigcrook Road, however the route is not well signed and the surfacing on the advisory cycle lane is poor.

Edinburgh Orbital

5.5.25 The A720 Edinburgh Bypass is an orbital route running east west along the south of the city from the A1 at Old Craighall to the M8 at Hermiston Gait. Cycling is prohibited on the route therefore cyclists must use the inner orbital routes generally to the north of the bypass. The bypass also introduces severance across the main arterial routes into Edinburgh and as such the junctions provided offer a varying degree of service for cyclists. The facilities at each junction should be reviewed to ensure cyclists are being catered for in the appropriate manner and in keeping with current standards.

5.5.26 In relation to the inner orbital route there are very few cycle facilities provided with cyclists having to cycle on-road. There would appear to be opportunities to provide advisory cycle lanes on roads such as Frogston Road, however the decision was taken to provide central hatching as a means of reducing the overall carriageway width.

5.6 South Queensferry

5.6.1 South Queensferry is a relatively small town with two main routes running through the town. The B924 Bo'ness Road and High Street corridor runs west to east and the B907 Kirkliston Road runs north to south. Generally traffic volumes are relatively low and some residential streets and the High Street are provided with traffic calming. Conditions for cycling on road are therefore generally good. Appropriate links are provided to the town's schools, areas of employment and Dalmeny Railway Station.

5.6.2 While South Queensferry is some 10 miles for the centre of Edinburgh the distance does not necessarily act as a deterrent to cycling commuter trips into the city. For access to the south and the Kirkliston – Newbridge – A8 Corridor a route is available using the B800 which is a relatively wide open road with low traffic volumes following the opening on the new M9/A8000 spur to the Forth Road Bridge. This route is considered appropriate for commuter cycling and links well with facilities at Newbridge. An alternative off road route from the centre of the town towards Dalmeny is available. However as the path heads southwards beyond Dalmeny the path changes to an unbound surface and as such the cycle ride quality is poor due to the top surface being eroded to reveal large stones and the creation of muddy soft areas. It is however considered that this is perhaps more of a leisure route and perhaps not a priority in terms of Urban Cycling.

5.6.3 In relation to the A90 corridor, cycling has now been prohibited on the dual carriageway section of the road and therefore the NCN 1 now provides the most direct route into the west of Edinburgh. In general terms the route heads from South Queensferry to Dalmeny and then to the B924 before running along side the A90 via an off-road path. This path ties into the exiting slip road for the A90 and eventually links into other roads and path networks at Cramond Brig.

5.6.4 The main barrier to cycling in this area is the width of sections of the path running alongside the A90, where the width only allows for the safe passage of one cyclist. The width restriction results in cyclists having to slow down or stop when encountering other cyclists or pedestrians. A wider path would remove this barrier and significantly improve safety, the ride quality and journey times.

Figure 5.5: *Narrow section of path alongside A90*

5.7 Bo'ness & Grangemouth

Bo'ness

5.7.2 As with other towns located on the Firth of Forth the NCN 76 passes through Bo'ness. The routes are mainly on-road sections following the A904 on the east on the town and onwards into the town centre. In general terms the road network is lightly trafficked and the designated routes use quieter streets where possible. Given the nature of Bo'ness it is the case that most cycling trips can be undertaken in relative safety on the existing roads without the need for large scale cycling facilities. It is also the case that path networks are provided throughout the residential areas that provide pedestrians and cyclist with good links through the town without the need to keep to the road network. It may be however that some localised dropped kerbs are required at some locations to assist ease of access and use by cyclists. Bo'ness also has an off road leisure route to the north of the town, however this is unlikely to be used for commuting purposes as it is remote from the residential areas. It does however link in well with the Bo'ness and Kinneil Railway visitor attraction. During the audits it was found that the signing for the NCN 76 was not overly clear at entry points to the town and as such cyclists could become lost.

Grangemouth

5.7.3 From Bo'ness the NCN 76 follows the A905 westwards, on road, before transferring to an off-road shared path along the south side of the A905 Wholeflats Road. This route continues southwards off-road on Inchyra Road before turning back on itself and heading northwards through the centre of Grangemouth to tie in with the A804. This section of the route is an off-road route that runs through open land and playing fields and provides excellent links into residential housing areas, school and other local amenities.

5.7.4 The main route linking Grangemouth to Bo'ness in the east and Falkirk in the west is the A904. The eastern section of the road is bounded by the petrochemical plants to the north and south and it is only once it travels west past Inchyra Road the frontage becomes more residential in nature. The route is straight and is ideally suited for cycling, however there are no advisory cycle lanes provided on the eastern section and cyclists also have to negotiate two roundabouts. To the west of Inchyra Road advisory cycle lanes are provided along the road to the Dock Road junction. Beyond this point cycle facilities terminate and cyclists are left in a situation of having to negotiate the large roundabout at Earls Road. From this point there are no specific cycle facilities and as such cyclists require to deal with traffic on Earls Road and also have to negotiate the Earls Gate Roundabout at the M9 before gaining access to Falkirk. The next roundabout to the west is the Westfield Roundabout at the A9 where a shared use footway/cycleway is provided to the Falkirk Stadium to the south and the Bankside Industrial Estate and the Union Canal tow path in the north.

5.7.5 The missing link between Grangemouth and Falkirk is currently being investigated with the design work for the A904 underway. It is noted that the proposed Helix Project would include a more northerly connection between the two towns. However the A904 route would give access to the southern boundary of the Helix project but also provide a direct link into Falkirk Town centre and Grahamston railway station.

5.8 Falkirk

5.8.1 The general Falkirk area including Stenhousemuir to the north benefits from having an excellent cycling facility in the form of the tow path of the Forth & Clyde canal running north-east to south-west, from the M9 to the Falkirk Wheel at Carnmuirs/Tamfourhill. As previously discussed in relation to the Union Canal in Edinburgh, access points can be limited and more branding and signing could be provided to encourage use of this excellent facility for commuting purposes within the town. At the Falkirk Wheel the Forth & Clyde Canal links to the Union canal where the two paths provide a route around the southern boundary of the town, where links are made to Falkirk High railway station. The canal network is part of the National Cycle Route with British Waterways and Sustrans managing the canal network in partnership.

Figure 5.6: *Forth & Clyde Canal – Falkirk*

5.8.2 It is also noted that there are well established off-road paths alongside the River Carron and though parkland alongside Ronades Road and through sections of Stenhousemuir. However these facilities need to be signed and promoted to encourage more use by cyclists. Work is currently underway to address these issues regarding signage, information and surfaces on these routes. In addition to signing, in some cases appropriate connections are needed to link two routes together and then tie these facilities into the local road networks. Another off-road route that could be upgraded to a more appropriate standard for cyclists is the route from Carron Works to Larbert via the Lade Burn.

Figure 5.7: *Potential to upgrade path at Lade Burn*

5.8.3 In relation to on street facilities there are limited advisory cycle lanes provided on routes such as the Main Street at Camelon and the Bellsdyke Road at Stenhousemuir. However these are not widespread and as such cyclists have to mix with general traffic on the main routes running through the town and the surrounding area.

5.8.4 It is also noted that there are very few traffic signals in Falkirk, the main exception being the B902 Grahams Road, and therefore priority junctions and roundabouts tend to be provided. Roundabouts can be seen by some cyclists as a barrier to cycling and therefore these may be a discouraging factor when trying to encourage new cyclists onto the roads. There is an opportunity to consider the introduction of traffic signalled junctions as opposed to roundabouts as part of any new development coming forward with a longer term programme to replace existing roundabouts where appropriate.

5.8.5 On Grahams Road there would appear to be an opportunity to investigate the possibility of providing cycle lanes if the width allowed but also provide Advance Stop Lines (ASL) at the signalised junctions on this route.

5.8.6 In general terms Falkirk has the potential to provide an extensive cycle network emanating out from the Forth & Clyde Canal and linking into other existing facilities. However, it is recognised that due to the existing road widths being relatively narrow it may not be possible to provide good on road facilities and perhaps efforts should be focussed on concentrating on linking up and promoting the existing facilities.

5.9 Bonnybridge & Denny

5.9.1 The towns of Bonnybridge and Denny lie to the west of Falkirk and are located within the M80 and M876 corridors.

5.9.2 Bonnybridge is located the south of the M876 and is split into two halves with the main town centre being on the north of the Firth & Clyde Canal and the area of Milnquarter on the south side of the canal. In terms of cycling the canal tow path provides a good cycling facility into the centre of Falkirk. However given the lack of lighting this may not be suitable for all users during the periods of dark mornings and evenings.

5.9.3 Bonnybridge itself has no specific cycle facilities or off-road path networks other than a route running through the centre of Milnquarter. As the majority of the town is residential by nature, cycling on the majority of streets will be relatively safe given low speeds and traffic volumes. The two main routes through the town are the A804 Larbert Road and the A803. Larbert Road has been provided with traffic calming in the form of speed humps and priority chicanes and as such provides a good environment for cycling. The A803 acts as the main spine road through the town and contains bus stops, central refuge islands, right turn lanes, central hatching and two roundabouts. It is considered unlikely that this route is suitable for the provision of advisory cycle lanes, given the aforementioned infrastructure and road width available. In these circumstances a focus should be made on trying to ensure general traffic speeds are within and if possible, below the 30mph limit to ensure that cyclist have a degree of comfort when using these routes.

5.9.4 Bonnybridge is linked to Denny on the north side of the M876 via two underpasses at Drove Loan and the A872 Denny Road. The A872 acts as the main spine road through Denny and, similar to the A803 in Bonnybridge, there would appear to be limited road width available to provide an adequate and continuous cycle lane facility.

5.9.5 As with Bonnybridge the vast majority of streets are residential in nature and as such cycling can be undertaken in relative comfort and safety.

5.9.6 To the north of Denny there is a central east-west path network that links the new Denny High School to Stoneywood on the west of the M80. Good links are available into the adjacent residential streets and therefore a safe off road route is available for school children.

5.9.7 It is noted that both Bonnybridge and Denny are only around 4 to 5 miles from the western edge of Falkirk and that this distance could be cycled in around 30 minutes, thus making the bike a reasonable travel choice. However the existing routes leading into Falkirk and Larbert are far from ideal. As discussed, the Forth and Clyde Canal is one option but this is to the south of the main population areas. Further north the existing routes have to pass under the M876 and then, when on the east of the motorway, the B905 has poor horizontal and vertical alignments and the A883 is relatively straight resulting high traffic speeds. In their present form both routes are unattractive to cyclists and therefore, without major capital investment, the potential for encouraging inter-town commuter trips is limited.

5.10 Buckhaven, Methil & Leven

5.10.1 There are two main east-west routes running through the Buckhaven and Methil areas. The most northerly route is the A955 and southern route is Wellesley Road. The main links between these two roads are Sea Road to the west and Methil Brae to the east. In addition to this in Leven the A955 continues eastwards via the Promenade and out of town by way of Scoonie Road.

5.10.2 In general terms it was found that the cycle routes in this area were well signed and easy to follow. The type of facilities on the routes varied, however there would be benefit in designating a cycle network for the town.

5.10.3 On the A955 from Station Road to the South Street roundabout there were sections with a shared-use path facility. It is noted that the route is somewhat narrow to accommodate both pedestrians and cyclists, however volumes are not particularly high and the facility offers a degree of comfort to those cyclists who dislike cycling alongside general traffic.

5.10.4 On the B931 Wellesley Road cycle facilities are on road and there is the provision of advisory cycle lanes along with coloured surfacing at junctions. It was however observed that cars were parking on the cycle lane thus leading to cyclists potentially coming into conflict with general traffic when negotiating stationary vehicles. It was also felt that the existing markings needed to be re-laid.

5.11 Cowdenbeath

5.11.1 Cowdenbeath lies to the north of the A92, a main transport corridor running through Fife connecting the M90 at Halbeath to Dundee. There are no specific cycle facilities provided on the main routes through Cowdenbeath. There is however advisory cycle lanes provided on the A909 from the B981 northwards. Routes to the railway station are signed via a series of quiet streets and existing path networks.

5.11.2 The majority of the town lies between the B917 and the railway line. The majority of streets are residential in nature with a number of areas of open park land and playing fields which have off-road path networks. It is considered that cycling trips can easily be made using the relatively quiet residential streets and connecting paths.

5.11.3 While there are multiple options for cycle routes through residential streets, a number of key routes could be identified and promoted as part of a core cycle network for the town.

5.12 Dunfermline

5.12.1 Dunfermline is the largest town in Fife and in terms of road design is made up of the historical road network within the town centre and newer networks created as the town has expanded (mostly eastwards to the M90 corridor) over the years.

5.12.2 To the East of the town NCN 1 runs north to south alongside Linburn Road. To the north of the town NCN 76 runs east to west from NCN 1 to the centre of the town. In the rest of the town an extensive cycle network on the main routes has been provided using various facilities, including the use of quiet streets and lanes, shared footway/cycleways and off road networks. In general terms, on the main routes examined within the audit process, the facilities were considered good and relatively well signed.

5.12.3 There were some sections where it was felt that shared use footway/cycleways were perhaps too narrow to comfortably cater for both pedestrians and cyclists if volumes where high. It was also noted that there were locations where the shared use facility ended and cyclists were instructed to dismount by the appropriate signing. However it would appear opportunities were missed to provide a dropped kerb facility to allow cyclists to rejoin the road.

5.12.4 In addition to dropped kerbs not always being provided where a cycleway ended, it was also noted that there were various places where dropped kerbs were required at crossing points on shared use routes.

Figure 5.8: *Example of cycle route with no dropped kerbs*

5.12.5 Generally signing was of a high standard although there were a few locations where some additional signing was required to clarify route choice/directions.

5.12.6 It is considered that given the level of facilities in Dunfermline efforts should be concentrated on resolving some of the localised barriers to cycling and making the available routes as continuous as possible.

5.13 Glenrothes

5.13.1 Glenrothes is located on A92 corridor as it heads northwards from Kirkcaldy towards Dundee. The majority of the town lies to the west of the A92, however there are residential and industrial areas to the east, along Markinch and its railway station.

5.13.2 Glenrothes is one of the 'new towns' created under the New Towns (Scotland) Act 1946 and as such many of the roads in the town are provided with segregated footway/ cycleways. In addition to those routes alongside traffic routes, there is an extensive network of off road paths which have been signed and provide excellent facilities.

5.13.3 As with Dunfermline, Fife Council has used these facilites to provide an extensive cycle network. From the Woodside area there is an off road shared path network that runs along the southern boundary of the town before heading northwards along the western boundary. In the centre of town the main spine road, including South Parks Road has segregated shared use facilities on either side of the road.

5.13.4 In conjuction with the improvements made to Markinch Railway Sation a new cycle facility was provided to link into the centre of Glenrothers in addtion to the existing links to the north Glenrothes area.

5.13.5 Generaly the routes are well signed and provided with good crossing facilites, including Toucan crossings and dropped kerbs. Given the number of roundabouts in Glenrothes, these may pose difficulties for some cyclists, however facilites are generally acceptable where segregated crossing facilites are provided to negotiate the junctions.

Figure 5.9: *High quality signing, Glenrothes*

5.13.6 Similar to Dunfermline it is considered that efforts should be made to investigate and remove some of the smaller barriers on the existing network.

5.14 Kirkcaldy

5.14.1 The town of Kirkcaldy is located to the south-east of the A92 at a point where the corridor begins to head northwards to Glenrothes.

5.14.2 The town does not have the same level of off-road network as provided in Dunfermline and Glenrothes, however there are relatively long sections of traffic free routes. The main off-road sections are segregated footway/cycleways along the B981 and a section of the A910 Oriel Road. The town's Esplanade forms part of the NCN 76 and provides a route towards the town centre from the south of the town. From the northern end of the Esplanade the on-road NCN 76 heads northwards through the town towards Thornton and Glenrothes.

5.14.3 Within these routes around the town, Fife Council has identified a number of streets to complete the Kirkcaldy Cycle Network. With the exception of Hayfield Road, which is provided with advisory cycle lanes the other streets chosen for the signed routes tend to be quieter roads that penetrate residential streets where cycling can be undertaken in relative safety.

5.14.4 As discussed most of the designated routes are on-road, however the off-road path networks around the railway station have been signed and designated as cycle routes to gain access to this transport interchange.

5.14.5 Once again Fife Council has identified an appropriate cycle network for the town and has provided signing and information as required. It is however considered that this initial work can be improved upon by undertaking more detailed audits to see if smaller barriers to cycling can be removed.

5.15 St Andrews

5.15.1 St Andrews is some distance from the main transport corridors, however it does have a significant population and being a University Town has the potential for high numbers of trips to be undertaken by bike.

5.15.2 The NCN 1 route provides a link into the town centre from the west with the route alongside the A91 being an off road path running parallel to the main road. To the south and west the NCN 1 and a local route towards Ceres are signed as on-road routes. In the town centre routes have been designated for cycling and are well signed.

5.15.3 The B939 Hepburn Gardens, Bogward Road, Canon ate and John Know Road on the western side of the town are all provided with on road advisory cycle lanes, which during the audit visit were relatively clear of parked cars. However this may not always be the case, given the residential frontages on these routes, and the potential for on street parking to increase at certain times of the day.

5.15.4 The main spine road running east-west on the south side of the town is Lamond Road. No cycle facilities have been provided on this route, however the route has been provided with traffic calming features and as such traffic speeds are slow and therefore conditions are generally good for cyclists.

5.15.5 In the town centre, the historic road layout tends to be relatively narrow and traffic speeds are relatively slow providing good conditions for cycling.

5.16 Dalkeith & Surrounding Area

5.16.1 Dalkeith is located to the south-east of Edinburgh and is on the A68 transport corridor. Until recently the A68 ran west – east through the centre of the town, however the recently opened bypass has relocated the trunk road network to the north. The main objective of this project being to remove long distance trips from having to negotiate the town centre and the restrictive road network.

5.16.2 From the Sheriffhall Roundabout on the A720 Edinburgh City Bypass, the NCN 1 heads southwards on an off-road cycle route. This continues to Hardengreen before heading south-westwards through Bonnyrigg and then onwards to Penicuik.

5.16.3 On the east side of Dalkeith localised improvements have been made for cyclists through the provision of shared use footway/cycleways links to new housing on the north east of the town and also on B6416 Salters Road leading to the Dalkeith Schools campus on Cousland Road. The campus also links into the NCN 1 as it heads northwards to Whitecraig and Musselburgh beyond.

5.16.4 The B6482 is also provided with segregated footway/cycleways as it heads from Dalkeith to Newtongrange via Easterhouses.

5.16.5 Beyond these main off-road routes the majority of cycling in the Dalkeith area occurs on road. There are a few advisory cycle lanes and Advance Stop Lines at traffic signals and some of the larger roundabouts, such as the one at the A7/Eskbank Road, have been provided with segregated facilities to allow cyclists to negotiate the junction off-road. However, it does appear to be the case that there is an opportunity to identify and designate a cycle network in the Dalkeith area along with examining the possibility of improving conditions through the provision of appropriate facilities were the site constraints allow.

5.17 Penicuik

5.17.1 Penicuik lies to the south of Edinburgh and is located on the A701 corridor. The A701 runs north-south and tends to split the town into two halves of similar size and density of housing.

5.17.2 Off road facilities are limited to a path which follows the North Esk River to the east of the town. This provides a long distance off road to route to Bonnyrigg, Dalkeith and the NCN1. On the west side of the A701 there is a path network through open parkland to the north of Cuiken Terrace that provides a pleasant off road route towards the town centre and retail outlets.

5.17.3 In general terms there is no distinct cycle network identified within the town. Similarly there are limited cycle facilities provided on the main A701 transport corridor. It is noted that the route does tend to be relatively narrow and does accommodate significant traffic volumes, therefore there may be difficulties in providing advisory cycle lanes on this route.

5.17.4 Given that most cycle trips can be undertaken in relative safety on the residential streets, any efforts to improve conditions for cyclists should be focussed on the A701 and in ensuring that cyclists can safely negotiate the various side junctions along this main traffic route.

5.18 Galashiels

5.18.1 Galashiels is located in the Scottish Borders and sits on the A7 transport corridor. The town tends to form a ribbon type development along the valley formed by the Gala Water.

5.18.2 In relation to existing cycle routes there is an off road path running eastwards along the Gala Water commencing at a car park at Currie Road /Glenfield Road. This route then becomes the NCN 1 at the River Tweed and continues along the north side of Tweedbank to reach the village of Darnick and the town of Melrose beyond. Where the Gala Water meets the River Tweed the NCN1 also heads southwards along the west side of the river. It is however unclear how the east-west route will be accommodated within the plans for the Borders Railway line.

5.18.3 There are no specific cycle facilities provided on the main routes through Galashiels other than a section of shared use path on the A72. In general terms, streets tend to be relatively narrow and therefore difficult to accommodate any form of cycle lane. It is also the case that some of the residential streets are extremely steep and as such cycling may not be seen as an attractive option for some people. The town centre also operates as a large gyratory and as such cyclists will encounter some difficulties on certain journeys.

5.18.4 The needs of cyclists in the town centre could be reviewed to investigate if there are any measures that could be taken to accommodate cyclists in the gyratory system.

5.19 Hawick

5.19.1 Hawick is located in the Scottish Borders and sits on the A7 transport corridor. The A7 runs through the town north south and there are residential areas of similar size and density on either side of the route.

5.19.2 At the southern end of the town there is a signed route known as the Borders Loop which comes into the town from the west through Wilton Dean and then heads south via the B6339.

5.19.3 In the town there is no distinct cycle network or facilities of cyclists and on the main traffic routes, cycling takes place on road. Similar to other towns in the Borders, the historic street layout tends to result in narrow roads where it is difficult to accommodate cycle lanes. The majority of streets are residential in nature and therefore cycling should be able to be undertaken in relative safety.

5.19.4 In terms of improving conditions for cyclists it may be that the focus should be on reducing traffic speeds on the main routes through the town centre so as to encourage more cycle trips for commuting to work and shopping.

5.20 Broxburn, Bathgate & Armadale

Broxburn

5.20.2 Broxburn is located to the west of Edinburgh on the A89 corridor. The town lies to the north of the A89, with its main street for the town, the A899, lying to the north. From the eastern end of Broxburn at the A89/A99 roundabout a segregated shared use footway/cycleway runs eastwards along the north side of the A89 to Newbridge at the M8/M9 interchange. This route links into the A8 corridor and thus forms part of a longer distance commuter route to areas such as the Gyle and Edinburgh Park.

5.20.3 From the A89 and A899 roundabout heading west, cycling then occurs on road on both routes, however there is no obvious signing to direct westbound cyclists into the A89. It is also the case that due to ongoing housing development the route on the north side of the A89 is not as direct as it could be. It does however provide access to the housing areas and continues westwards to the Bangour Hospital at Dechmont. While cyclists are segregated from general traffic, the A89 is somewhat isolated from housing and natural surveillance and traffic speeds are also relatively fast. Therefore it may be that less experienced cyclists choose to use the A899 main street to commute through the town. Between Broxburn and Dechmont a hard strip has been provided that offers cyclists a degree of segregation from general traffic, however the classification of this facility is unclear.

5.20.4 There is an off road route running east-west that follows the line of the Brox Burn that sits between the two main traffic routes. In addition to this there are links to the Union Canal tow path which runs north-south through the middle of the town.

5.20.5 Given the ribbon type development of the town either side of the A899 there is limited scope for a cycle network to be provided for Broxburn as ultimately the most direct route through the town is to use the main street. Therefore any improvements should be directed at providing ASL at traffic signals, improving links and connections at the A899 and ensuring cyclists are protected when they enter the main road from side junctions.

Bathgate

5.20.6 The town of Bathgate is located to the north of the M8 corridor. The A89 runs through the centre of town and connects with Broxburn to the east and Armadale to the west. There are very few cycle facilities in Bathgate other then a short section of advisory cycle lane on the A89 Edinburgh Road to the west of Blackburn Road.

5.20.7 The manner in which the town has developed has resulted in distinct residential areas with little connection via path networks between them. This results in no obvious opportunities to designate a cycle network that could combine quieter residential streets and off road paths. In terms of encouraging more urban cycling in the town, using the Fife model, a network of quiet streets and existing off-road facilities could be designated as the core cycle network for the town, along with the provision of ASL at traffic signal junctions and the investigation of improving conditions for cyclists at roundabout junctions. In some cases main routes can be relatively wide such as Kirk Road and an opportunity could be taken to provide advisory cycle lanes. Such a network would be helpful in encouraging more multi modal trips by increasing cycling to the town's railway station.

Armadale

5.20.8 Armadale is located to the north of the M8 corridor. The A89 provides the main east-west route through the town while the B8084 runs north–south. As the development of the town is somewhat similar to Bathgate there are no specific cycle facilities provided in the town, nor is there any signed cycle network. It is also noted that the boundaries of Armadale and Bathgate are only around 2km apart but there are no cycle links provided, nor any specific facilities to help negotiate the large roundabout junction at the A89/A801. In terms of encouraging cycling links between the towns, the provision of cycle facilities along this short section should be investigated.

5.21 Linlithgow

5.21.1 Linlithgow is located to the west of Edinburgh and sits to the south of the M9 transport corridor and the Edinburgh – Glasgow railway line.

5.21.2 In relation to off-road cycle facilities the Union Canal and its tow path runs east-west through the southern section of the town and there are numerous access points to this facility. It is noted that while open land between some residential development areas have been provided with off road path networks that are suitable for cycling, others areas do not have such facilities and as such cycling is confined to the residential streets.

5.21.3 The A803 provides the main traffic route through the town and this links into the M9 motorway. Secondary routes are the A706 to the south-west and the B9080 to the east. On the main traffic routes there are no specific facilities for cyclists other than sections of advisory cycle lanes on the A803 westwards from the A706 through Linlithgow Bridge. It is however recognised that while these are main routes, the road widths are relatively narrow and as such it may be difficult to provide facilities such as advisory cycle lanes.

5.21.4 However, given the layout of the town and the presence of the Union Canal, it would appear that there is an opportunity to develop a cycle network for the town that uses a variety of off-road paths and signed on-road routes. Some more detailed auditing would be required to make the appropriate links and crossings at certain location.

5.22 Livingston

5.22.1 Livingston is a 'new town' located to the south of the M8 motorway. The town has been developed around a segregated road and footpath system. Therefore the segregated paths are ideal for use by cyclists. Given the extensive network within Livingston is has not been possible to undertake an audit of all the foot/cycle paths within the town. It is however noted that there are good links to the railway stations at Livingston North and Livingston South with access to both stations via the off-roads path network. In the case of Uphall Station there are some paths leading to the station but there is a lack of continuity to the Craigshill area.

5.22.2 The route along the main spine road (A899) to the east of the town provides a good north – south central core to the rest of the off-road path networks. A further key route running east-west is located along the Bathgate railway line linking Uphall Station, the Houston Industrial Estate, Knightsridge and Deans. Other east-west running routes include one to the north of the A705 which eventually ties into the NCN 75 in the Eliburn area. To the south of the town and either side of the A71, an east-west route runs through the Dedridge and Murieston areas.

5.22.3 Links are also provided to the A89 through a path network in the Deans area, while a segregated path alongside the A779 and a more rural route using NCN 75 provide links directly into the east side of Bathgate

5.22.4 While destination signing is provided to a high standard on the path network it is considered that there is a need to review the signing and designation of the various paths with a view to updating and re-branding them to help encourage new cyclists onto the network. It was noted that during site visits including a pleasant early evening (commuter time) site visit to a number of paths there were only a few child cyclists observed. This is in contrast to the levels of cycling (and general activity) observed on the Union Canal in Edinburgh. While it is accepted that the travel patterns in Livingston will differ from Edinburgh, it would appear there is more scope to encourage cycling on these routes.

Figure 5.10: *High quality signing on off road paths*

Figure 5.11: *Older vandalised signs that do not highlight the potential to cycle*

5.22.5 It is also noted that some of the overbridges on the paths are provided with signs asking cyclists to dismount, presumably as the bridge parapet is lower than the current standard to accommodate cyclists. This is a barrier to cycling that should be addressed.

5.22.6 It is understood that the council has commissioned work to identify barriers to cycling and this will can be used in the future to improve conditions for cyclists.

5.23 Whitburn

5.23.1 Whitburn is located to the south of the M8 corridor. The A705/B7069 provides the main east-west route through the town while the A706 runs north-south. The development of the town has resulted in a grid type system of roads and as such the residential areas all tend to connect back into the two main traffic routes. There is no cycle network designated, however it is noted that there is a series of off-road paths through parkland in the south east of the town and these help link up the residential areas that are bound by the A706 and Blaeberyhill Road and these could be used by cyclists to provide a traffic free alternative.

5.23.2 It is assumed that cyclists in the area mostly use the quiet residential streets before gaining access to the main traffic routes. Similar to Bathgate there may be some merit in establishing a cycle network for the town and examining in more detail where appropriate links and crossing facilities could be provided for such a network.

6.1 General

6.1.1 The following tables provide an outline of the main issues identified through the desk top study and audit process. In some locations there is clearly a need for more detailed audit work to be undertaken to identify more specific barriers to cycling and potential solutions, however this level of detail was outwith the remit of this particular project.

Table 6.1: *Alloa*

Town/Corridor/ Objectives	Observed issues and Potential Action
Alloa A985, Stirling to Alloa Railway line. • Development of a cycle network for the town including links to existing NCN routes and existing local off road paths.	• Sign key routes within the town and promote as a cycle network. Network should include linking the Devon Way to NCN76 and the surrounding main routes. In addition the network should designate some quiet streets as main cycle routes through residential areas that link to main routes. Examples include Claremont and Doo-cat Brae/ Forebraes • Upgrade existing crossing to Toucan where local routes crosses Izatt Street (A907) to link to NCN 76 to the south. • Directional signing required where NCN crosses Glasshouse Loan as route is confusing. • Provide dropped kerbs where NCN 76 crosses Broad Street (High kerbs and Central reserve) • Undertake more detailed audit work to identify barriers to cycling with a view to developing a programme of improvement works.

Table 6.2: *East Lothian*

Town/Corridor/ Objectives	Observed issues and Potential Action
Haddington A1 • Improve cycle safety at large roundabout.	• Provide cycle bypass and appropriate cycle crossing facilities on the south side of the Oaktree Roundabout
Tranent A1, A199 East Coast Main Line • Improve links between towns and railway stat	• Improve signing and promotion of the Heugh Walkway for use by cyclists. • Provide directional signing for cyclists at B1316. • Provide advisory cycle lane from B1316 to Prestonpans Railway Station.
Prestonpans A1, A199 • Provide well signed local route and appropriate links to railway station and adjacent towns	• Continue to follow up feasibility and route determination of North Sea Cycle Route using coastal routes and B1348. • In line with new development provide advisory lane where width allows on B1316 from Prestonpans Railway Station to Prestongrange Road.
Musselburgh, A1, A199 East Coast Mainline • Provide better defined routes for cyclists through town.	• Sign key routes within the town and sign and promote as a cycle network. Consideration needs to be given to potential east-west routes that run centrally through the town. • Pursue provision of missing link and improved path surfacing from Musselburgh Station to Newcraighall Road and the path network to Gilbertstoun Loan and beyond.

Table 6.3: *Edinburgh*

Town/Corridor/ Objectives	Observed issues and Potential Action
Edinburgh North Links to Leith, Crewe Road and Inverleith. • Highlight presence of high quality off-road facility • Use available road width to provide segregation for cyclists.	• Develop Signing Strategy for North Edinburgh Cycle Route including more obvious entrance features at access points. • Improve access to North Edinburgh Cycle Route by providing wheel channels at steps. • Provide cycle lanes on Crewe Road South and East Fettes Avenue.
Edinburgh East A1, Links to Musselburgh & Newcraighall • Provide safe off road/quiet street route for leisure and commuting • Improve links to railway stations	• Resolve issues relating to cycling on Portobello Promenade • Improve Brunstane Burn route at Daiches Brae to secure continuous route.
Edinburgh East A1, Links to Musselburgh & Newcraighall • Provide safe off road/quiet street route for leisure and commuting • Improve links to railway stations	• Review on road cycle facilities and the need for associated waiting restrictions on the main traffic corridors. Pursue more enforcement of waiting restrictions at peak times. • In conjunction with the University of Edinburgh identify key routes to and between University sites, provide signing and investigate route improvements. • Investigate possibility of pilot Study for a 'Bike Boulevard' in the George Square – Potterrow area. • Remove steps at Royal Infirmary of Edinburgh/ Craigmillar Castle Road
Edinburgh South Morningside Road • Improve conditions for cyclists on main commuter route.	• Provide more cycle lanes on Comiston Road
Edinburgh South West Lanark Road • Highlight presence of high quality off-road facility	• Develop Signing Strategy for NCN 75 Cycle Route including more obvious entrance features at access points. Wheel channels are also required at some access locations.

Table 6.3: *Edinburgh – cont*

Town/Corridor/ Objectives	Observed issues and Potential Action
Edinburgh West A8 Corstorphine Road & A71 Calder road • Improve facilities on main commuter route. • Highlight presence of other nearby facilities available for risk averse cyclists	• Provide facilities for cyclists at Calder Road Roundabouts. • Develop and add to signing strategy of quiet streets route to south of A8 corridor and the Edinburgh Fastlink route.
Edinburgh North West A90 & Queensferry Road • Providing cycle facilities on the A90 possibly in conjunction with bus priority measures. • Highlight presence of other nearby facilities available for risk averse cyclists	• Provide cycle facilities on the A90 possibly in conjunction with bus priority measures. • As an alternative to the above provide signing to direct people to alternative quieter routes such as NCN 1 and Craigcrook Road
Edinburgh Orbital Inner/Outer A720 • Use available road width to provide segregation for cyclists.	• Review existing provision and need for cyclist facilities at junctions with the A720. • Improve signing of the inner orbital route to establish a well signed cycle route with the provision of appropriate facilities where viable. • Alter layout of Frogston Road to provide advisory cycle lanes as opposed to centre hatching. Similar action could be taken on Braid Hills Drive
South Queensferry A90, A8000 • Improve facilities on main commuter and leisure route.	• Provide suitable solution to widen footway/ cycleway alongside A90.

Table 6.4: *Falkirk Area*

Town/Corridor/ Objectives	Observed issues and Potential Action
Bo'ness & Grangemouth M9 Corridor • Provide missing links and facilitate commuter cycling to major employment areas • Link the communities of Bo'ness and Grangemouth to the wider network for cycling	• Provide a continuous, safe and usable link between the settlements and employment areas of Grangemouth and Bo'ness, and provide a more user friendly section of the NCN 76 (Round the Forth) route. • Provide additional signing to existing key routes on A904 corridor
Falkirk M9, M876 corridor • Improve cycle facilities on routes to main employment areas • Improve cycle facilities on key routes to town centre and railway station • Provide links and highlight presence of existing off road paths.	• Provide continuation to on and off road routes on and linking to Bellsdyke Road, with improved signage for walking and cycling through Take the Right Route and joint signage for NHSFV new acute hospital. • Upgrade and improve quality of surface and improve signage provision on east/west route following the River Carron • Provide ASL and where possible advisory cycle lanes to improve conditions for cyclists on Grahams Road • Develop appropriate routes northwards into the town from the Forth & Clyde canal
Bonnybridge & Denny M9, M876 corridor • Highlight presence of existing paths and cycle facilities • Provide links to adjacent towns and areas of employment	• Provide a high quality link from Denny to the Falkirk Wheel utilising the former railway line and crossing the M876 linked to a route from the 3 Bridges Roundabout to Stirling Road via a new cycleway on Lochlands Loan • Include appropriate signage within scheme designs

Table 6.5: *Fife*

Town/Corridor/ Objectives	Observed issues and Potential Action
Buckhaven A92 , Fife Costal Route • Improve cycle facilities on key routes to town centre	• Review signing on key routes within the town. • Renew cycle lane marking on Wellesley Road • Undertake more detailed audit work to identify barriers to cycling with a view to developing a programme of small improvement works.
Cowdenbeath A92, Fife Circle Line • Improve cycle facilities on key routes to town centre including to railway station.	• Sign key routes within the town and promote as a cycle network.
Dunfermline M90, A907, Fife Circle Line • Remove all possible barriers on well developed cycle network	• Undertake more detailed audit work to identify barriers to cycling with a view to developing a programme of small improvement works. • Main issues relate to lack of signing and dropped kerbs at some locations.
Glenrothes A92 • Remove all possible barriers on well developed cycle network • Continue to develop network and make links to new developments	• Undertake more detailed audit work to identify barriers to cycling with a view to developing a programme of improvement works. • Unclear designation of path status at western section of Leslie Road and Queensway. Designate as cycle path to provide off road access to major employment area and links to NCN 76. • Link up existing sections of path to provide route along the Formonthills Road/Cadham Road corridor.
Kirkcaldy A92, East Coast & Fife Circle line • Remove all possible barriers on well developed cycle network	• Undertake more detailed audit work to identify barriers to cycling with a view to developing a programme of improvement works.
St Andrews • Potential large cycle population • Remove all possible barriers on well developed cycle network	• Undertake more detailed audit work to identify barriers to cycling with a view to developing a programme of improvement works.

Table 6.6: *Midlothian*

Town/Corridor/ Objectives	Observed issues and Potential Action
Dalkeith Area A7, A68 • Continue to develop network and make links to new developments	• Sign key routes within the town and promote as a cycle network. • Provide advisory cycle lane or other appropriate signing to highlight route and presence of cyclists on key route from High Street to the off road facility on Musselburgh Road. • Undertake more detailed audit work to identify barriers to cycling with a view to developing a programme of improvement works.
Penicuik A701, A702 • Continue to develop network and make links to new developments • Link into commuting corridors and long distance leisure routes. (e.g Edinburgh and proposed Roslin to Peebles route)	• Sign key routes within the town and promote as a cycle network. • Improve conditions for cyclists at junctions on A701 by improving sightlines and removing on-street parking.

Table 6.7: *Scottish Borders*

Town/Corridor/ Objectives	Observed issues and Potential Action
Galashiels A7, A68 • Improve cycle facilities on key routes in town centre • Encourage use of existing facilities and cycling between Galashiels and Melrose	• Sign key routes within the town centre and promote as a cycle network. • Improving conditions and routes for cyclists on the town centre gyratory • Promote use of existing off-road paths
Hawick A7 • Improve conditions for cyclists on key routes in town centre	• Sign key routes within the towns and promote as a cycle network. • Promote a cycle friendly town centre by encouraging slow traffic speeds and giving priority to cyclists.

Table 6.8: *West Lothian*

Town/Corridor/ Objectives	Observed issues and Potential Action
Broxburn A89, A899 • Clarify existing facilities and provide improved signing for cyclists where choice of routes exist	• Clearly designate hard strip at A899 at Dechmont as cycle lane. • Improve conditions for cyclists on A899 including provision of ASL and examination of side junctions. Where appropriate remove on-street parking and improve sightlines • Provide directional signing at A89/A899 roundabout to encourage use of good quality facility on A89.
Bathgate A89, M8 corridor. Airdrie Bathgate line • Improve conditions for cyclists on key routes in town centre	• Sign key routes within the town and promote as a cycle network. • Improve conditions for cyclists at roundabout junctions and provide ASL at traffic signals. • At side junctions remove car parking and improve sightlines.
Armadale A89 • Improve conditions for cyclists on key routes in town centre • Improve links between adjacent towns to encourage cycle trips	• Sign routes within the town and promote as a cycle network. This should include improving connections to the off road path network to the west of South Street and improving conditions for cyclists on North Road, Mill Road and the Main Street. • Cycle markings can be provided at refuges on West Main Street • Provide facilities at A801roundabout to encourage more cycling trips between the town and Bathgate • Improve conditions for cyclists at roundabout junctions and provide ASL at traffic signals
Linlithgow M9, A903 • Improve conditions for cyclists on key routes in town centre	• Sign key routes within the town and promote as a cycle network. The network should include links to the Union Canal along with using the High Street, Mains Road and Falkirk Road and quiet streets such as Back Station Road, to Royal Terrace. North-South routes should be signed along Preston Road and Manse Road along with Jordan Street. • Undertake more detailed audit work to identify barriers to cycling and developing a programme of improvement works.

Table 6.8: *West Lothian – cont*

Town/Corridor/ Objectives	Observed issues and Potential Action
Livingston M9, A71, A899 • Promote use of high quality off road networks for commuting and leisure.	• Review and upgrade signing for existing off-road path network to promote cycling with attention being given to the four key routes. • Upgrade bridge parapets to meet current height standards for cycling. • Provide dropped kerbs and directional signing at road side to access off road paths. • Provide appropriate surfacing on the 'missing link' from the Railway Path to Nettlehill Road • Continue development of long-distance route on the A89, thus linking the north side of Livingston to Broxburn. The cycle facility currently ends at the Bangor Village Hospital site at Dechmont.
Whitburn M8 Corridor • Improve conditions for cyclists on key routes in town centre	• Sign routes within the town and promote as a cycle network. The network should include the off-road paths to the south-east of the town, East and West Main Streets and the A706. • Advisory Cycle lanes can be provided on West Main Street from Polkemmet Road to Stewart Drive before on street parking restricts road width. • On East main Street cycle markings at refuges can be provided. • Advisory cycle lanes can be provided on Longridge Road from Manse Road to Croftmalloch Road

6.1.2 The issues highlighted in the above table provide a guide to a proposed action plan for each local authority to take forward. Priority and estimated costings have been provided in more detail in the main guide to investment report.

7.1 General

7.1.1 For urban cycle networks it is not always possible to provide a road or path network that can adequately cater for all road users. It is therefore necessary to provide adequate information to road users to assist in highlighting both routes and the presence of cyclists.

7.1.2 The following provides general guidance on the levels of signing that should be applied to an urban cycle network.

7.2 On Road

Roads with limited width

7.2.2 On roads where there is limited width to provide facilities such as shared use paths or advisory cycle lanes, the identification of a recommended cycle route where cyclists are travelling on the main carriageway can be made through the use of signing to diagram 967 in the Traffic Signs Regulations and General Direction 2002 (TSRGD) – see figure 7.1.

Figure 7.1: *Sign – Diagram 967*

7.2.3 On the routes identified within this study where no cycle signs have been previously provided, this cycle sign should be used at regular intervals to confirm the route to cyclists and highlight the presence of cyclists to other road users.

Road with limited width and refuges

7.2.4 On some roads there is a need to cater for pedestrian crossing movements or right turning vehicles through the provision of central islands. These can then introduce a pinch point for cyclists. In East Lothian and Midlothian road markings have been used to help highlight the presence of cyclists at such locations and act as a reminder to drivers to slow down and not overtake a cyclist in the vicinity of the refuge. See Figure 7.2

7.2.5 On routes identified within this study, this type of marking can be provided where road width does not allow a full cycle lane to be provided but where refuges introduce pinch points.

Figure 7.2: *Cycle markings at central island*

On-Road Cycle Lanes

7.2.6 Where the road width allows then cycle lanes should be provided wherever possible. While ideally these should be continuous this is not always possible due to local width restrictions or a prevalence of on-street parking. In these circumstances these issues need to be resolved through a barrier review process. It is also the case that, even although not continuous, short sections of cycle lane can be useful, such as on uphill sections of road where cyclists may benefit from a degree of segregation.

7.2.7 Generally cycle lanes and the appropriate signing should be provided where possible. There is debate with regard to the provision of coloured surfacing within the cycle lanes. There is some evidence to suggest that the colour differentiation assists in keeping other road users from using the cycle lane. There is, however the additional cost to be taken into account and if the provision of a coloured surface is prohibitive then consideration should be given to providing it at locations where cyclists are most vulnerable, such as at junctions and traffic signals.

Direction signing

7.2.8 In general terms where a cycle route is following a main traffic route cyclists can be directed by the signs provided for general traffic. However there are situations where there are links to off road paths and alternative routes on quiet streets from a main traffic route. At such locations specific cycle direction signing should be provided.

7.2.9 Signing to diagram 2602.1 (see figure 7.3) allows for the name of a cycle route to be added or varied. This legend could be used to identify a local link or quiet route as an alternative to the main traffic corridor. Care would however be required to ensure that those cyclists seeking to use the main transport corridors were not needlessly diverted from their route choice.

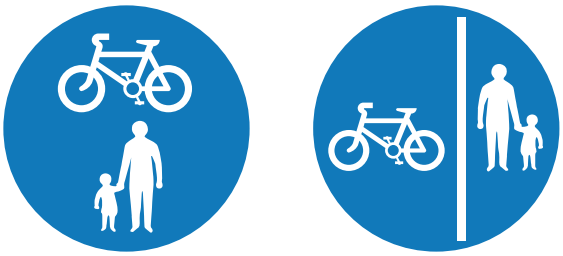
Figure 7.3: *Sign – Diagram 2602.1*

7.3 Off-Road

Shared use signing

7.3.2 Off road paths by their nature tend to require two main two forms of signing to assist cyclists and other users. Signs similar to Figure 7.3 above to provide directions and signs informing users of the presence of cyclists. Signing to diagram 956 and 957 indicate the use of a route by cyclists and pedestrians either as a shared path or segregated facility.

Figure 7.4: *Signs to Diagram 956 & 957*



7.3.3 The presence of these signs on off road routes can help minimise conflict between different users groups. When the signs are not present other users can often feel cyclists are misusing the route, this is especially the case if the route is relatively narrow. The signs provide cyclists with a legitimacy of use and people tend to be more accepting and willing to accommodate each other on a shared use facility when it is well signed. The signs do not have to be provided extensively along a route but should be provided at regular intervals and at intersections between routes or at locations where on-road routes join an off road path.

Signs to assist with orientation

7.3.4 On some off road paths, such as disused railway lines, cyclists unfamiliar with the area may become disorientated by the lack of reference points visible from the route. It is therefore of use to provide additional information at key points to assist cyclist and other users orientate themselves. In Edinburgh, the North Edinburgh Cycle Route has been provided with signs indicating the name of the road passing over the cycleway. Along with directions signs at access points, these can greatly help cyclists navigate the route and ensure they can leave the route at the appropriate point. This type of signing may also act as an indication that there are other potential links to destinations between their original routes from A to B.

Signs to highlight and promote off road routes

7.3.5 Another problem with off-road paths is that they can often have access points or intersections that are not overly obvious or existing signs become hidden by foliage and vegetation. (see figure 7.5)

Figure 7.5: *Hidden Signs*

7.3.6 Where possible direction signs should be well located at all access points, both to provide cyclists with directional information but also highlight the presence of the facility to other road users and potential cyclists. High quality signing and a well maintained route could have beneficial effects in encouraging inexperienced and returning cyclists onto their bikes.

8.1 Local Authorities

8.1.1 An initial consultation questionnaire was sent to representatives who deal with cycling matters in the eight local authorities. Six of the eight authorities responded to this initial consultation.

Initial consultation

8.1.2 Copies of the questionnaires and the responses received can be found in Appendix 3

Targets for cycling and existing data

8.1.3 It is noticeable that there are a range of responses in relation to targets for cycling mode share and data specifically relating to cycling commuter trips. While Edinburgh and Falkirk appear to be able to provide this information, the lack of response by other authorities would suggest that little is being done to collect appropriate data that would help inform policy decisions relating to cycling, or indeed provide proof that actions taken are improving the cycling mode share.

Policies to Promote Urban Commuter Cycling

8.1.4 Once again this question provided a mixed response and it would appear that only Falkirk and Clackmannanshire could provide specific responses. While LTS may have general references to cycling along with other policies that would assist the encouragement of urban commuter cycling it would appear to be the case that some extra emphasis needs to be given to promote this particular element of cycle travel.

Exemplar Projects

8.1.5 Five of the six authorities provided examples of projects that would assist in promoting urban cycling, however it was noted that many of these were relatively major schemes relating to improving infrastructure on off-road routes. Falkirk and Edinburgh have provided examples of projects that specifically related to improving conditions on the urban on road network and also general provision for cyclists, such as cycle parking. However it may be the case that local authorities find it easier to promote and gain funding for larger cycle route schemes, while many of the smaller barriers to cycling on the existing road networks go unnoticed or unattended, possibly with the aim of resolving issues through maintenance projects, developer contributions or other transport related budgets.

Improvements required to encourage urban cycling

8.1.6 All authorities made reference to the need for well defined and continuous networks. In some cases specific examples were given of 'missing links' on some routes. In addition to this there was a clear identification of good trip-end facilities for cyclists being a key requirement. This would include secure parking and other facilities such as showers and changing facilities.

Provision of Cycle Facilities for Cyclists

8.1.7 All respondents gave a positive indication that each local authority was actively involved in trying to ensure that new developments and transport interchanges were giving due consideration to the needs of cyclists and that facilities were being provided in relation to current standards. Councils also seem to be willing to provide cycle parking facilities at major trip generators, however it is not clear how much pro-active work is being undertaken with other organisations at older developments to 'retro-fit' and provide the same level of facilities that are required at new developments.

Initial Conclusions

8.1.8 Based on the initial responses it can be seen that local authorities have policies relating to cycling in general and provide a range of services and infrastructure. However, the promotion of urban cycling is perhaps less focused. For the authorities with smaller urban populations, commuter cycling may not be seen as a priority given that much of the working population may have a commuting distance that is not suitable for cycling. However, it is the smaller towns that perhaps have clearer opportunities to define local cycle networks and provide facilities, such as high quality cycle parking that can be used by the local community.

8.2 Individual Meetings

8.2.1 Following on from the questionnaire survey, contact was made with local authority representatives to invite them to attend meetings to further discuss their views on what were the key issues relating to Urban Cycling and the types of policies and strategies that need to be pursued.

8.2.2 Meetings were held with;

- David Kenny – Midlothian Council
- George Callaghan – Falkirk Council
- Chris Brace – the City of Edinburgh Council
- Graeme Johnstone – Scottish Borders Council
- Clare Hamilton-Sturdy – Fife Council

8.2.3 Lesley Deans of Clackmannanshire Council and Paul Ince of Midlothian took part in telephone consultation. While at West Lothian Tobias Brauer provided additional feed back via e-mail and Billy Thompson provide some feedback via telephone.

Identification of Routes, Signing and Promotion

8.2.4 In discussions with all representatives there was a general agreement that more could be done to clearly identify both individual routes and cycle networks. It is considered that Fife Council perhaps has the most extensive signing regime in relation to their cycle networks and this is an example that should be followed by all.

8.2.5 George Callaghan felt that while there were many good facilities in Falkirk, the focus on signing was often directly related to the route itself and not necessarily on the links to and from the route and the surrounding road and path networks. Falkirk is currently addressing this by undertaking an audit of signing with a view to producing a signing strategy. Similarly Chris Brace in Edinburgh agreed that more work could be done to highlight the various access points to 'hidden paths' such as the North Edinburgh Cycleway that runs along old railway lines.

8.2.6 A similar issue exists in Livingston where there is an extensive path network, however it would appear that cycle usage is relatively low. In principle West Lothian are keen to see extensive on and off road facilities provided, however if some of the minor issues such as signing, maintenance and promotion are not also addressed, then it can be the case that facilities, such as those in Livingston, may be underused.

8.2.7 Discussions took place with regard to the difficulties of how best to define routes when cyclists can have varying degrees of experience that result in differing route choices. It was however agreed that with careful consideration it should be possible to identify cycle networks that would cater for the majority of cyclists.

8.2.8 In some cases existing routes can be linked up to form more comprehensive networks such as Paul Ince's example in East Lothian of a recent feasibility study into routing the North Sea Cycle route along the East Lothian coast thus linking a number of communities.

8.2.9 In addition to the actual signing of routes it was felt that promotion of cycling by the various authorities was relatively good, with most being actively involved in producing promotional materials and sponsoring cycling events. Clare Hamilton-Sturdy highlighted that the promotion of cycling can sometimes be undertaken by other bodies not related to the councils' transportation departments. By taking opportunities to link cycling to other issues such as health promotion, accessibility and environmental concerns, cycling can be promoted under a wider umbrella without the constant need for transportation departments to take the lead.

8.2.10 The issue of path sponsorship was also discussed with Clare Hamilton-Sturdy and while this could prove to be useful in terms of finance and promotion, it was noted that this has to be treated with care given that too much branding on signs and routes can be intrusive and key information, such as destinations and distance, can be lost on signs and information boards.

8.2.11 It was felt that a similar situation often occurred when a mixture of signs have been erected at key decision making points. Some examples were given of NCN signs being alongside standard directions signs and other route branding signs, where the route is not only a national route but also part of a local network. In some cases there has been no consultation with the councils and as such the signing looks unattractive and has been erected without any due consideration for users.

Cycle Action Plans

8.2.12 Discussions with Edinburgh, Falkirk and Fife Councils led to the issues of local authorities developing their own Cycle Action Plan. Currently a Cycle Action Plan for Scotland is being promoted by Cycling Scotland and it may be the case that each authority could promote their own action plan in line with the national one. Chris Brace in Edinburgh indicated that the authority is already developing their own action plan and this may be an ideal forum

Barriers to Cycling

8.2.13 In terms of barriers to cycling all representatives agreed that a more formal approach could be pursued in relation to identifying and rectifying barriers on the existing networks. George Callaghan made the point that of course the barriers are not necessarily physical or relate to infrastructure. For some barriers, such as access to a bike or changing attitudes to cycling, other approaches would be required. However the idea of the CRISP system used in London was generally welcomed as a sensible approach to bringing various parties together with a view to resolving a range of issues.

8.2.14 Billy Thompson at West Lothian indicated that the council had already begun to undertake work on identifying barriers to cycling in the Livingston area.

8.2.15 Graeme Johnstone and Dave Kenny both agreed that the removal of barriers in the urban environment was important but considered that for more rural areas, their efforts were being concentrated on providing good quality local off-road paths. It is the case that for some of the smaller towns, the road layouts are restrictive and as such more emphasis is placed on the provision of alternative routes or the reduction of general traffic speeds though historic town centres.

Reporting of maintenance issues

8.2.16 The systems used for the reporting of maintenance issues varied from council to council. However all councils have a system in place and it was felt this was beneficial in terms of trying to show cyclists that they were being given equal consideration to other road users.

8.2.17 The question of a dedicated cycle maintenance reporting system was discussed but it was considered that this would have to be examined in conjunction with the existing systems for each council. It was considered that over time more reporting would be undertaken through web-based technologies and as such links to maintenance reporting should be placed on a council's cycling web page.

Engagement with cycling groups

8.2.18 Some authorities had good working relationships with cycle groups in their area and also had 'cycle forums' where representative groups could raise cycle related issues to council officials and elected members. Fife did have a forum but attendance dropped over the years and now has an annual seminar where groups can raise a range of issues in an open forum.

8.2.19 It was also the case that, in some of the more rural areas, the lack of cycling groups and the distances between urban areas meant that no obvious representative groups or bodies were coming forward to sit on such forums.

8.2.20 It was however agreed that the input from cyclists was important with regard to improving services. It was also felt that this two way approach helps council representatives explain some of the issues they have to overcome when trying to develop new facilities and initiatives.

Safety and Security

8.2.21 All councils are involved in monitoring cycle accidents on their road networks and are also keen to improve conditions for personal safety and the security of cyclist's bikes.

8.2.22 George Callaghan pointed out that while an on road cycle accident may be recorded by the police, there may be a number of unreported incidents on off-road paths where the emergency services are not called. He considered that there is some merit in a wider study into the number of cycle accidents reported at Accident & Emergency departments that have not been recorded as road accidents on the STATS 19 form.

8.2.23 A key issue for some councils in terms of personal safety, especially in the more rural areas was the lighting of off road paths. Even in the urban environment this was considered important especially on routes where the road may be in an old railway cutting or lined with trees.

8.2.24 All representatives were conscious of the need to provide cycle parking in areas that were subject to natural surveillance by general on street activity, or covered by CCTV cameras. For example Dave Kenny was developing a programme for cycle parking at key bus stops and is beginning by looking at town centres where there are a high number of bus stops and retail outlets that would not discourage cyclists from leaving their bikes parked for a reasonable length of time.

Public Transport Interchanges

8.2.25 All the council representatives were comfortable that steps have been taken and are ongoing to improve links to transport interchanges, such as railway stations, along with providing high quality cycle parking. George Callaghan suggested Larbert Station as an example of a cycle locker scheme which suffered from a severe vandalism issue due to the design of the lockers. However with some retrofitting, strengthening and the provision of locks security was improved and the lockers, now covered by station CCTV are in much greater use.

8.2.26 In general the representatives were comfortable that cycling had been considered in new and future developments, such as the transport interchange at Markinch railway station and the proposed Waverley line in the Scottish Borders. However there was perhaps some work to be done in relation to bus stations in the SEStran area.

Future Funding & Aspirations

8.2.27 All representatives were very conscious of the relatively low level of funding given to cycling and, as such, this often results in slow progress being made when trying to implement new strategies and policy objectives. While some works can be undertaken and funded through new development projects, the remainder is paid for from existing ring fenced budgets. For most authorities the amounts currently available per annum can easily be used up with the provision of a relatively short section of new off road route and a toucan crossing.

8.2.28 It was agreed that with a more co-coordinated approach other budgets, such as those for maintenance, could be used to remove some smaller barriers to cycling such as dropped kerbs and poor surface quality.

8.3 Sustrans

8.3.1 A meeting was held with Katharine Taylor and Petra Staats, to discuss Sustrans' views on urban cycling and also to review the potential issues that need to be raised within an urban cycling strategy.

8.3.2 Katharine Taylor was keen to develop the idea of 'cyclists as equals' as the main thrust of any strategy document for urban cycling. It was considered that cyclist were often to low down in the road user hierarchy when it comes to both the provision of facilities and funding.

8.3.3 Petra Staats gave an example of cycle ways in parts of northern Europe being cleared of snow and grit before the main traffic routes. Giving this status to cyclists may help encourage a change in attitudes to cycling in this country and also encourage more people to cycle if they were confident road conditions and facilities were provided and well maintained.

8.3.4 Following on from this theme, the concept of comfort and accessibility was discussed as being of key importance. It was accepted that while many 'core cyclists' were willing to put up with existing conditions, if more people are to be encouraged to take up cycling, especially urban commuting, there must be a degree of comfort on each and every trip.

8.3.5 In terms of accessibility it was agreed that it can be difficult to identify the correct route that suits the needs of all levels of cyclists, however if the barriers to cycling are clearly identified then there is no reason why, were possible, these cannot be removed to provide a fully accessible network. The idea of the CRISP system used in London was welcomed as a means of bringing together all disciplines together to resolve barrier issues. Some of the key barriers mentioned in the discussion related to legal issues such as exempting cyclists from banned turns, provision of contra-flow lanes on one-way streets and the removal of parked cars from cycle lanes. There was a general feeling that more could be done in relation to enforcing general traffic law to reduce traffic speeds and generally improve conditions for cyclists.

8.3.6 Another key issue relating to accessibility was the finalizing of networks. It was felt that while some good facilities and routes were being provided throughout the country a piecemeal approach and lack of an overall plan in some cases resulted in an incomplete route or network. It was considered that this approach can discourage the inexperienced who may have a high degree of comfort and accessibility on one section of a route only to find themselves struggling with heavy traffic conditions on a narrow street on another part of the route.

8.3.7 Similarly, Sustrans generally welcome the proposed Designing Streets document which will not only help bring various disciplines together during the planning process but may also allow for more innovative designs to be considered. In terms of innovation Ms Taylor highlighted the concept of 'Bike Boulevards' as a bold step to give more priority to cyclists in certain circumstances. Discussions took place around this subject and it was considered that there would be merit in trying to identify areas of high cycle usage that may be suitable for a pilot study.

Figure 8.1: *American Bike Boulevard – no need for advisory cycle lane*

8.3.8 Katharine Taylor also raised the issue of the general lack of data relating to cycling activity. While it is the case that some counters were placed on off road routes, there appeared to be no specific mechanism for gathering data on cycle usage on main traffic routes. This situation made it very difficult to argue the case for cycling and it was considered that if a good base level survey could be undertaken in key locations, then over the years there would be an opportunity to demonstrate if various schemes and initiatives have been successful. Discussions took place with regard to the belief that cycling in Edinburgh, for example, was increasing but that there did not appear to be any definitive data to support this.

8.3.9 In terms of monitoring and reviewing projects, Sustrans felt it was important to obtain the views of users both before and after the implementation of schemes. It was considered that the views of users were often under utilized and that their inputs were important, not only in relation to new schemes but also in relation to resolving existing problems on the network.

8.4 Cycle User Groups

8.4.1 A meeting was held with representatives of the Lothians cycling campaign group – Spokes and the Cycle Touring Club – CTC. The following people attended the meeting;

- Dave du Feu – Spokes
- Sandy Scotland – Spokes
- Donald Smith – Spokes
- Peter Hawkins – CTC.

8.4.2 As the views of the local authorities and Sustrans had already been obtained one of the main focus points of the meeting was to gain the views of the cycle users, especially in relation to how best to provide suitable facilities for the various cyclist groups, from the inexperienced rider to a person who commutes daily through heavy traffic conditions.

The needs of cyclists

8.4.3 The issue of whether or not cyclists prefer to get from A to B as quick as possible was discussed along with whether or not this area should be the focus of an urban cycling strategy. Discussions highlighted that while some cyclists may often like to have a direct route provided, the choice of route can often be dictated by a range of circumstances and, given the freedom afforded to cyclists, these choices can be made very quickly and often. For instance, it may be that in lighter traffic conditions a cyclist may prefer to keep on the main traffic route. However during times of high traffic volumes and possible congestion blocking the way, a cyclist may switch to adjacent quieter streets that can be negotiated in a similar journey time. Another example may be that a change in the weather totally alters a cyclist's route choice and therefore instead of using the quicker on road route a more leisurely and scenic route is chosen when time allows for such a journey.

8.4.4 The discussion on this issue ended by agreeing that ideally the roads and the urban cycle network should be developed using 'invisible engineering' that enables maximum route choice with minimum diversions.

8.4.5 In relation to the types of routes available and the types of barriers encountered in an urban situation, a general discussion took place with regard to the types of conditions cyclists expected. It was agreed that while route improvements including new off-road facilities created to avoid more heavily trafficked routes in the urban environment were useful, it was considered that of equal importance was the removal of barriers to cycling on existing facilities. Far from seeking new routes, the cycle users indicated they would be content if more focus was given to resolving many of the long standing issues that are present on the existing cycle networks. Issues such as cycle lanes terminating where they could be continued, the provision of dropped kerbs, the enforcement of waiting restrictions and general maintenance issues were considered high on any priority list for these experienced cyclists.

8.4.6 The basic philosophy behind this is the belief that the removal of smaller barriers can often open up new, wider and quicker routes to more cyclists. Similar to the discussions with Sustrans, the exemption of cyclists from certain banned movements or prohibitions and the opening up of even the smallest connecting corridor, for example between two cul de sacs, can remove the need to take circuitous routes. Often that can remove cyclists from some traffic routes where there is more likelihood of accidents occurring.

Cycling as an acceptable travel mode.

8.4.7 A general discussion took place with regard to how cyclists were perceived and how cycling could be placed higher on the road user hierarchy. There was general agreement that any urban cycling strategy should promote the provision of cycle parking in visible locations in town centres and in front of major public buildings and places of employment, so that cycling is seen as an everyday travel mode.

8.4.8 In relation to the issue of making cyclists and cycling more visible, Dave du Feu was keen to remind everyone of an article in the Spokes newsletter of spring 2006 that highlighted the benefits of providing coloured surfacing at cycle facilities such as cycle lanes and Advance Stop Lines. These benefits include giving cyclists a degree of comfort when using such facilities as other road users, both pedestrians and motorists alike are less likely to stray into a cycle lane when a coloured surface is present. The use of coloured surfacing is also another indication that cycling should be considered as a normal everyday travel mode and that cyclists have equal rights when using the public roads.

Identification of barriers to cycling.

8.4.9 As with other groups the idea of a more formalized system to identify barriers to cycling and formulate an objective and programmed action plan were welcomed by the group. As previously discussed it was felt that in some cases, easily resolved barriers were sometimes unattended for years and that when encountered on a daily basis a single barrier can sometimes be the defining issue that stops one person from cycling. The fear is that such barriers can discourage new cyclists from making more journeys and make more experienced cyclists wonder about whether or not cycling is their most suitable travel mode, given the lack of comfort and accessibility.

8.4.10 The group accepted that there were some areas where there may be no ideal solution to improving conditions for cyclists, however if an objective review is undertaken then the specific issue can be dropped and focus and resources be better targeted at barriers which can be removed.

8.4.11 Specific examples relating to the Edinburgh area were discussed and these included the difficulties cyclists can face trying to negotiate junctions at the city bypass, the need to remove steps where possible, such as the steps to the Craigmillar Castle Avenue at the Royal Infirmary of Edinburgh.

8.4.12 In addition to the types of barriers above, other barriers such as poor maintenance of surfacing, removal of litter and other materials and the failure to trim back foliage and vegetation on off-road routes and at their access, often made facilities look unwelcoming and thus potentially deter some cyclists.

Other consultations

8.4.13 A telephone consultation was undertaken with David Wardrop-White a Spokes member with specific interest in encouraging employers to promote cycling and other sustainable travel modes through travel plans and personal travel planning methods.

8.4.14 David Wardrop-White was very keen on tapping into large companies with a view to encouraging and promoting issues of corporate responsibility, environmental responsibility and the use of sponsorship and marketing to help promote cycling.

8.4.15 David Wardrop-White has been working with Lyndsay Brown of Cycling Scotland to help promote the Cycle Friendly Employer awards and it is this type of promotional work that could help with a range of issues, including the retro-fitting of facilities for cyclists in older offices and other places of employment that were not originally subjected to the more stringent planning policies enforced today.

8.4.16 Discussions also took place about looking forward in relation to the promotion of cycle routes and the use of web-based and hand held communication devices to access information on cycle routes. Of considerable interest was the London Cycle Network's route planner which provides journey times for all travel modes including cycling and walking. It was considered that this type of system could be developed for the SEStran region or the wider Scottish network, possibly by 'piggy-backing' onto existing travel information sites.

Plans of audited routes

Appendix **2**

Plans of areas to be considered within Action Plan

Print outs of audit checklists

Appendix **4**

Questionnaire returns from local authorities

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