

WEST EDINBURGH PLANNING FRAMEWORK: BACKGROUND PAPERS

ECONOMY

Introduction

1. Scottish Enterprise Edinburgh & Lothian appointed EKOS Economics and Regeneration and Ryden Property Consultants to undertake some research and analysis to inform the draft West Edinburgh Planning Framework.

2. This background paper summarises the commissioned report on the demand and supply of economic development and labour supply. It focuses on the economic development and related labour and property supply and demand issues affecting West Edinburgh and seeks to widen and deepen the previous analysis¹ of potential development scenarios for West Edinburgh and set it in a wider regional and sub-national economic context.

Edinburgh and the Lothians' economy

3. Lothian is centred on the City of Edinburgh, and is one of Scotland's most densely populated regions, accounting for only 2% of Scotland's land area but 15% of its population; 18% of employment and around 20% GDP. In property terms, Lothian accounts for 15% of Scotland's industrial stock and 25% of its office stock, much of which is modern and of high quality.

4. In looking at future growth prospects, Edinburgh and the Lothians has a higher share of most of Scotland's key growth sectors and clusters, particularly in knowledge and science industries and financial and business services.

5. Population projections show that the number of Lothian residents is expected to rise steadily by around 48,000 by 2015 at the same time as the national population experiences a small but steady decline. This increase is expected to occur mainly through (65%) in-migration. In Edinburgh over 90% of population growth is expected to be as a result of in-migration.

6. Employment forecasts supplied by Scottish Enterprise Edinburgh and Lothian show that employment in Lothian is forecast to grow by around 40,000 to the year 2015, with 30,000 of these jobs forecast to be created in Edinburgh. The main employment increases are forecast in services, healthcare and hotels and catering. Around 15,000 of the Edinburgh jobs are expected to be in financial services, business services and communications.

7. While there are some major forecast employment increases in the service sector (around 60,000), significant additional losses in the manufacturing sector (around 20,000) are also expected. This will have implications for the future labour supply and raises issues for re-training.

8. The latest available figures show GDP in Lothian at 117 (GDP per UK index) mainly on the strength of the Edinburgh economy. This is forecast to continue with some² predicting that Edinburgh will have the fastest growing economy of any major UK city over the next five years. The analysis

¹ Lothian Strategic Sites Study (Scottish Enterprise Edinburgh and Lothian)

² Cambridge Econometrics

shows that Lothian tends to account for significantly more than its share of these key growth areas and is considered to be a key growth location in the future. It is therefore anticipated that future development activity around West Edinburgh would relate to these key growth areas.

9 The future labour supply data (Table 1) has been projected to 2015 by applying amended economic activity rates to the 1998-based population projections. The projection shows an increase in the Lothians workforce of 26,400, of which 53% (14,000) will be in Edinburgh with the remaining 12,400 across the rest of the Lothians.

	<u>1999</u>	<u>2015</u>	<u>Increase</u>	<u>Change %</u>
City of Edinburgh	222,900	236,900	14,000	6.3%
East Lothian	42,600	46,400	3,800	8.8%
Midlothian	42,900	43,400	500	1.2%
West Lothian	84,000	92,100	8,100	9.7%
Lothian Total	392,400	418,800	26,400	6.7%

Source: draft Edinburgh and Lothians Structure Plan

10 However, when the wider Lothian Travel to Work Area is considered, the total labour supply is reduced by 5,600 due to projected decreases in labour supply in Fife and the Borders. This, alongside obvious transport constraints, has potential implications for levels of in-commuting.

11 Table 2, brings together population and employment forecasts and shows the forecast labour supply shortages.

	<u>Supply</u>		<u>Demand</u>		<u>Shortfall</u>	
	<u>1999</u>	<u>2015</u>	<u>1999</u>	<u>2015</u>	<u>1999</u>	<u>2015</u>
Edinburgh	222,900	236,900	287,400	321,900	64,500	85,000
East Lothian	42,600	46,400	26,000	23,600	-16,600	-22,800
Midlothian	42,900	43,400	24,100	26,900	-18,800	-16,500
West Lothian	84,000	92,100	67,700	78,800	-16,300	-13,300
Lothians Total	392,400	418,800	405,300	451,200	12,900	32,400

Source: draft Edinburgh and the Lothians Structure Plan

12 The data shows that the level of shortfall in Edinburgh is forecast to reach 85,000 by 2015. Within the rest of Lothian, supply will be greater than demand, and the net mis-match is forecast to be around 32,000. The implications of this would seem to be that forecast demand in Edinburgh can only be met through increased in-commuting, in-migration or increased economic activity.

13 It is assumed that the key growth areas in Edinburgh will be financial and business services, communications and other private services. The analysis of the data show a figure of around 15,000 forecast new jobs over the period to 2015 in these sectors. In addition, it is assumed that there will be a further 5,000 new jobs in related activities.

14 This economic analysis suggests a potential need for around 325,000 square metres of net additional accommodation (class 4 offices) or 372,000 square metres gross for Edinburgh. This is equal to 31,000 square metres per annum to 2015. This of course assumes that Edinburgh is able to

attract and/or accommodate the additional 20,000 new jobs. Other factors to be taken into account include:

- the effect of companies 'trading up', where the gross increase is greater than actual new demand;
- companies moving or relocating to new property;
- growth being accommodated in currently under-utilised properties;
- opportunities for bespoke development; and
- ongoing turnover in the property market.

Property market analysis

15 It is estimated that the Edinburgh office stock is around 2.3 million square metres. Total office/class 4 take up has been, on average, 93,000 square metres per annum since 1997. Although the bulk has been in the city centre, Edinburgh Park has accounted for approximately 12% of this. It is assumed that demand (take up) will continue at around 93,000 square metres per annum. Whilst this may appear an optimistic scenario, due to recent years being particularly buoyant, it does suggest a requirement of around 1.1 million square metres for class 4 business space in Edinburgh area to 2015. However, this figure includes new and second-hand business space and of this, approximately 327,000 square metres is likely to constitute demand for new floorspace.

16 Bringing the economic and property market analysis together therefore suggests that there will be demand for approximately **330,000** square metres of new additional Class 4 business floorspace in Edinburgh by 2015.

17 Committed development at Edinburgh Park and Newbridge (development with planning permission but not yet implemented) is approximately 400,000 square metres. This alone, has capacity for all the forecast employment growth in Edinburgh to 2015 in the financial, business services and communication sectors. There are also large allocated sites for class 4 development in the City Centre, Edinburgh Waterfront, Leith, and the South East Wedge and further afield in West Lothian, East Lothian and Midlothian. The Scottish Enterprise Edinburgh and Lothian Strategic Sites report takes a broader perspective and suggests that Lothian has potential supply of land for class 4 development for around 2.1 million square metres.

18 It is also estimated that current (known) and forecast new capacity in central Scotland for business space is around 4.6 million square metres with an average forecast output of between 232,000 and 464,000 square metres per annum over the next 20 years. Many of these developments, such as Clyde Waterfront are already well advanced in planning terms. Overall office and business space take up in Scotland as a whole is historically around 250,000 square metres per annum.

19. All of this suggests that there is more than adequate long-term supply, range and choice of sites at local, regional and national levels to meet forecast demand. It is less easy however, to assess to what extent this is of the right quality and in the right locations.

Conclusions

- There is likely to be a significant level of over-supply of Class 4 business land in Lothian to 2015 at least without any additional allocations in West Edinburgh.
- If current trends continue it is forecast that the projected supply of land for class 4 use in Lothian will meet the forecast need up to the year 2030 (without the need for further land release in West

Edinburgh). This excludes development activity outside Lothian which would have the impact of increasing the level of potential over-supply significantly at the wider regional and national level.

- While it may be possible to show that left to its own devices, the market would opt for further development and land release in West Edinburgh, this would be likely to add to an already over-supplied market. Notwithstanding the issues regarding a shortage of labour supply and congestion, this could constitute a waste of valuable economic resources elsewhere in Scotland. This suggests that the realisation of West Edinburgh's economic development potential in the short-term would be at the expense of other known development areas.
- Although there may be long-term opportunities offered by West Edinburgh for benefits in sustainable transport terms, this could have an adverse impact at a national level for wider policy agendas such as social justice requiring further consideration and justification.

TRANSPORT

Introduction

1. This background paper on transport considers the nature of the transport system in West Edinburgh. It also describes proposed transport improvements as well as opportunities for strategic enhancement. The paper also summarises a specially commissioned study carried out by JMP Transportation Consultants to assess the extent of pressures on the strategic road network.

The transport system in West Edinburgh

2. At a strategic level, West Edinburgh is well connected into the national transport network, with links to Edinburgh, the rest of Scotland and beyond.

3. The area is served by three trunk roads: the M8, which links Edinburgh with Glasgow; the M9, which connects Edinburgh with Falkirk and Stirling and joins the M8 at Newbridge and the A720 Edinburgh bypass which links into the M8 at Hermiston Gait. Strategic 'local' roads include the A8000 which links the Forth Road Bridge with the M9 and the M8 and the A8 which links Edinburgh with Newbridge and the A90, which provides an alternative route from the Forth Road Bridge to the Gyle area. Recent years have seen major increases in road capacity in the area, particularly with the completion of the M8 to connect with the city bypass and the grade separated junction at Newbridge. Nonetheless, all of the roads referred to above have seen considerable traffic growth in recent years and are currently near, at or above efficient operating capacity in the morning and evening peaks.

4. The area is at first glance well served by rail, with links from Edinburgh to Fife and beyond, Edinburgh to Glasgow (2 lines: the main line via Falkirk High and another via Shotts) and Edinburgh to Bathgate and Dunblane. In practice, however, only South Gyle Station (on the Fife line) is practical for travelling to work in West Edinburgh but it is a long walk to and from many workplaces in Edinburgh Park, whilst travellers from the west of Edinburgh have to change trains at Haymarket. Services on the Shotts route require upgrading. Capacity problems on the Forth Rail Bridge and at Edinburgh's Haymarket and Waverley stations mean that there is little scope to significantly improve the frequency of services to South Gyle in the short term, although additional rolling stock and platform lengthening to relieve the persistent overcrowding are in hand. Insufficient capacity at a number of other points on the network currently limits the scope for higher frequencies on other routes, although this should not impact on the level of service currently planned for Edinburgh Park station. However, plans to redevelop Waverley Station, the Stirling-Alloa-Kincardine link and other initiatives will contribute to easing these constraints in the medium to longer term.

5. Edinburgh Airport is relatively well connected to Edinburgh city centre with a high frequency express bus. However, whilst being one of the fastest growing airports in the UK, there is no rail access to the Airport. The Scottish Executive has now commissioned a study to investigate the feasibility of introducing a heavy rail link to both Edinburgh and Glasgow airports. This will report later this year. Developing rail links to these airports is one of the ten priorities highlighted in *Scotland's Transport: Delivering Improvements*.

6. The good road connections described above mean that the area is highly accessible by car. It is the second (out of 42) most accessible zone in Lothian identified in recent work for the draft Structure Plan for Edinburgh and the Lothians. By the same measure, the area's accessibility by public transport is relatively poor. The ratio of car to non-car accessibility is important when judging the likely share of travel by different modes of transport. Zones with the highest ratios are likely to attract the highest proportions of car travel. Based on this, with current infrastructure and services, locations in the area

are likely to generate higher shares of car travel than those within the City bypass, in most of Midlothian and in the western part of East Lothian.

7. The traditional employment areas of Sighthill and South Gyle have limited off street car parking space and unmanaged on street parking. Though it is served by several high frequency bus services, the area is also relatively inconvenient to reach by public transport from much of Edinburgh and its hinterland. The result is indiscriminate parking on pavements and landscaped areas, which only adds to congestion and detracts from amenity. At Edinburgh Park, the target of Green Transport Plan is to reduce single car driver trips from 70% to 49% by 2011. The City of Edinburgh Council is applying equally stringent controls to redevelopment proposals in South Gyle and Sighthill.

Edinburgh Airport

8. The Scottish Air Transport Consultation Document, to be published this summer, will set out different scenarios for anticipated growth in the demand for air services at airports, including Edinburgh airport, over the next 30 years. After the consultation process, the UK Government and Scottish Ministers will consider responses and will set out a preferred way forward in the proposed Air Transport White Paper in 2003.

9. Public transport access to the Airport is 16%; 48% is by private car; taxis account for 29% and rental cars for most of the remainder. The BAA Surface Access Strategy 2002-2007 contains targets for sustainable access. By 2007, the 16% public transport share is intended to rise to 25%. As BAAplc forecast growth from around 6m passengers to around 8m by 2007, this in effect means a doubling of public transport trips from 1m to 2m. This would still leave a 20% increase in passengers using other modes, from 5m to 6m. The Airport envisages difficulties on Eastfield Road and at the A8 junctions by 2005 and is promoting the case for improved road access.

10. In considering the land use implications of Airport development, Edinburgh Airport is officially safeguarded in accordance with the criteria set out by the Civil Aviation Authority (CAA) to ensure that developments on and around aerodromes do not infringe with internationally agreed safety margins around aircraft flight paths, nor interfere with the visual and non-visual aids to navigation which guide aircraft on those flight paths. As a result, proposed developments on, and in a wide area around, Edinburgh Airport must undergo a process known as Aerodrome Safeguarding. This process ensures that alterations to the local built environment are carefully assessed to check that they have no adverse impact on aircraft safety.

11. Public Safety Zones have implications for certain land uses or for intensification or new development. Obstacle Limitation Surfaces (height constraints for buildings or other constructions) are defined and are required to be in place around each operational runway at an airport.

12. A further control is Runway End Safety Areas, which the CAA require to be in place at the end of operational runways.

13. BAA plc can continue to cater for growth in traffic by modifications to operational layouts within the airport, without affecting off-airport constraints, for a period of time. There comes a point, however, when terminal expansion and additional apron stances are required, and additional land may have to be acquired.

14. Although not currently part of BAA plc's forward planning, there are scenarios being explored as part of the work leading up to the Aviation White Paper which requires a new runway. Should a

second main runway prove necessary at Edinburgh, it too would have its own Public Safety Zones and Obstacle Limitation Surfaces, increasing the amount of safeguarded or constrained land. Conversely if the secondary cross-wind runway was decommissioned, not only would that land be freed up there, but safeguarding constraints over a significant area to the south and east could also be removed. For any new parallel runway, the combination of Obstacle Limitation Surfaces and Runway End Safety Areas could also have implications for the existing elevated Fife rail line, and add justification for the case for a rail link beneath the Airport, with closure and levelling of the Fife embankment. This, along with a number of other options for rail access to the Airport is being considered as part of the Edinburgh and Glasgow Airports Rail Links Study. This study was commissioned by the Scottish Executive and Scottish Enterprise and is due to conclude in the Autumn.

Pressures on the strategic road network

15. Already committed development means that levels of road traffic in Edinburgh will increase significantly. Base traffic is also estimated to grow by 24% by 2015. Work carried out by JMP suggests that committed development, combined with the Royal Bank of Scotland's proposals for Gogarburn (if approved) as well as increases in base traffic, could encourage a further 90,000 vehicles (2 way trips) per day into West Edinburgh. This is estimated to mean a further 12,000 vehicles per hour during both the weekday AM and PM peak (Appendix 1). Edinburgh Park would be the biggest generator of traffic.

16. These proposed developments are also likely to generate a number of public transport orientated trips. This will be supported by the need for Travel Plans orientated towards achieving a better balance of public transport and private car use. It is anticipated that these would lead to a further by 20,000 (people) trips on public transport.

17. The combined impact of this for the strategic road network will be very significant (Appendices 2 and 3). It is anticipated that all road links in the area will operate over capacity, with increased congestion during a higher proportion of weekday peak hours. It is also anticipated that major junctions will operate over their most efficient operating capacity thus exacerbating congestion.

18. The conclusions of the work carried out by JMP suggest that containing existing levels of traffic and achieving travel patterns comparable with sustainable development objectives will require major improvements in public transport accessibility. Even with this however, a proportion of trips will be made by private car, leading to a need for investigating more fully the case and various options for improved road access and management of transport impact.

Proposed transport improvements

19. There are a number of improvements to the transport network that should come on stream in the next few years. These improvements are key components of an investment package to be delivered in advance of the potential introduction of congestion charging in 2006. The main proposals are:

- **Edinburgh Park Station** – A new railway station is proposed on the main Glasgow to Edinburgh railway line and will serve Edinburgh Park/South Gyle. Planning permission for the full development of Edinburgh Park requires the Station to be operational. The Station is expected to open in 2003. Trains between Edinburgh, Bathgate and Dunblane will serve the Station initially. There will also be scope for Edinburgh - Glasgow trains to stop.

- **Edinburgh CrossRail** – Dunblane and Bathgate trtrains extended to Newcraighall (opened 4 June 2002), with potential benefits for West Edinburgh once Edinburgh Park Station opens.
- **Ingliston Park and Ride** – The City of Edinburgh Council is promoting a park and ride site at Ingliston.
- **WEBs guided busway** – WEBs is a proposal by The City of Edinburgh Council to introduce an enhanced bus corridor along a route from the city centre to Edinburgh Park, including a small proportion of guided busway. The Scottish Executive has awarded the project £6 million from the Public Transport Fund. Necessary Parliamentary Orders have been approved and the Busway is expected to be operational in 2004.
- **'Straight into Town'** - bus priority measures to reduce journey times from Livingston to Edinburgh Park and the city centre (likely completion date end 2003).
- **A8000 Improvement.** The Forth Estuary Transport Authority (FETA) is promoting an upgrade of this road link. Design and preparation work was carried out by the City of Edinburgh Council with loan support for the development of the project from the Scottish Executive. A Notice of Intention to Develop has now been submitted. Compulsory purchase and roads orders will follow with construction expected to start in 2004. The project is expected to cost £24 million.

20. However, as recognised in Edinburgh's Local Transport Strategy (LTS), much higher levels of investment are needed to tackle existing and near-future problems effectively. Current proposals to introduce congestion charging would provide an income stream to meet this need for investment, as well as reducing congestion levels. The LTS 'preferred strategy', now formally adopted by the Council, proposes a light rail network for the city, and the Council is actively pursuing congestion charging as a means to part-fund such a network as a component of a wider investment package for Edinburgh and south-east Scotland.

21. The City of Edinburgh Council is also investigating the prospect of a West Edinburgh Tramway to form part of a wider **Edinburgh Tram Network**. The West Edinburgh Tram scheme consists of a predominantly segregated tram alignment from the city centre (replacing WEBS to Edinburgh Park) to the south of and then along the A8 corridor to Newbridge. There are a number of options for initial phases of the scheme to terminate at Edinburgh Park, Gogarburn or Edinburgh Airport before extending to Newbridge. Possible extensions onto Livingston or Queensferry may also be considered as later phases. If proven to be viable, the tram network could be in operation by 2009. Necessary Parliamentary Orders would need to be in place by 2005. The Scottish Ministers are committed to a first class transport infrastructure for Edinburgh. The Scottish Executive has already given financial support (£6.5m) for progressing a proposal for a North Edinburgh loop to Parliamentary Order stage and have indicated a willingness to do the same for a West Edinburgh route.

22. The Scottish Ministers have also stated in *Scotland's Transport: Delivering Improvements* that developing **rail links to Edinburgh Airport** is one of the top ten priorities for transport delivery. These would facilitate access to the area and reduce journey times to Edinburgh Airport for people travelling from Edinburgh Waverley, Fife, Glasgow and other parts of Scotland and the UK. As mentioned above, consideration of various options for rail links to Edinburgh Airport is underway and due to conclude in the Autumn. It will feed into the work being done in preparation for the Aviation White Paper.

23. Even with all this investment leading to success in increasing the proportion of trips by public transport, there will be a significant increase in overall demand for trips by private car. Although not currently forming part of any firm proposals for an improved transport system in West Edinburgh, the scale of committed development, combined with the very significant anticipated growth of the Airport would therefore suggest that road improvements may be necessary. This would be in addition to measures designed to lock in the benefits of investment in public transport by restraining traffic levels.

Conclusions

- West Edinburgh is strategically located in the Scottish transport system. However, congestion, capacity thresholds and a lack of integration between modes of transport undermine its accessibility by private car and public transport.
- Edinburgh Airport is experiencing rapid growth. This raises operational as well as surface access and wider land use issues.
- The strategic road network is under significant pressure from the transport impact of development already with the benefit of planning permission. Further planning permissions, combined with the anticipated growth of Edinburgh Airport and intensification of existing land uses will significantly increase levels of congestion by 2015.
- Various transport improvements are proposed in the short term although these are unlikely to be able to tackle existing or anticipated capacity issues.
- The longer term proposals for rail links to Edinburgh Airport and a West Edinburgh Tram network constitute strategic improvements in the public transport system.
- Even with these strategic improvements in place there will be a significant increase in demand for road based traffic, suggesting a need to consider the case and various options for improved road access and management of transport impact.

Appendix 1

Vehicle trips generated by committed and proposed new development in west Edinburgh

	Development	Development Type	Development Related Vehicle Trips (2-way)		
			AM Peak	PM Peak	Daily Total
1.	Grampian Foods, Newbridge (TA)	Office – 56,670m ²	1230	912	7800
2.	Edinburgh Gate, Newbridge (TA)	Office – 74,322m ²	1663	1210	10450
3.	Edinburgh Exchange, Newbridge (TA)	Storage / Distribution 16,191m ²	70	65	533
4.	Edinburgh Airport (FM/JMP)	Airport Expansion	1735	1787	17350
5.	Royal Highland Showground (FM/JMP)	Mixed	371	319	N/A
6.	Proposed RBS HQ, at former Gogarburn Hospital (TA)	HQ – 57,500 m ²	1700	1655	12200
7.	Edinburgh Park (TA)	Business Park – 324,903 m ²	5500	5400	39650
8.	Sighthill / South Gyle (CEC/JMP)	Change to Office 100,000m ²	574	170	2700
9.	Newbridge 'Core Dev. Area' (CEC/ JMP)	Mixed	Negligible additional traffic flow		
Total			12,843	11,518	90,683*

Note : N/A = Not Available, * total excludes Royal Highland Showground.

Implications for Operational Performance

Evaluation of Traffic Demands		2001		2015	
Link Name	Assessed Demand Capacity	Demand Flow	RFC	Demand Flow	RFC
Rural Links (Annual average daily traffic)					
M8 – West of Junction 1a (M8 Extension)	64600	92685	1.43	115300	1.78
M8 – East of Junction 1a	61000	86470	1.42	107600	1.76
M9 – North of Newbridge Roundabout	48400	22975	0.47	28600	0.59
A8 – East of Newbridge Roundabout	47400	39675	0.84	49400	1.04
A8 – West of Gogar Roundabout	47100	44015	0.93	54800	1.16
Urban Links (peak hour traffic volumes)					
M9 – South of Newbridge Roundabout	4000	2831	0.71	3522	0.88
A8 – East of Maybury Junction	2100	2110	1.00	2625	1.25
A720 – South of Gogar Roundabout	3600	2246	0.62	2794	0.78
A902 – North of Maybury Junction	2100	1272	0.61	1583	0.75
A89 – West of Newbridge Roundabout	1470	882	0.60	1097	0.75

Note : RFC = Ratio of Flow to Design Reference Capacity

Implications for operational performance of key junctions

Evaluation of Traffic Demands	Junction		Operational Performance	
	Form	Type	2001	2015
Junction Name				
M8 / A8 Newbridge	Grade Separate	Roundabout	At Capacity	Over Capacity
M8 / A720 Terminal Junction	Grade Separate	Roundabout	Below Capacity	At Capacity
A8 / Edinburgh Airport	Grade Separate	Roundabout	Below Capacity	Below Capacity
A8 / A720 Gogar	Grade Separate	Roundabout	At Capacity	Over Capacity
A8 / A902 Maybury	At grade	Traffic Signals	At Capacity	Over Capacity
A720 / A71 Calders	At grade	Traffic Signals	Over Capacity	Over Capacity
A90 / A902 – Barnton	At grade	Traffic Signals	Over Capacity	Over Capacity

Note : Information on existing and future performance being extracted mainly from available Transport Assessment data.

ENVIRONMENT

Introduction

1. This background paper summarises information provided by The City of Edinburgh Council on environmental issues and technical constraints in West Edinburgh.

The wider context

2. All policies, plan and programmes need to take account of their effects on the environment. Sustainable development and tackling climate change are now major Scottish Executive priorities. Sustainable development requires that developments involve a wise use of resources and ensure that they do not place unnecessary burdens on the ecosystem by unsustainable practices in matters such as the production of waste, use of energy and transport. The protection of and enhancement of Scotland's biodiversity is a vital element of sustainable development and plans for the future development of West Edinburgh will need to demonstrate a contribution to the achievement of that policy priority. The commitment to contribute to the UK's efforts to tackle climate change means that proposals for development must seek to minimise greenhouse gas emissions. Transport is particularly problematic in this context. Given the scale of existing proposed and potential developments in West Edinburgh, it is important that transport options contribute to reducing carbon dioxide emissions.

Character

3. The area around the A8 corridor is characterised by large amounts of open countryside within which lie the towns and villages of Kirkliston, Newbridge, Ratho and Ratho Station. The open land is predominantly productive farmland and most of it is protected by Green Belt or countryside policies. Much of the countryside is attractive landscape of varied character ranging from the heather moorland of the Pentland Hills to parklands such as Dalmeny and Cammo. Three significant waterways, the River Almond, the Union Canal and the Water of Leith cross the area in an approximately west-east direction. The various towns and villages are contrasting elements in the landscape as are the three large areas of non-conforming use at Edinburgh Airport, the Royal Highland Showground and further to the south Heriot-Watt's Edinburgh Campus at Riccarton.

Natural constraints

4. The study area is subject to a number of environmental designations which constrain the development of the area. A significant proportion of West Edinburgh is designated as Green Belt, a long standing national policy designation which aims to protect the landscaping setting and compact form of the city.

5. Green Belt boundaries have been reviewed periodically over the past 20 years. Since the 1980's the line of the city by-pass on the west side of the city has been seen as a defensible and long term boundary for the urban area and has protected the countryside from urban sprawl and prevented coalescence of communities. It has also provided scope for more intensive redevelopment of built up areas. The consistent application of Green Belt policy, combined with the planned growth of various 'strategic non-conforming uses' in the Green Belt (such as the Edinburgh Airport and the Royal Highland Showground) has also played a role in diverting development pressure to brownfield land within the city.

6. With regard to nature conservation constraints, existing water courses are considered to be important recreational and wildlife assets and have been designated as Sites of Interest for Nature Conservation (SINC). In addition, land at Cammo Country Park and to the south of Hallyards Farm have also been designated as SINCS.

7. A landscape survey was undertaken in 1992/93 as part of the preparation of the Rural West Edinburgh Local Plan. The purpose of the study was to define landscape character zones and to identify areas of exceptional landscape quality. Those zones of highest quality were identified as Areas of Outstanding Landscape Quality (AOLQ). Gogarburn Hospital lies within a parkland setting with a large number of mature trees and Gogar Burn runs through the site. As a result it has been designated as an AOLQ. The historic policies of Dundas Castle, Dalmeny Golf Club and Dalmeny House are also designated as AOLQs and are included in the Inventory of Gardens and Designed Landscapes.

8. The Union Canal, although for the most part outwith the study area, is designated as a Scheduled Ancient Monument and there are a small number of other monuments scattered throughout the study area. There are concentrations of listed buildings within the main settlements and some are located in the rural area set in extensive grounds and parkland. However, it should be noted that in general, land on either side of the A8 and around the airport is unaffected by heritage designations.

9. Given the rural nature of the area it is important that the requirements of the Wildlife and Countryside Act 1981 and the Protection of Badgers Act 1992 are met through the use of appropriate design and construction methods. Where development proposals come forward there may be opportunities to enhance the landscape, design, nature conservation and biodiversity value of the area.

Technical constraints

10. The River Almond and its flood plain is a major feature in the area. However, some of the water courses in the area are susceptible to flooding. For example the River Almond is known to flood at various points to the west and north of the Airport. Any development proposals would have to address these flooding issues in the context of NPPG 7. Proposals would have to identify the level of risk and propose measures for addressing that risk that are to the satisfaction of SEPA.

11. Other development constraints include the Airport Public Safety Zone, where development at the ends of the runway is regulated to avoid large concentrations of people. There are also restrictions on the height of development permitted in and around the airport.

12. Finally, there are also two high-pressure gas pipelines running through the study area. Development within these locations is required to comply with health and safety guidelines.

Conclusion

- There are a range of environmental assets, technical constraints and wider sustainable development objectives that will influence future development and investment in transport infrastructure in West Edinburgh. These will need to be taken into account in the realisation of wider economic and sustainable transport objectives and will have an influence on the nature, location, design and implementation of individual projects.