

South East Scotland Transport Partnership (SEStran)

Edinburgh Orbital Bus Project

Pre-Feasibility Report

Revision Schedule

EOBP Pre-Feasibility Report

October 2009

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1	6 April 2009	Draft Report	Nicolas Whitelaw Planner Gayle Adams Principal Planner Jonathan Campbell Transport Planner Lynsey MacPhail Transport Planner	Marwan AL-Azzawi Associate	Marwan AL-Azzawi Associate
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1 Introduction

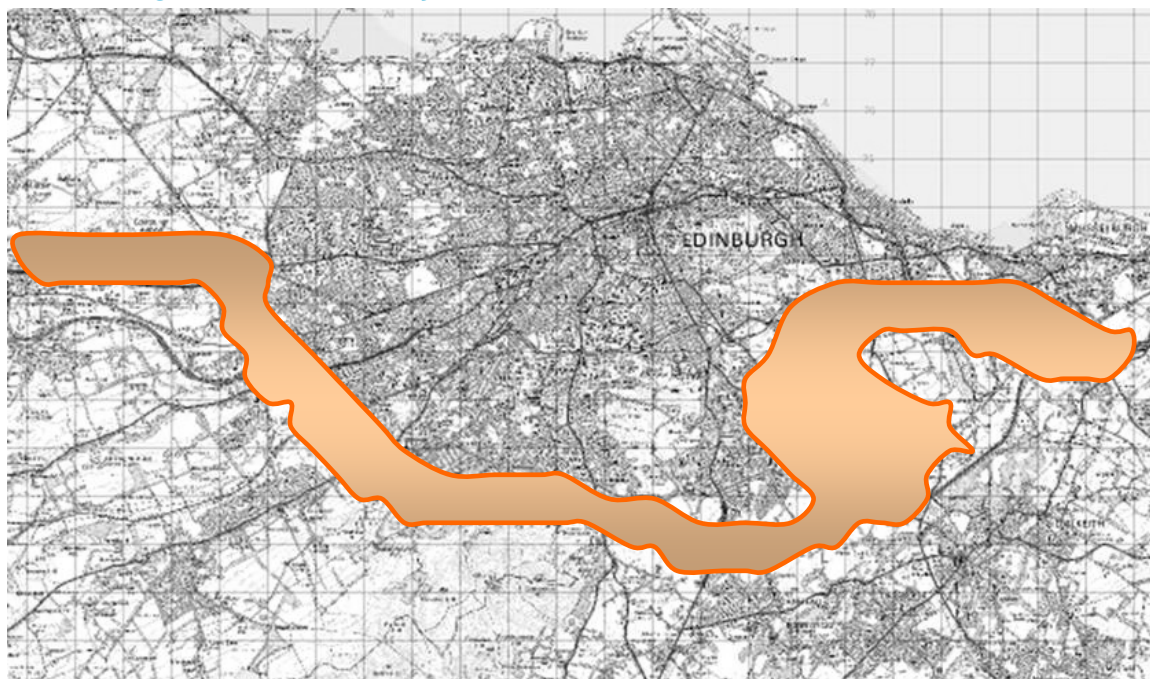
1.1 Background

- 1.1.1 SEStran (South East Scotland Transport Partnership) appointed Scott Wilson to carry out a high-level evaluation of potential options for a Bus Rapid Transport (BRT) system linking Newbridge and Queen Margaret University (QMU) at Newcraighall via Edinburgh International Airport, the Edinburgh Royal Infirmary and a number of key employment, retail, and park and ride sites located within the vicinity of the A720 Edinburgh City Bypass.
- 1.1.2 The expansion of public transport should be strongly linked to land-use planning and the safeguarding of future public transport corridors/alignments. The study should be sufficient to assist in the reservation of land for future proposals in the forthcoming SESplan (South East Scotland Plan).
- 1.1.3 This report sets out the results of the proposed EOBP linking key sites in the area.

1.2 Overview of the Study Area

- 1.2.1 The Study Area for this appraisal, covers the Edinburgh area, and is shown in Figure 1.1 overleaf. This includes the outskirts of East, South and West Edinburgh and the immediate area surrounding Newbridge and Straiton, located within Midlothian local authority boundary, and the Musselburgh area located within East Lothian local authority area.

Figure 1.1: The Study Area



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- 1.2.2 The Study Area falls within the “Edinburgh City Bypass” corridor, characterised by high volumes of commuter tidal flow between West Edinburgh and East Edinburgh and their respective hinterlands. The Edinburgh City Bypass Corridor represents a strategic corridor where high volumes of modal shift are required, and corresponding investment needed to achieve this.
- 1.2.3 Due to the large scale of the EOBP Study Area and for ease of reference the STAG 2 Assessment has been divided into the following 9 sections:
- Section 1: Newbridge Park and Ride – Edinburgh Airport/ Ingliston Park and Ride – Gogar;
 - Section 2: Gogar – Hermiston Park and Ride – A720 Edinburgh City Bypass at A70/Water of Leith;
 - Section 3: A720 Edinburgh City Bypass at A70/Water of Leith – Lothianburn Park and Ride;
 - Section 4: Lothianburn Park and Ride – Straiton Park and Ride;
 - Section 5: Straiton Park and Ride – A720 Edinburgh City Bypass Underpass;
 - Section 6: A720 Edinburgh City Bypass underpass – Sheriffhall Park and Ride – Edinburgh Royal Infirmary (ERI);
 - Section 7: Edinburgh Royal Infirmary – Queen Margaret University (QMU);
 - Section 8: Sheriffhall Park and Ride to Millerhill Park and Ride; and
 - Section 9: Sheriffhall Park and Ride to Edinburgh Royal Infirmary.
- 1.2.5 Based on previous work¹, suggestions emerged that part of the solution for this corridor would be to provide a high quality bus rapid transit – wholly or partly segregated from other traffic – that would serve the periphery of Edinburgh, the neighbouring employment, retail and residential areas, and the relevant main interchanges. The drawings presented in this report are the final preferred scheme alignments and section details.
- 1.2.6 The objectives of this report include the following:
- identify existing and proposed land-use patterns within the Study Area that will influence the usage of a high quality public transport service;
 - identify relevant routes and new infrastructure requirements for BRT public transport options; and
 - estimate preliminary capital costs as relevant for a STAG Part 2 Appraisal for BRT options, which will identify a land-take plan for reservation in the upcoming development of the SESplan.

¹ Edinburgh Orbital Bus Rapid Transit, STAG 1 Study, Halcrow, June 2008

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1.3 Structure of this Report

1.3.1 The overall structure of this report is as follows.

- Chapter 2* - Sets out the land-use impacts;
- Chapter 3* - Outlines the environmental constraints;
- Chapter 4* - Provides an overview of the scheme development;
- Chapter 5* - Presents the capital and operating costs;
- Chapter 6* - Summarises the economic appraisal and business case by section; and
- Chapter 7* - Provides the conclusions.

2 Land Use Impacts

2.1 Introduction

- 2.1.1 Part of the EOBP study was a review of the committed and proposed land use developments. This is important as it has helped identify land use availability and also existing and future major trip generators which could be served by any potential scheme.
- 2.1.2 This Chapter therefore summarises this review, looking at each of the 9 sections discussed in Chapter 1 in turn. Appendix A contains a detailed list of the land-use policy impacts along with a plan showing the major new developments likely to be impacted by the EOBP.

2.2 Section 1: Newbridge to Gogar

Route Description

- 2.2.1 This section of the EOBP route option would utilise the existing A89 Edinburgh Road and the A8 Glasgow Road between Newbridge Park and Ride site and Gogarburn roundabout via a link with Ingliston Park and Ride, with options to connect with Edinburgh International Airport (For further details refer to Fig No. S105976/001 in Appendix B).

Policy

- 2.2.2 The Rural West Edinburgh Local Plan shows the following land use and development proposals:
- Policy ED 1 Sites for Business and Industry;
 - Policy ED 5 Edinburgh Airport;
 - Policy ED 6 The Royal Highland Showground;
 - Policy H 2 Strategic Housing Land Allocations; and
 - Policy Tra 8 Transport Proposals.
- 2.2.3 The content of the above Policies are shown in Appendix A. The specific proposals stemming from the above policies that relate to the EOBP route options are shown in Table 2.1 overleaf.

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Table 2.1: Applicable Planning Policies Proposals: Rural West Edinburgh Local Plan June 2006

Applicable Policies/ Proposals	Local Plan Proposal Reference	Location/ Proposed Use	Area/ Units	Comments
Policy ED 1	ECON 7	Newbridge North Class 4 (Business).	22.2 Ha	The site was formerly occupied by a poultry rearing and processing business. The site boundaries are formed by the M9 to the east, the A89 Edinburgh to Broxburn Road and Newbridge Industrial Estate to the south and the River Almond to the north and west. Edinburgh Airport runway lies nearby to the north east. The existing industrial buildings are intrusive in the landscape and highly visible from the M9, which forms one of the major gateways into the city. The relocation of the existing operation is an opportunity to provide a high quality modern, low density business park within a landscaped setting, designed to complement the site's gateway status.
Policy ED 1	ECON 9	Gogarburn Single-user Class 4	36.3 Ha	
Policy H 2	HSP 4	Newbridge Nursery, Newbridge Housing	25 units	
	HSP 5	Hillwood Road, Ratho Station Housing	3.79 Ha 50 units	The site is currently in use as a football pitch, a children's play area and amenity open space. In order to address a recognised housing need, provide a more appropriate location for the existing football pitch and create a woodland setting for Ratho Station, a development of a maximum of 50 new houses is proposed on site HSP5. This will provide the opportunity to secure a new community hall, incorporating changing facilities to replace the previous sports pavilion on the site. The playing field will be relocated to the adjacent area which is shown as ENV7. It is expected that the

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Applicable Policies/ Proposals	Local Plan Proposal Reference	Location/ Use	Proposed Area/ Units	Comments
				<p>housing will be provided through 'Capital City Homes', a partnership between the City of Edinburgh Council and The Places for People Group.</p> <p>Housing on these greenfield sites shall not be occupied before the West Edinburgh Tram to Newbridge is operational or its funding has been committed or, in the event of this not being delivered, other strategic (or strategically significant) improvements in public transport accessibility to the area have been secured</p>
Policy Tra 8	T1	West Edinburgh Tram (Edinburgh City Centre-Edinburgh Park-Gogarburn-Edinburgh Airport-Newbridge with extensions to Queensferry and Livingston).		Corridor safeguard to be established. It is anticipated that this service will be operational to Newbridge by Spring 2009.
	T4	Edinburgh Airport Rail Station (including safeguarded stations at Turnhouse and Gogar) and associated links.		Further consideration will be given to which of these locations is the most appropriate to facilitate access to the airport by rail.
	T10	Edinburgh Airport road links		Further consideration will be given to which road links are most appropriate.
	T11	City of Edinburgh Guided Busway (Edinburgh Airport to Gogar Roundabout).		Guided busway safeguarded route.

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- 2.2.4 The West Edinburgh Development Framework compliments the policies ED5 and ED6 and the Rural West Edinburgh Local Plan Proposal Map to a large extent and provides indicative details of the extent of future land uses. The Development Framework shows the Royal Highland Showground to be located to the south of the A8 between Ratho Station and Gogar. An international Business Gateway would be created north of the A8 between Ingliston and Gogar. The location of a new rail station is also shown to be located in the vicinity of Gogar adjacent to the Edinburgh – Fife railway line.
- 2.2.5 BAA has also prepared a Masterplan for Edinburgh International Airport which contains a variety of potential land use options including the provision of a new access road linking the airport with Gogar roundabout (see Fig No. S105976/001 in Appendix B).
- 2.2.6 The proposed EOBP route option could potentially conflict with the safeguarded route and tram stop location of the West Edinburgh Tram (Policy Tra 8, Proposal T1) as shown in the Proposals Map of the Rural West Edinburgh Local Plan.

Development

- 2.2.7 The tram depot, route and underpass for the Edinburgh Tramline is currently under construction at Gogar. The line is due to be completed and operational by 2011.
- 2.2.8 The proposed EOBP route option would have no impact and would not be impacted on by this development.

Applications

- 2.2.9 There are a number of planning applications for commercial and industrial developments at Newbridge, primarily within the Newbridge North site (Kirkliston Road) (see Fig No S105976/010 in Appendix B). These are listed in Table 2.2 overleaf.

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Table 2.2: Planning Permissions: Newbridge and Ratho Station



Application	Address	Proposal	Area	Status
Business/Office				
08/01881/REM	2A Kirkliston Road Newbridge EH28 8SN	Proposed office and industrial development (class 4, 5 and 6) with associated storage yard, car parking and landscaping	Plot 10 a 54m x 16.5m Plot 10 b 31m x 15.5m	Application Approved
07/04961/REM	2A Kirkliston Road Newbridge EH28 8SN	Plot 2 - Proposed office development with associated car parking and landscaping		Application Approved
07/04960/REM	2A Kirkliston Road Newbridge EH28 8SN	Plot 6B - Proposed office development with associated car parking and landscaping		Application Approved
07/01625/FUL	Land Adjacent To 2 Harvest Drive Newbridge	Proposed phased office development (class 4 use) of 2no 3 storey buildings, associated landscaping + car-parking		Application Approved
06/02978/FUL	9 Edinburgh Road Newbridge Edinburgh	Demolition of existing buildings and erection of new car showrooms/workshop and car valeting building	1.364 Ha	Application Approved
08/04063/FUL	Land At 9 Edinburgh Road Newbridge	Variation of condition 1 of planning permission 06/02978/FUL and 08/01393/REM to allow for plot 10 to be included within the condition alongside plots 2 + 6B	1.364 Ha	Application Approved
01/00829/OUT	2A Kirkliston Road Newbridge Edinburgh EH28 8SN	Business park campus comprising two, three and four storey buildings with associated parking	Business Park 22.2 Ha / 66,088m ²	Application Approved
Hotel				
08/00529/REM	2A Kirkliston Road Newbridge EH28 8SN	Proposed hotel development encompassing ancillary restaurant, public house and leisure facilities with associated car parking and landscaping	1.67 Ha	Application Approved
08/00435/REM	2A Kirkliston Road Newbridge EH28 8SN	Reserved matters application for erection of hotel and restaurant/public house (public house licence) with associated parking and landscaping		Application Approved
Residential				
08/01968/FUL	Land Adjacent To Freelands Road Edinburgh	Residential development providing 100 private residential units, 18 affordable units, + 60 bedroom care home and new canal basin with associated changing block	11.05 Ha 118 housing units	Pending consideration
08/04171/OUT	Land Adjacent To 132 Glasgow Road Ratho Station, Edinburgh	Residential development, a care home, sheltered housing, affordable housing, a new community centre and associated landscaping and engineering works	10.8 Ha	Pending consideration

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- 2.2.10 The most significant planning application within the study area is for the development of Newbridge North Business Park (01/00829/OUT) for 66,088m² of industry/business space over 22 Ha.
- 2.2.11 Outline planning application (08/04171/OUT) has been refused for the development of 200 housing units over 10.8 Ha of land for the area at Ratho Station as denoted by Proposal HSP 5 of the Rural West Edinburgh Local Plan (see Table 3.2 above) as it contrary to the policies and proposals safeguarding the potential Royal Highland Showground site (see Figure No S105976/010 and S105976/011 in Appendix B).
- 2.2.12 The proposed EOBP route option would not impact on and would not be impacted by the implementation of these applications.

2.3 Section 2: Gogar to A720 at A70/Water of Leith

Route Description

- 2.3.1 Section 2 runs between Gogar roundabout and the A720 Edinburgh City Bypass crossing of the Water of Leith on a network of existing local roads (South Gyle Broadway, Bankhead Avenue, Wester Hailes Road (B701) and the A720 Edinburgh City Bypass). For further details refer to Figure No. S105976/002.
- 2.3.2 The Edinburgh City Local Plan identifies the EOBP route option within the locality of the following policies:
- Policy Emp 1 Office Development - Strategic Business Centre;
 - Policy Emp 3 Business and Industry Areas;
 - Policy Tra 6 Tram;
 - Policy Ret 3 Commercial Centres;
 - Policy Ret 10 Alternative Use of Shop Units – Elsewhere in Defined Centres Commercial Centre; and
 - Policy Ret 4 Local Centres.
- 2.3.3 The specific proposals stemming from the above policies that relate to the proposed route options are shown in Table 2.3 overleaf.

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Table 2.3: Applicable Planning Policies and Proposals: Finalised Edinburgh City Plan March 2007

Applicable Policies/ Proposals	Local Plan Proposal Reference	Location/ Proposed Use	Area/ Units/ Floorspace	Comments
Policy Emp 1	BUS 2	Edinburgh Park Business	16 Ha (total) 200,000m ²	The southern phase of Edinburgh Park was granted outline planning permission in 2001. The high quality of building design and landscaping will be continued from the first phase, and development densities will generally be higher, making use of underground car parking. Includes permission for a hotel and ancillary service uses.
Policy Hou 1	HSG 17	South Gyle Wynd Housing	3.3 Ha 180 units	Site to become available for housing on completion of the redevelopment proposals for the Forresters and St Augustines High Schools on a smaller shared campus. The site will be used as playing fields on a temporary basis during construction of the new school facilities. A new access road off the existing roundabout on South Gyle Broadway will be required.
Ret 4, Ret 10	S1	Wester Hailes Centre Extend existing Centre to provide new superstore		Opportunity to improve quantity and quality of food shopping at Wester Hailes. Additional floorspace must be integrated with existing centre. A Retail Assessment will be required to establish the maximum size of store permitted. Proposal should incorporate improvements to the public realm and pedestrian access to the centre.
	S2	Harvesters Way, Wester Hailes Mixed use incorporating commercial leisure	4.3 Ha	Planning permission has been granted for commercial leisure development on this site. The development of part of the site for housing as an integral component of a mixed use scheme encompassing town centre uses other than retail is also acceptable in principle.
	S3	Hermiston Gait Centre Class 1 non-food retail warehouse	3.4 Ha	Proposed extension to existing retail park to accommodate 15,000m ² (gross) floorspace subject to developer contributions to public transport and traffic management improvements

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- 2.3.4 It is unlikely that any of the planning policies and proposals shown in table 3.4 above would preclude the route options.

Development

- 2.3.5 There are no known developments that would impact on or be impacted by this route option.

Applications

- 2.3.6 Table 2.4 below show that there are a number of planning applications relating to the Gyle, Edinburgh Park, Sighthill and Wester Hailes.

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Table 2.4: Planning Applications: West Edinburgh (The Gyle, Hermiston, Edinburgh Park, Sighthill, Wester Hailes)



Application Reference	Address	Proposal	Area	Status
Business/Office				
08/02362/FUL	Site A, Building A5 7 Lochside View Edinburgh EH12 9DH	Office development - renewal of planning permission		Application Approved
08/02375/FUL	Land Adjacent To Lochside Way Edinburgh	Application under section 42 of the Town and Country Planning (Scotland) Act 1997, to vary the terms of condition 1 of planning permission 01/04536/FUL to extend the time period within which the development shall be commenced	0.88 Ha	Application Approved
08/02373/FUL	Land Adjacent To Lochside Way Edinburgh	Application under section 42 of the Town and Country Planning (Scotland) Act 1997, to vary the terms of condition 1 of planning permission 01/04549/FUL to extend the time period within which the development shall be commenced.	0.88 Ha	Application Approved
08/01796/REM	Land Adjacent To Lochside Way Edinburgh	Erection of business village pavilions	1.91 Ha (Phase 1 – 1.12 ha. Phase 2 – 0.79 Ha)	Application Approved
07/04052/REM	7 South Gyle Broadway Edinburgh EH12 9EH	The proposed construction of two class 4 office buildings, annotated building 2 and building 7 and comprising part of an overall masterplan for the site		Application Approved
01/04549/FUL	Land Adjacent To Lochside Way Edinburgh	Land to west of Lochside Crescent (Lochside Crescent to be extended as part of the application), new offices, below ground parking and associated landscape	N/A	Application Approved
01/04536/FUL	Land Adjacent To Lochside Way Edinburgh	Land to west of Lochside Crescent (Lochside Crescent to be extended as part of the application) - New offices, below ground parking and associated landscape	N/A	Application Approved
00/00809/REM	Edinburgh Park Edinburgh EH12 9JY	Enabling works comprising access road, lochan, attenuation pond/water parterre with associated landscaping for Edinburgh Park southern phase	N/A	Application Approved
08/00665/FUL	9 - 11 Sighthill Court Edinburgh EH11 4BN	Redevelopment of existing 17,252 sqm university campus to form new 24,838 sqm university campus including re-use of existing buildings, alteration to car parking layout, landscaping and other associated works	3.27 Ha	Application Approved
05/02899/OUT				

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07/04232/FUL	Land Adjacent To Lochside Way Edinburgh	Edinburgh Park Southern Phase Masterplan - Vary planning permission 99/02295/OUT so as not to comply with conditions 2 and 9 of the consent	16 Ha (200,000m ²)	Application approved
08/04316/FUL	2 South Gyle Crescent Edinburgh EH12 9FQ	This planning application is for the construction of a new class 4 office building on the site, to be known as HQ2 and to form phase 2 of the development of the proposed EHQ business park masterplan (submitted as supporting information)	4.43 Ha 10,416 m ² HQ 1/ 8,565 m ² HQ2	Pending consideration
Retail				
04/03076/FUL	1 Hermiston Gait Edinburgh Edinburgh EH11 4FE	Erection of class 1 non-food retail warehouse with external sales areas, ancillary offices, customer car park and associated access improvements and landscaping		Application approved
06/00977/OUT	Wester Hailes Centre (Westside Plaza) Edinburgh EH14 2SW	Outline planning application for extension of Westside Plaza Shopping Centre to create Class 1 retail floor space	6504 m ² gross floorspace	Application Approved
Educational				
08/00714/FUL	206, 208 Broomhouse Road Edinburgh EH12 9AD	To amend the existing Planning Permission (06/02338/FUL) for the erection of 2 no, new 900 pupil high schools with associated sports/community facility, erect new Forrester Rugby Club, demolish existing schools, and construct sport pitches		Pending consideration
06/02338/FUL	206, 208 Broomhouse Road Edinburgh EH12 9AD	Erect 2 new 900 pupil high schools with associated sports / community facility, erect new Forrester Rugby Club, demolish existing schools and construct sports pitches.		Application Approved
Hotel				
05/02969/REM	1 Cultins Road Edinburgh EH11 4YY	Erect 170 bedroom hotel with associated landscaping and parking	0.91 HA	Application approved
Other				
05/02700/CEC	14 - 18 Bankhead Avenue Edinburgh EH11 4HD	Detailed planning application for a roads depot, associated offices, workshops, garaging, storage, landscaping, car parking and vehicular access	2.70 Ha	Deemed Permission
03/00341/FUL	Land To The West And South Of 75 Harvesters Way Edinburgh EH14 3JH	A leisure development comprising hotel, family leisure complex, indoor/outdoor 5-a-side football with associated car parking etc	3 Ha	Application Approved

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2.3.7 The most significant application in the study area is for the development of Edinburgh Park southern phase (07/04232/FUL) for the development of 200,000m² of office space over 16 hectares (see Figure No. S105976/021).

2.3.8 The proposed EOBP route option is unlikely to impact on or be impacted upon by the above applications.

2.4 Section 3: A720 at A70 to Lothianburn

Route Description

2.4.1 Section 3 runs between the Water of Leith at the A720 Edinburgh City Bypass and the proposed Lothianburn Park and Ride. The proposed BRT alignment would utilise the existing hard shoulder of the A720 Edinburgh City Bypass and therefore minimal land take would be required, except for the construction of emergency lay-bys within the solum of the A720 Edinburgh City Bypass.

2.4.2 The provision of a bus stop/Interchange at Dreghorn would result in a small area of land take (see Figure No. S105976/0031 in Appendix B). The only other land take required for this section would be at the site of the proposed Lothianburn Park and Ride which is currently used for agricultural purposes. For further details refer to Figure No. S105976/003 in Appendix B.

Policy

2.4.3 The Edinburgh City Local Plan identifies the EOBP route option within the vicinity of the following policies:

- Policy ENV 9 Green Belt;
- Policy ENV 10 Landscape Quality; and
- Policy OS 4 Pentland Hills Regional Park.

2.4.4 The EOBP route option would have no impact on the above policies.

Development

2.4.5 There are no known developments that would impact on or be impacted by this route option.

Applications

2.4.6 There are no known planning applications that would impact on or be impacted by this route option.

2.5 Section 4: Lothianburn to Straiton

Route Description

2.5.1 Section 4 runs between the proposed Lothianburn Park and Ride adjacent to the A702 and the existing Straiton Park and Ride adjacent to the A701 on a new segregated alignment that runs parallel to the south of the A720 Edinburgh City Bypass. For further details refer to Fig No. S105976/004 in Appendix B.

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- 2.5.2 It is acknowledged that the distances quoted in this study for sections 4 (Lothianburn – Straiton; Segregated and longer option) and 4h (Lothianburn – Straiton; Hard shoulder and shorter option) represent the construction distances involved. The actual bus operational distances involved are different with the segregated option 4 being considerably shorter than the hard shoulder option 4h. This may in particular affect the relative difference in the business cases for the two options and should be subject to more detailed estimates in further studies.

Policy

- 2.5.3 The Midlothian Local Plan identifies the EOBP route option as impacting on the following policies:

- Policy RP 1 Protection of the Countryside;
- Policy RP 2 Protection of Greenbelt; and
- Policy RP 4 Prime Agricultural Land.

- 2.5.4 The EOBP route option would impact on and conflict with the above policies relating to land designated as greenbelt and prime agricultural land.

Development

- 2.5.5 There are no known developments that would impact on or be impacted by this route option.

Applications

- 2.5.6 There are no known planning applications that would impact on or be impacted by this route option.

2.6 Section 5: Straiton to A720 Underpass

Route Description

- 2.6.1 Section 5 runs between the existing Straiton Park and Ride and the A720 Edinburgh City Bypass underpass on a network of existing roads (B702 Loanhead Road) through Straiton Retail Park and onto the Loanhead - Danderhall disused railway line. For further details refer to Figure No. S105976/005 in Appendix B.

Policy

- 2.6.2 The Midlothian Local Plan identifies the EOBP route option as impacting on the following policies:

- Policy RP 1 Protection of the Countryside;
- Policy RP 2 Protection of Greenbelt;
- Policy RP 4 Prime Agricultural Land;
- Policy RP12 Regionally and Locally Important Nature Conservation Sites;
- Proposal HOU 1 Strategic Housing Land Allocations;
- Proposal ECON 1 Strategic Economic Land Allocations; and
- TRAN 4 Safeguarding for Transportation Schemes.

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- 2.6.3 The specific proposals stemming from the above policies that relate to the proposed route options are shown in Table 2.5 overleaf (see Figure No. S105976/050 in Appendix B).

Table 2.5: Applicable Planning Policies and Proposals: Midlothian Local Plan at December 2008

Applicable Policies/	Local Plan Proposal Reference	Location/ Proposed Use	Area/ Units/ Floorspace
Proposal HOU 1	H11	Ashgrove, Loanhead Housing	200 units
Proposal ECON 1	E6	Ashgrove, Loanhead Business/ Industry	10 Ha
Policy TRAN 4	Rail	Millerhill to Loanhead	
	Strategic Roads	A701 Straiton to Milton Bridge Improvement	
	Local Roads Serving New Developments	Edgefield Relief Road	

- 2.6.4 The EOBP route option would run adjacent to H11 and E6 land allocations as shown on Midlothian Local Plan Proposals Map and Appendix B. Proposal H11 relates to the development of approximately 200 housing units at Ashgrove, Loanhead. Adjacent to this site at the south and east is E6 Ashgrove.
- 2.6.5 It is acknowledged that that it is not feasible for BRT vehicles to operate on the hard shoulder through a junction and will always have to use the 'down' and 'up' slip roads. This will in particular be an issue with the Lasswade junction that is only a half junction with slip-roads only to/from the west. However, the 'best' alignment of the BRT proposals in this area will have to be considered further in light of City of Edinburgh forthcoming proposals for possible new Park and Ride sites in the Gilmerton Road and Lasswade Road area so the proposed alignments in this area will have to be considered as part of more detailed further studies.
- 2.6.6 Loanhead which allocates 10 hectares of space for business and industrial use. The proposed route is unlikely to preclude the development of these proposal sites, and could even compliment these developments and the transport routes safeguarded by Policy TRAN 4.

Development

- 2.6.7 There are no known developments that would impact on or be impacted by this route option.

Applications

- 2.6.8 SUStans have applied for change of use from disused railway to cycleway/footway (07/00798/FUL and 07/00799/FUL). This has been granted consent by Midlothian Council. There are no other known planning applications that would impact on or be impacted by this route option.

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2.7 Section 6: A720 Underpass to Sheriffhall & ERI

Route Description

- 2.7.1 Section 6 runs between the A720 Edinburgh City Bypass underpass at Straiton to the Edinburgh Royal Infirmary potentially linking with the Sheriffhall Park and Ride. The route would follow the alignment of the Loanhead – Danderhall disused railway line, Gilmerton Station Road, Old Dalkeith Road (A7) and Ferniehill Drive, with a potential option to create a new BRT route through the western edge of the Drum Estate. For further details refer to Figure No. S105976/006 in Appendix B.

Policy

- 2.7.2 The Edinburgh City Local Plan identifies the EOBP route option as impacting on the following policies:
- Policy Emp 2 Centre for Biomedical Research;
 - Policy Tra 7 Park and Ride;
 - Policy Tra 12 Cycle and Footpath Network;
 - Policy Env 6 Historic Gardens and Designed Landscapes (HGDL);
 - Policy Env 9 Greenbelt; and
 - Policy Env 14 Sites of Local Importance.
- 2.7.3 The proposed EOBP route option would give effect to and compliment Policy Tra 12 and is unlikely to preclude the development Emp 2 Centre for Biomedical Research.
- 2.7.4 Policy Tra 7 and the Edinburgh City Local Plan Proposals Map indicate a proposed Park and Ride site at the intersection of the Old Dalkeith Road and Ferniehill Drive, at the northern edge of the Drum Estate.
- 2.7.5 The EOBP route option would impact on and conflict with the above policies relating to land designated as greenbelt (Policy Env 9) and depending on the final route option, could directly impact on a HGDL (Policy Env 6), and Local Nature Conservation site (Policy Env 14) at the Drum Estate and Edmonstone.

Development

- 2.7.6 Some preliminary site preparation and landscaping work has taken place at the site of the Edinburgh Centre for Biomedical Research. There are no other known developments that would impact on or be impacted by this route option.

Applications

- 2.7.7 An outline planning application has been submitted for Edmonstone Care Village Nursing Homes (08/00934/OUT) within Edmonstone Estate for 138 units (6,100 m²). The proposed EOBP route option would not affect this development due to the presence of boundary wall and mature trees on the perimeter of the site. SUStrans (07/04735/FUL) have had a planning application granted by City of Edinburgh Council for change of use from disused railway to cycleway for land parallel to Gilmerton Station Road.
- 2.7.8 The planning consent granted to SUStrans for a cycle/footpath on the disused railway could present a potential obstruction in terms of the routing of the option. Alternatively the

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option could share part of the alignment with cycle/footpath and take an alignment immediately adjacent to the Loanhead – Danderhall disused railway utilising Gilmerton Station Road and agricultural land.

2.8 Section 7: ERI to QMU

Route Description

2.8.1 Section 7 runs between the Edinburgh Royal Infirmary and Queen Margaret University on existing roads (A6095 Newcraighall Road) and on the proposed public transport alignment and disused railway line at Newcraighall on the south west of Musselburgh. For further details refer to Figure No. S105976/007 in Appendix B.

Policy

2.8.2 The Edinburgh City Local Plan identifies the EOBP route option as impacting on the following policies:

- OSR 4 Open Space Proposal - Site East Wedge Parkland;
- Policy Tra 7 Park and Ride;
- Policy Tra 11 New Roads;
- Policy Tra 12 Cycle and Footpath Network;
- Policy Hou 1 Housing Development;
- SCH 6 Indicative School Proposal;
- Policy Env 14 Site of Local Importance;
- Policy Emp 2 Centre for Biomedical Research;
- Policy Emp 3 Business and Industry Area;
- Policy Ret 3 Commercial Centre; and
- Policy Ret 10 Alternative Use of Shop Units - Elsewhere in Defined Centres.

2.8.3 The specific proposals stemming from the above policies that relate to the proposed route options are shown in Table 2.6 overleaf.

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Table 2.6: Applicable Planning Applications: Finalised Edinburgh City Local Plan March 2007

Applicable Policies/ Proposals	Local Plan Proposal Reference	Location/ Proposed Use	Area/ Units/ Floorspace	Comments
Policy Emp 2	BUS 1a BUS 1b	Little France Centre for Biomedical Research	1a -25 Ha 1b - 15 Ha (Total 40 Ha)	The development is a joint project of the University of Edinburgh and Scottish Enterprise Edinburgh & Lothians (SEEL). The approved master plan for the first phase (BUS 1a) provides for 82,500m ² of research accommodation, and 51,000m ² for the teaching purposes of the University of Edinburgh. Development in the second phase to the south-east (BUS 1b) will be guided by an amended master plan, which will restrict building heights to two-storeys and provide a more extensive parkland setting, resulting in a lower density of development. Existing trees within the site are part of a Local Nature Conservation Site and should be retained.
Policy HOU 1	HSG 5 Housing Proposal	New Greendykes Housing	810 units	
	HSG 6 Housing Proposal	Greendykes Housing	990 units	
	HSG 13 Housing Proposal	Newcraighall North Housing	9 Ha 200 units	A joint master plan for sites HSG 13 and HSG 14 should be prepared in consultation with local residents. Proposals should make provision for the following: - landscape and footpath/cycle network improvements - open space proposals - potential improvement/ restoration of culverted watercourse - contribution to the provision/enhancement of community facilities. Vehicular access to the site should be taken from Whitehill Street / Newcraighall Road. There should be no vehicular access from Gilberstoun. A local transport assessment should be undertaken.
	HSG 14 Housing Proposal	Newcraighall East	8 Ha 220 units	As for HSG 13 above, a joint master plan should be prepared in consultation with local residents. Proposals should make provision for the following:

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Applicable Policies/ Proposals	Local Plan Proposal Reference	Location/ Proposed Use	Area/ Units/ Floorspace	Comments
		Housing		<ul style="list-style-type: none"> - landscape and footpath/cycle network improvements - open space proposals including retention of Green Belt land to the east (see Proposal OSR 5) - potential improvement/ restoration of culverted watercourse - contribution to the provision/enhancement of community facilities - A bus route to connect through to Queen Margaret University College campus. <p>Vehicular access to the site should be taken from Whitehill Street / Newcraighall Road. A local transport assessment should be undertaken.</p>
Indicative School Proposal	SCH 6	New Greendykes		Indicative proposal for new two-stream primary school associated with New Greendykes housing proposal HSG 5. Exact location of the site for the new school has not yet been determined.
Open Space and Recreation Proposals	OSR 4	South East Wedge Parkland Parkland, open land and structure planting		Land around Craigmillar/Greendykes retained in the Green Belt will be landscaped to provide multi-functional parkland, woodland and country paths linking with parallel developments in Midlothian.
	OSR 5	East of Newcraighall Parkland Parkland and structure planting		The open land to the east of the Proposal HSG 13 development site will be retained as publicly accessible open land and park land within the Green Belt.
BUS 1	BUS 1	Craighhall Business Park	39 Ha	<p>The Development Framework will set out the detailed planning matters to be addressed. However the following requirements must be met:</p> <ul style="list-style-type: none"> - Access to the Business Park area lying to the south of the Millerhill spur rail line will be taken from a revised B6415/Service Station access junction - Access to the Business Park area lying to the north of the rail line will be taken from a new

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Applicable Policies/ Proposals	Local Plan Proposal Reference	Location/ Proposed Use	Area/ Units/ Floorspace	Comments
				<p>grade-separated junction as a development of the half-diamond priority junction to be provided to access the first phase of the Queen Margaret University College campus.</p> <ul style="list-style-type: none">- There will be no vehicular access, other than buses, from the Whitehill Farm Road area- The proposed development must integrate with the proposed Queen Margaret University College campus (Proposal ED16) and the land reserved for a Parkway Station and associated parking (Proposal T5)- The development must reserve land sufficient to enable future access to the QMUC campus by the provision of a bus link from Newcraighall and the route of a possible Tram Line 3- Both business sites must respect the prominence of their location and secure a development that, through design, materials, layout and landscaping, makes a positive contribution to the wider area. The basic concept will be of buildings set within a parkland setting.

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2.8.4 A Masterplan has been prepared for the Shawfair area on the South East of Edinburgh. Part of this Masterplan covers the future development of Edinburgh Biomedical Research Park and the Greendykes area (for further details refer to paragraph 2.9.5 of Section 8 below).

2.8.5 A Masterplan has also been prepared for the regeneration of the Craigmillar area by PARC Craigmillar. This Masterplan has recently been submitted as planning application 08/02553/OUT (see Table 2.7). A number of planning applications in Table 3.8 have been submitted in relation to the PARC Craigmillar regeneration area, such the restoration of the Niddrie Burn (08/02474/FUL).

Development

2.8.6 There are no known current developments identified that would impact on or be impacted by this route option.

Applications

2.8.7 Table 2.7 overleaf contains information on planning applications have also been submitted/approved within this section of the route option. (Figure No. S105976/070 and S105976/071 in Appendix B).

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Table 2.7: Planning Applications: Edmonstone, Craigmillar, Greendykes, Fort Kinnaird



Application Reference	Address	Proposal	Area	Status
Business				
08/00344/REM	Land Adjacent To Little France Drive Edinburgh	Development of centre for regenerative medicine, comprising facilities for biomedical research and support services with associated car parking and access	1a - 25 Ha 1b - 15 Ha	Application Approved
08/00409/OUT	Land Adjacent To Whitehill Road Edinburgh	Mixed use development comprising hotel (including restaurant), car showrooms, car parking, accesses, service road and landscaping (as amended)	3.515 Ha	Application Approved
06/05078/FUL	8 Whitehill Road Newcraighall Edinburgh EH15 3HR	Proposed extension to existing car showrooms, new workshop building and ancillary chip and valeting bays (as amended).		Application Approved
Residential				
07/01644/OUT	Land At Greendykes Road Edinburgh	Outline residential	22.5 Ha No more than 1,000 units	Pending Consideration
07/01428/FUL	Land Adjacent To Niddrie Mains Road Edinburgh	New build residential development consisting of 72 flats + 21 houses for sale; 12 flats + 5 houses for rent, total 110 homes; in addition phase 2 will incorporate the relocated Brenda House facility	1.42 Ha	Application Approved
03/02034/FUL	Land At The Wisp Edinburgh EH16 4SG	Proposed residential development (detached, semi detached and terrace houses and flats) as amended	6.4 Ha 284 units	Pending Consideration – Minded to grant
08/03669/FUL	Land At The Thistle Foundation Niddrie Mains Road Edinburgh	Proposed erection of 34 dwelling units, comprising a mix of houses and flats ranging between two and four storeys	1.12 Ha	Pending Consideration
08/03962/FUL	Niddrie Mill Primary School 267 Niddrie Mains Road Edinburgh EH15 3HG	Erection of 55 residential dwellings including the refurbishment of part of the existing school and associated parking and amenity space	0.88 Ha	Pending Consideration
05/01358/OUT	Land At Greendykes North Greendykes Road Edinburgh EH16 4HQ	Residential development and public open space at approx 80 units per ha on 9.5 ha of land enclosed by Greendykes Avenue and Greendykes Road (outline application) and submitted housing design guide.	9.5 Ha	Minded to Grant
08/03553/FUL	Land At Greendykes North Site Greendykes Road Edinburgh	Proposed residential development, comprising 38 dwelling flats and 9 townhouses for sale and 8 dwelling flats and 2 townhouses for rent	0.7 Ha	Pending Consideration
Retail				

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08/00785/FUL	Kinnaird Park, Lawhouse Toll Edinburgh	Individual retail (Class 1) units as part of the overall reconfiguration and redevelopment, and a sub-station		Application Approved
07/02874/REM	Kinnaird Park / Lawhouse Toll Edinburgh	Reconfiguration and redevelopment of retail park and related schemes for public realm and landscaping		Application Approved
07/02874/VAR2	Kinnaird Park, Lawhouse Toll Edinburgh	Non-material variation 07/02874/REM - Reconfiguration and redevelopment of retail park and related schemes for public realm and landscaping, (Alterations to configuration of authorised retail units)		Vary Consent
08/00785/VARY	Kinnaird Park, Lawhouse Toll Edinburgh	Non-material variation 08/00785/FUL - Individual retail (Class 1) units as part of the overall reconfiguration and redevelopment (Alterations to configuration of authorised retail units)		Vary Consent
Mixed Use				
08/02553/OUT	Development Site At Niddrie Mains Road Edinburgh	Erection of mixed use development including, residential (houses + apartments), residential care homes (class 8), business (class 4), retail (class 1), food store (class 1) (including cafe), petrol filling station, classes 2 and 3, Community High School (including public library, cafe and sports/ leisure facility), Train Station, with associated landscaping, infrastructure and car parking	22.53 Ha	Pending Consideration
03/01259/MLC	Old Dalkeith Road Midlothian Dalkeith	Application for Outline Planning Permission for residential, industrial and commercial floorspace, community facilities (including new primary schools), and associated landscaping with provision for sport and recreation, and new transport facilities (including new roads, railway and park and ride facilities) on land bounded by A720, Old Dalkeith Road and The Wisp, Millerhill, Dalkeith		Raise no Objection Subject to Conditions
Other – Road Construction, Landscaping, etc				
04/03443/FUL	Edmondstone Campus Old Dalkeith Road Edinburgh EH16 4SL	Proposed earthworks (landforming and soil deposition), woodland planting and woodland shelterbelt (as amended)		Application Approved
04/02469/CEC	New Royal Infirmary To Greendykes Road Edinburgh	Construct a public transport link and associated roadway		Application Approved
08/02474/FUL	Land Adjacent To Greendykes Road Edinburgh	Restoration of Niddrie Burn, involving excavation of river corridor + associated engineering works		Pending Consideration
07/00898/FUL	Land To South Of And Part Of Hunters Hall Greendykes Road Edinburgh	Restoration of the Niddrie Burn, involving excavation of river corridor and associated engineering and landscaping works		Pending Consideration
06/03921/FUL	Greendykes Avenue, Greendykes Road + Greendykes Terrace Edinburgh EH16 4HQ	Redevelopment of brownfield land, roads and pavements to provide new roads, pavements, shared surface and landscape infrastructure		Application Approved
06/03921/FUL	Greendykes Avenue, Greendykes Road + Greendykes Terrace Edinburgh EH16 4HQ	Redevelopment of brownfield land, roads and pavements to provide new roads, pavements, shared surface and landscape infrastructure		Application Approved

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- 2.8.8 Perhaps the most important application is 03/01259/MLC for the outline development of the Shawfair New Settlement Area (as corresponding to the Masterplan (for further details refer to paragraph 2.9.5 of Section 8 below) in Edinburgh's South East Wedge.
- 2.8.9 The EOBP route option would intersect with a number of potential developments which have been granted or are awaiting planning consent. The route would be able to utilise the proposed public transport corridor between the Edinburgh Royal Infirmary (ERI) and Greendykes. The route would also intersect with proposed housing developments (07/01644/OUT and 03/02034/FUL – both pending determination) relating to HSG 5 and HSG 6. However, these developments have considered the safeguarded public transport route (Policy Tra 7, planning application Ref 04/02469/CEC) and it should therefore be possible to route the option through these proposed should they materialise towards the construction stage.
- 2.8.10 Another planning application that may affect the alignment of the EOBP route option is 08/00785/VARY for the redevelopment of Edinburgh Fort and Fort Kinnaird Retail Parks. The effect of this application would involve the closure of the existing access from Newcraighall Road to Edinburgh Fort with a new traffic route created on Whitehill Road.

2.9 Section 8: Sheriffhall to Millerhill

Route Description

- 2.9.1 Section 8 runs between the existing Sherrifhall/Todhills Park and Ride and the proposed Millerhill Park and Ride on a disused railway line, local road network (B6415 Old Craighall Road) and segregated off line alignment. For further details refer to drawing number S105976 008.

Policy

- 2.9.2 The Midlothian Local Plan identifies the EOBP route option within the vicinity of the following policies:
- Policy RP 1 Protection of the Countryside;
 - Policy RP 2 Protection of Greenbelt;
 - Policy RP 4 Prime Agricultural Land;
 - Policy RP 20 Development Within the Built-Up Area;
 - Policy RP 25 Nationally Important Gardens and Designed Landscapes;
 - Proposal ECON 1 Strategic Economic Land Allocations;
 - Policy COMD 1 Committed Development;
 - Proposal TRAN 2 Waverley Rail Line; and
 - Policy TRAN 4 Safeguarding For Transportation Scheme.
- 2.9.3 The specific proposals stemming from the above policies that relate to the proposed route options are shown in Table 2.8 overleaf.

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Table 2.8: Applicable Planning Policies and Proposals: Midlothian Local Plan December 2008

Applicable Policies/ Proposals	Local Proposal Reference	Plan	Location/ Proposed Use	Area/ Units/ Floorspace
Policy COMD 1	e25		Millerhill Marshalling Yards/ Monkton Colliery	
			Business/General Industry/ Storage and Distribution 4	
	e27		Todhills	
Proposal ECON 1	h43		Business/ General Industry	
			Shawfair Housing	3500 units
	E1		Todhills East	8.5 Ha
Policy TRAN 4		Rail	Business/ Industry	
			Waverley – Shawfair to Tweedbank	
			Millerhill to Loanhead	
			A720 City Bypass to B6415 Millerhill Road Link	
	Strategic Roads		Shawfair road network	
	Local Roads Serving New Developments			
	Other Public Transport		Orbital Rapid Transit on A720 City Bypass	

2.9.4 The Midlothian Local Plan and Proposals Map indicates the large scale development of the Shawfair area. The Local Plan allocation has been developed through the preparation of a Masterplan for the site.

2.9.5 Midlothian and City of Edinburgh Councils in conjunction with Miller Ventures, Mactaggart and Mickel, and Buccleuch Property (Shawfair) Ltd have prepared a Masterplan for the Shawfair area under the joint venture umbrella Shawfair Developments Limited (SDL). The Masterplan covers an area of 1,028 hectares, and includes the development of new mixed use civic core, centred on a new rail station, with the development of a new supermarket, library, health centre, and local shops including leisure, pub and restaurants. The Masterplan provides for the development of two Neighbourhood Hubs: Hilltown focused around a new primary school and Millerhill. Two major office locations with total gross area of 203,525 sq m (2.2m sq ft) of new class 4 office accommodation would be created - Shawfair Park Edinburgh, and Cairnie Business Village.

2.9.6 The Masterplan also provides for a new Industrial Estate (Whitehills) 5,000 m² of general industrial space, residential expansion consisting of 4,800 new homes including affordable housing, and the creation of Bio-medical Research and Business Park adjacent to Edinburgh Royal Infirmary. In terms of public transport the following would be provided:

- New rail line and station;
- New park and ride adjacent to Shawfair Park; and
- New bus priority corridors.

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- 2.9.7 The EOBP route option would not sterilise any of the above elements of the Masterplan and could potentially utilise and give effect to the provision of the bus priority corridor.

Development

- 2.9.8 The development of Phase 1 of new business/office units is currently taking place at Shawfair Business Park adjacent to the Sheriffhall Park and Ride site. This phase will provide 2,101 m² of new office space.

Applications

- 2.9.9 Midlothian Council are minded to grant permission for residential development south of the B6415 Old Craighall Road, Millerhill (Planning ref awaiting MLC). There are no other known planning applications that would impact on or be impacted by this route option.

2.10 Section 9: Sheriffhall to Edinburgh Royal Infirmary

Route Description

- 2.10.1 Section 9 starts at the existing Sherriffhall Park and Ride and carries on for a short distance towards the Millerhill P&R before it turns left and travel northwards along a dedicated route for a future public transport link, safeguarded as part of the major development plans in the area. The public transport corridor runs towards the Edmonstone area at which point the EOBP route turns left and heads towards the ERI where it terminates. This is a segregated off line alignment. For further details refer to Figure no. S105976/009 in Appendix B.

Policy

- 2.10.2 This section is an extension of Sections 7 and 8 and hence the policy issues are the same.

Development

- 2.10.3 This section is an extension of Sections 7 and 8 and hence the development issues are the same.

Applications

- 2.10.4 This section is an extension of Sections 7 and 8 and hence the planning applications are the same.

2.11 Summary of Impacts

- 2.11.1 Overall there are a number of land use proposals which will influence the final alignment of the EOBP route option to be brought forward for safeguarding. There are also a number of planning applications which have been granted consent or that are pending consideration which may have an impact. In particular the planning applications for the Edinburgh Royal Infirmary to the Wisp link road. However, these planning applications have considered the safeguarded public transport link.
- 2.11.2 There are no current developments which would sterilise the route options, although some minor changes may be required to the route alignment as a result of the implementation of land use proposals and planning applications.

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- 2.11.3 A number of the committed developments and safeguarded transport routes from the Edinburgh and Midlothian Local Plans present opportunities/alternative alignments for the proposed route options, including:
- Provision of Edinburgh Airport Link Road (Policy Tra 8);
 - Edinburgh Royal Infirmary – Wisp Link Road (Policy Tra 11, Policy Tra 12, 04/02469/CEC);
 - Newcraighall – Queen Margaret University Link Road (Policy Tra 12);
 - Millerhill – Loanhead Public Transport Corridor (Policy Tra 12, TRAN 4);
 - Shawfair Local Road Network (TRAN 4);
 - A720 City Bypass to B6415 Millerhill Road Link(TRAN 4); and
 - Edgefield Relief Road (TRAN 4).
- 2.11.4 The proposed route options could also integrate and interchange with other transport modes, including rail, tram and park and ride facilities.
- 2.11.5 The important land-uses are the new housing, commercial/employment developments and the schools & colleges. These will generate significant potential demand for any BRT system. Other land-uses include playing fields, parks and open spaces and hence are unlikely to generate/attract significant volumes of demand.
- 2.11.6 Various land use proposals and development data was collated from relevant extracts of the Structure / Local Plans for the Study Area. The Development Plans referred to were:
- The Edinburgh and Lothian Structure Plan 2015 (June 2004)²;
 - Finalised Edinburgh City Local Plan (March 2008)³;
 - Rural West Edinburgh Local Plan (May 2006) inc. alterations October 2008⁴;
 - Midlothian Local Plan (December 2008)⁵; and
 - East Lothian Local Plan (December 2008)⁶.
- 2.11.7 In addition, reference was made to various Masterplans that have been prepared for the following areas:
- Edinburgh International Airport⁷;
 - Edinburgh Park Southern Phase⁸;
 - PARC Craigmillar Regeneration⁹;
 - Fort Kinnaird Retail Park; and
 - Shawfair New Settlement¹⁰.

² <http://www.elsp.gov.uk/CurrentStructurePlan.htm>

³ <http://map.avinet.no/website/edinburgh/plans/ecdp/contents.htm>

⁴ <http://map.avinet.no/website/edinburgh/rwelp/plans/rwelp/contents.htm>

⁵ http://www.midlothian.gov.uk/images/cms/PDFs/local_plans/Finalised_MidlothianLP_06.pdf

⁶ http://www.eastlothian.gov.uk/downloads/adopted_ELLP2008_text.doc

⁷ http://www.edinburghairport.com/assets/B2CPortal/Static%20Files/Edimasterplanv2_single.pdf

⁸ <http://www.edinburghpark.co.uk/corporate/future.php>

⁹ <http://www.parccraigmillar.co.uk/>

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- 2.11.8 Reference was also made to the West Edinburgh Development Framework 2008 which guides and influences the content of the Rural West Edinburgh Local Plan and future development plans for the area. This document has the same status as a Scottish Planning Policy and will be a material consideration in development management decisions. The Framework sets out a long-term strategic vision for West Edinburgh as an area considered to be nationally important in terms of economic development, global connectivity, transport and the environment.
- 2.11.9 Review of these documents helped to highlight the scale of proposed transportation, industrial, retail, business, residential and other developments that will be expected to generate additional transport demand in the future, which could enhance the demand for a new BRT system and also identify potential stops and interchanges for the new public transport services. A land-use baseline was established in order to assess the current planning development context, which was used to measure the impact of future options as part of the route evaluation. This was supplemented with key stakeholder consultations at City of Edinburgh Council and Midlothian Council and East Lothian Council.
- 2.11.10 The results of this work identified 8 plots for committed new housing sites, 7 plots for new industrial/commercial employment sites and 1 plot for new schools & colleges. An overview is shown in Table 2.9 below and Figure 2.1 overleaf.
- 2.11.11 This section describes the route and identifies any committed developments, development proposals, and planning applications that the EOBP route option will encounter or pass adjacent to. Site visits were undertaken to identify any developments under construction.

Table 2.9: Summary of Committed Developments

Business/ Industry		Housing		Education	
Ref	Location/ Area (Hectares (Ha))	Ref	Location/ No of Units	Ref	Location
BUS 1a	Phase 1 Biomedical Centre, Little France, 25 Ha	HSP4	Newbridge Nursery, Newbridge, 25 units	SCH 6	New Greendykes
BUS 1b	Phase 2 Biomedical Centre, Little France, 15 Ha	HSP 5	Hillwood Road, Ratho Station 50 units		
BUS 2	Edinburgh Park, 16 Ha	HSG 17	South Gyle Wynd, 180 units		
ECON 7	Newbridge North Business Park, 22.2 Ha	H 11	Ashgrove, Loanhead, 200 units		
ECON 9	Gogarburn, 36.3 Ha	HSG 5	New Greendykes, 810 units		
E6	Ashgrove, Loanhead, 10 Ha	HSG 6	Greendykes, 990 units		
BUS 1	Craighall Business Park, 39 Ha	HSG 13	Newcraighall North, 200 units		
		HSG 14	Newcraighall East, 220 units		
Total	163.5 Ha		2675 units		

- 2.11.12 In addition to this a search of planning applications in the Study Area was undertaken using the City of Edinburgh Council interactive map based planning application portal¹¹.

¹⁰ http://www.midlothian.gov.uk/images/SEW_mplan/index.html

¹¹ http://citydev-portal.edinburgh.gov.uk/publicaccess/tdc/DcApplication/application_searchform.aspx

3 Environmental Constraints

3.1 Introduction

- 3.1.1 As well as looking at land use availability and new opportunities for the EOB to serve, it is also important to recognise the potential environmental constraints along the study corridor. This is necessary so as to avoid any environmentally sensitive designated areas when developing the route alignments.
- 3.1.2 This Chapter summarises the environmental review. For further details on environmental impacts refer to Environmental Assessment Section in the STAG 2 Report¹².

3.2 Summary of Impacts

Section 1: Newbridge to Gogar

- 3.2.1 The River Almond Site of Importance for Nature Conservation (SINC) is located close to the Newbridge Park and Ride at the start of the route option. In addition, the Park and Ride site is located within the south east corner of Newliston Historic Garden and Designed Landscape (HGDL) just outside the Newliston Area of Outstanding Landscape (AOLQ). The route would pass over this feature using an existing crossing. The EOB route option would pass close to a Scheduled Ancient Monument (SAM) at Newbridge and Gogar. There are AOLQs at Gogar, south of the A8, as well as a HGDL at Millburn Tower (see Figure No. S105976/012, S105976/013, S105976/020 in Appendix B).
- 3.2.2 Depending on the final design and alignment of the proposed route there are unlikely to be any impacts to the environmental receptors listed above, although there could be possible impacts to the setting of SAMs.

Section 2: Gogar to A720 at A70/Water of Leith

- 3.2.3 There is a SAM and Listed Buildings at Baberton Mains (see Figure No. S105976/023 in Appendix B). The proposed EOB route option would impact on an area of greenbelt (Baberton). There are four Conservation Areas within the vicinity of the EOB route option (Hermiston, Juniper Green, Colinton and Swanston) but they would experience no direct changes by the proposed route option.

Section 3h: A720 at A70/Water of Leith to Lothianburn

- 3.2.4 The Pentland Hills Area of Great Landscape Quality (AGLQ) is located to the south of the route option, although the EOB route option would not impact on this receptor. Morton Conservation Area is located within the vicinity of the EOB route option. This section of the EOB route option would not impact on any designated environmental receptors as the option would utilise the existing road infrastructure of the A720 Edinburgh City Bypass albeit with minor modifications.

¹² Edinburgh Orbital Bus Rapid Transit STAG 2 Study, Scott Wilson, April 2009

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Section 4: Lothianburn to Straiton

- 3.2.5 The proposed EOBP route option would impact on an area of greenbelt and prime agricultural land as well as minor watercourses. There are two Conservation Areas within the vicinity of the EOBP route option (Swanston and Morton) but they would experience no changes by the proposed route option.

Section 4h: Lothianburn to Straiton

- 3.2.6 Section 4h uses the existing hard shoulder and therefore while there might be similar environmental issues as in Section 4 above they should be to a much lesser extent.

Section 5: Straiton to A720 Underpass

- 3.2.7 The proposed EOBP route option would pass adjacent to a Local Nature Reserve site and watercourse - Straiton Pond and May Burn (see Figure No. S105976/050 in Appendix B).
- 3.2.8 Depending on the final design and alignment of the proposed route there are unlikely to be any impacts to the environmental receptors listed above, provided appropriate mitigation measures are put in place.

Section 5h: Straiton to A720 Underpass

- 3.2.9 Section 5h uses the existing hard shoulder and therefore while there might be similar environmental issues as in Section 5 above they should be to a much lesser extent.

Section 6: A720 Underpass to Sheriffhall &ERI

- 3.2.10 The Drum Estate is designated as a HGDL, and there are a number of Listed Buildings and areas of Ancient Woodland within this estate. The proposed route would also impact on an area of greenbelt. There is large area of Ancient Woodland within the Edmonstone Estate adjacent to Old Dalkeith Road. Gilmerton Conservation Area is located within the vicinity of the EOBP route option but would not experience any impacts as a result of the proposed route option (Figure No. S105976/061, S105976/062, and S105976/063 in Appendix B).
- 3.2.11 Depending on the final design and alignment of the proposed route there are unlikely to be any impacts to the environmental receptors listed above, provided appropriate mitigation measures are put in place.

Section 6h: A720 Underpass to Sheriffhall &ERI

- 3.2.12 Section 6h uses the existing hard shoulder and therefore while there might be similar environmental issues as in Section 6 above they should be to a much lesser extent.

Section 7: ERI to QMU

- 3.2.13 The proposed EOBP route option would impact on an area of greenbelt as well as watercourse and local nature conservation site (Niddrie Burn). There are also a number of

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Listed Buildings adjacent to existing roads – Niddrie Cottages and properties on Whitehill Street (see Figure No. S105976/071 and S105976/072 in Appendix B).

- 3.2.14 There is an area of archaeological sensitivity located at Newcraighall at the end of the route.

Section 8: Sheriffhall to Millerhill

- 3.2.15 The proposed EOBP route option could potentially impact on an area of greenbelt and prime agricultural land as well as minor watercourses. There are also historic and landscape designations in the area including Newton House HGD, River North Esk AGLV, and Newton pit alignment SAM close to Millerhill (Figure No. S105976/081). This area is classified as being archeologically sensitive.

Section 9: Sheriffhall to ERI

- 3.2.16 This section is an extension of Sections 7 and 8 and hence the environmental issues are the same.

3.3 Summary

- 3.3.1 There appear to be minimal environmental constraints or receptors which would impact on or be impacted by the proposed route options. In particular there are very few physical environmental receptors within the middle sections (3h, 4, 4h, 5 and 5h) that could affect the alignment of the Scheme. Sections 6 and 8 have the potential to cause significant effects on historic and landscape designations, although negative effects can be avoided or minimised through the use of mitigation measures or changes to the alignment of the route option. Appendix A contains a plan showing the environmental constraints.

4 Scheme Development

4.1 Overview of the Process

- 4.1.1 An important component of the study was the integration of the proposed EOBP system with the existing transport network (including other public transport facilities such as existing stations) and the surrounding land-uses. Scott Wilson undertook various site visits of the proposed route/alignments and prepared preliminary drawings showing possible alignments for any new EOBP system in the area.
- 4.1.2 Armed with this data and the issues identified from the land-use assessment in Chapter 2 and the environmental constraints identified in Chapter 3, a range of possible options were set for discussion with the client group, and account was also taken of timeframes for the implementation of proposals. Potential different alignments of each section were also considered and the options were discussed with the client group.
- 4.1.3 The options were tested using the Transport Model for Scotland (TMfS) version 5a, to identify potential demand at each stop and along various alignments. Those which attracted significant volumes of demand were kept and those which performed poorly were discounted. The modelling included current and future land-use developments so as to take into account future potential travel demand in the study area. The modelling results were discussed with SEStran throughout the modelling work. An iterative process was followed, whereby the results of one option were used to formulate or refine other options which took the best performing alignments/stops and collated them into an optimum scheme.
- 4.1.4 The outcome of the above option development process was a reasonable number of broadly defined alternative proposals that were subjected to cost estimation described later in this report.
- 4.1.5 As part of the optioneering process the potential to enhance or strengthen integration with existing public transport facilities was also considered. This was deemed important, as experience has shown that the new EOBP options will need to ensure that all journeys by EOBP are as straightforward as possible and integration between different modes will help to achieve this aim. This 'seamless' approach helps to improve patronage and journey experience.
- 4.1.6 A series of simple measures which, if combined in a coherent fashion, can lead to significant improvements in the journey and positively contribute to modal shift. In this regard, accessibility and connectivity will therefore be important since any route alignment should link with current and planned stops/interchanges and areas of large employment, housing, retail and other land-uses (both existing and proposed).
- 4.1.7 To maintain high average running times, where appropriate, the alignment of the new EOBP was segregated from other modes of transport (and protected from traffic congestion) integrated with other modes or a combination of the two. Proposed stops/interchanges were sited close to the potential users' to encourage usage and there was also consideration for Park-and-Ride / Choose interchanges.

4.2 Preferred Alignment/Scheme

- 4.2.1 The identified sections of the EOBP options are shown in Figure No. S105976/000 in Appendix B. The network is made up of individual sections identified in the analysis which can be connected together to make up a number of different total routes for the EOBP network. These sections are labelled from Sections 1 to 9 inclusive; with differing alignments for some sections to represent different variations in the areas they traverse or how they tie into the next section (e.g. Sections 5 and 5a represent the same link but follow two different alignments).
- 4.2.2 All 9 sections are technically feasible and hence, for the purposes of safeguarding land in the emerging SESPLAN, their alignments can all be safeguarded for future development until a detailed evaluation is carried out to identify a detailed design.
- 4.2.3 The following is a brief description of each section, highlighting the land use and environmental constraints identified in the previous two chapters:
- Section 1: With the exception of the safeguarded section of the Edinburgh tram from the Airport to Newbridge there are no identified land use proposals or planning applications which would preclude the route option. However there could be impacts to greenbelt land and landscape and cultural heritage receptors. This section is shown in more detail in Figure No. S105976/001 in Appendix B;
 - Section 2: There are no identified land use proposals or planning applications which would preclude the route option. With the exception of greenbelt land the EOBP route option would not directly impact on any designated environmental receptors although there could be impacts to the setting of a SAM and listed buildings. Further details of this section are shown in Figure No. S105976/002 in Appendix B;
 - Section 3: There are no identified land use proposals or planning applications which would preclude the route option. In addition the EOBP route option would not impact on any designated environmental receptors (see Figure No. S105976/003 in Appendix B);
 - Section 4: There are no identified land use proposals or planning applications which would preclude the route option. With the exception of greenbelt land the EOBP route option would not directly impact on any designated environmental receptors. This section is shown in more detail in Figure No. S105976/004 in Appendix B;
 - Section 4h: This is based on Section 4 but uses the hard shoulder. Figure No. S105976/004h in Appendix B shows the alignment.
 - Section 5: With the exception of the planning permission granted to SUStans for use of the disused railway from Loanhead to Danderhall as a cycle/footpath there are no other identified land use proposals or planning applications. There are no identified land use proposals or planning applications which would preclude the route option. In addition the EOBP route option would not impact on any designated environmental receptors. Further details of this section are outlined in Figure No. S105976/005 in Appendix B;

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- Section 5h: This is based on Section 5 but uses the hard shoulder. Figure No. S105976/005 in Appendix B shows the alignment.
- Section 6: With the exception of the planning permission granted to SUStrans for use of the disused railway from Loanhead to Danderhall as a cycle/footpath there are no other identified land use proposals or planning applications which would preclude the route option. There could be indirect impacts to greenbelt land and landscape and cultural heritage receptors (see Figure No. S105976/006 in Appendix B);
- Section 6h: This is based on Section 6 but uses the hard shoulder. Figure No. S105976/006 in Appendix B shows the alignment.
- Section 7: There are a number of identified land use proposals or planning applications which could influence the development of the EOBP route option particularly between the ERI and Fort Kinnaird at Greendykes. With the exception of greenbelt land the EOBP route option would not impact on any designated environmental receptors. This section is shown in more detail in Figure No. S105976/007 in Appendix B; and
- Section 8: There are a number of identified land use proposals for the development of Shawfair in the south east wedge of Edinburgh which could influence the development of the route option. Depending on the exact alignment of the route the option could potentially impact on greenbelt land and a number of landscape and cultural heritage receptors. An outline of this section is shown in Figure No. S105976/008 in Appendix B.
- Section 9: This section is an extension of Sections 7 and 8 and hence the land-use issues and environmental constraints are the same.

4.3 Junctions

- 4.3.1 Up to 11 road junctions could require modifying or creation in order to accommodate the proposed route options depending on whether they are segregated or using the hard shoulder. The junctions requiring to be modification/creation are:
- A720 Gogar Roundabout (S105976/0011);
 - A720 Calder Road Junction (S105976/0021);
 - A720 Edinburgh City Bypass Dreghorn Junction (S105976/0031);
 - Straiton Park and Ride / A701 Straiton Road (S105976/0041);
 - A701Straiton Road / B702 Loanhead Road (S105976/0042);
 - A701Straiton Road / Lang Loan Roundabout (S105976/0043);
 - A7 Old Dalkeith Road/ Todhills – Loanhead disused railway (S105976/0061);
 - A7 Old Dalkeith Road/ Todhills (S105976/0083);
 - A722 Gilmerton Road (S105976/0063);
 - A6106 Millerhill Road (S105976/0081); and
 - B6415 Old Craighall Road (S105976/0082).
- 4.3.2 The figures denoted in brackets above are the figures contained in Appendix B of this report.

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4.4 Summary

- 4.4.1 In summary there are a number of committed developments, applications and environmental designations that will influence the alignment of the final EOBP route to be safeguarded.
- 4.4.2 Only major and moderate sized land use proposals, developments and planning applications have been considered during the appraisal of the EOBP route. It is also assumed that there will be more planning applications submitted throughout the EOBP study area before the proposed scheme is safeguarded.
- 4.4.3 The planning permission granted to SUStrans for conversion of disused railway to cycle/footpath (sections 5 and 6) could prevent the EOBP route option using parts of or the whole of the disused railway line between Loanhead and Danderhall.
- 4.4.4 Overall, there are five sections (1, 2, 7, 8 and 9) which have a number of planning applications and developments proposals that will have a direct influence of the final alignment of the EOBP.
- 4.4.5 In terms of environmental designations parts of the proposed route (new segregated alignments) would impact on areas of greenbelt and prime agricultural land. The proposed EOBP route option would also pass adjacent to a number of Historic Gardens and Designed Landscapes, local landscape designations, watercourses, ancient woodland, Listed Buildings, Conservation Areas, local wildlife sites, Scheduled Ancient Monuments, and areas of archaeological sensitivity.
- 4.4.6 The scheme should not have any major impacts on any environmental designations provided appropriate mitigation measures and design solutions are put in place.
- 4.4.7 Despite the EOBP route option alignment being constrained somewhat by other planning applications and development proposals, there are no major physical obstacles that would preclude the development of the EOBP. In addition the route options could potentially be altered or modified to use other safeguarded public transport route proposals and developments being brought forward.

5 Capital and Operating Costs

5.1 Background

- 5.1.1 The study corridor broadly runs parallel to the A720 Edinburgh by-pass, linking the QMU or Millerhill in the east to Newbridge in the west. The routes follow four different alignments which will have an impact on project capital costs.
- 5.1.2 The corridor includes several existing or planned Park & Ride sites, which currently provide opportunities for interchange between the corridor and radial public transport routes into the city centre, and will increasingly be able to do so over larger parts of south Edinburgh, connecting the city centre with nearby and outlying communities.
- 5.1.3 For the purposes of the study, the route is broken down into a number of sections, and these are configured slightly differently to present seven distinct routes: A to C5. These alignments are summarised in Table 5.1.

Table 5.1: Summary of EOBP Route Description and Lengths (metres)

Section	Description	Alignment	Approx. length(m)
Section 1	Newbridge P&R to Section 2 at Gogar/South Gyle Retail Centre via A720 underpass	Options A, A5, B, C & C5	9,050
Section 1a	Edinburgh Airport to Section 2 at Gogar/South Gyle Retail Centre	Options B17 & B18	5850
Section 2	Section 2 via Edinburgh Park and Hermiston to Section 3 at Juniper Green	Shared All Options	4,370
Section 3h	Section 3 start at Juniper Green to Lothianburn P&R via Dreghorn P&R	Shared All Options	5,490
Section 4	Lothianburn P&R to Straiton P&R	Options A, B, B17 & C	2,700
Section 4h	Lothianburn P&R to Straiton P&R – hard shoulder running on A720	Options A5, B18 & C5	2,560
Section 5	Straiton P&R to Section 6 near Wester Melville	Options A, B & C	2,070
Section 5h	Straiton P&R to Section 6 near Wester Melville – hard shoulder running on A720	Options A5, B17, B18 & C5	1,340
Section 6	Section 6 near Wester Melville to ERI via Sheriffhall P&R	Option A	6,100
Section 6a	Section 6 near Wester Melville to Sheriffhall P&R	Options B & C	2,870
Section 6h	Section 6 near Wester Melville to Sheriffhall P&R – hard shoulder running on A720	Option A5	7,400
Section 6ah	Section 6 near Wester Melville to Sheriffhall P&R – hard shoulder running on A720	Options B17, B18 & C5	4,130
Section 7	ERI to QMU via Newcraighall P&R	Options A & A5	4,770
Section 8	Sherriffhall P&R to Millerhill P&R	Options B, B17 & B18	1,750
Section 9	Sherriffhall P & R to ERI via Whitehill Mains	Option C & C5	4,630
Total Route Lengths (metres)		Option A	34,550
		Option A5	34,980
		Option B	28,300
		Option B17	25,630
		Option B18	25,490
		Option C	31,180
		Option C5	31,570

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- 5.1.4 The longest route alignment (Option A5) at 34.98 km is longer than the others owing to the longer sections 6h and 7 at the eastern end of the route.
- 5.1.5 Following the STAG Part 2 Appraisal and associated modelling using TMfS, 4 options emerged as the best performing for each of the alignments (i.e. North, South and combinations of the two). These are summarised in Table 5.2 below, which also shows the relevant sections used by each option. Note that there are two sub-options for route B (namely B17 and B18), which is due to the potential need for Section 4 of this route having to be built on a new segregated road link as there are no plans by Transport Scotland to provide a hard shoulder along this alignment by 2015. Clearly if a hard shoulder was to be implemented along Section 4 then B18 would be the preferred option for Route B as using the hard shoulder would significantly reduce capital costs.

Table 5.2: Summary of EOBP Route Description and Sections

Route	Section 1	Section 1a	Section 2	Section 3h	Section 4	Section 4h	Section 5	Section 5h	Section 6	Section 6a	Section 6h	Section 6ah	Section 7	Section 8	Section 9
A5	✓		✓	✓		✓		✓			✓		✓		
B17		✓	✓	✓	✓			✓				✓		✓	
B18		✓	✓	✓		✓		✓				✓		✓	
C5	✓		✓	✓		✓		✓				✓			✓

5.2 Summary of Capital Cost Outlay

- 5.2.1 The capital costs were based on the approximate estimates¹³ used for the South East Edinburgh Priority Bus Study. These are defined under various infrastructure categories, each of which indicates the type of works undertaken for each section of the route as defined in Table 5.1 above. The series relevant to the capital costs for this study are:

- Series 100: Preliminary costs;
- Series 200: Site clearance;
- Series 300: Fencing;
- Series 400: Road restraint;
- Series 500: Drainage;
- Series 600: Earthworks;
- Series 700: Pavement;
- Series 1100: Kerbs, footways etc.
- Series 1200: Traffic signs and markings;
- Series 1300: Road lighting etc;
- Series 1400: Electrics etc;

¹³ SPON'S Civil Engineering and Highway Works Price Book, Taylor and Francis Publishers, 2008

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- Series 2500: Special Structures;
- Series 2700: Accommodation works etc; and
- Series 3000: Landscaping and ecology.

5.2.2 Table 5.3 summarises the capital costs of the EOBP. A breakdown of these is shown in greater detail in Appendix C. A summary of the route composition is shown in the Table, which also breaks down the cost profile to show the base capital costs, the elements for contingencies and risk and uncertainty, and the optimism bias (OB) calculations. The Grand Total for the seven main options is highlighted, with contingencies, risk and uncertainty and optimism bias costs given for each of the options.

Table 5.3: Summary of Capital Costs

Route Option	Construction base costs	Contingencies	Risk and Uncertainty	Optimism Bias	Grand Total
Route A	£36.4m	£5.5m	£5.5m	£6.6m	£54.0m
Route A5	£16.4m	£2.5m	£4.1m	£4.6m	£27.5m
Route B	£33.7m	£5.1m	£5.2m	£6.2m	£50.2m
Route B17	£22.4m	£3.4m	£4.1m	£3.0m	£32.9m
Route B18	£15.1m	£2.3m	£3.7m	£2.6m	£23.7m
Route C	£40.5m	£6.1m	£6.5m	£6.8m	£59.9m
Route C5	£22.7m	£3.4m	£5.1m	£4.7m	£35.9m

Note: all costs are at 2008 prices

5.2.3 The Table demonstrates that those route alignments that incorporate hard shoulder running represent the lower cost options. Of these, route option B18, the southern route alignment, represents the lowest cost option. There is no doubt that hard shoulder running substantially reduces the capital costs by removing the necessity of additional earthworks and new pavement construction.

5.3 Summary of Operating Costs

5.3.1 This Section summarises the operating costs for each proposed alignment for the EOBP. The operating cost profile will depend on size and type and performance of vehicle operated, the length of route served and route alignment conditions.

Selection of Vehicles

5.3.2 The earlier report by Halcrow¹⁴ identifies a number of potential options for rolling stock on the route. However given the route will be running on existing sections of road and no new guidance systems such as rails, kerbs etc will be constructed the options are more limited than described previously.

5.3.3 This report identified three suitable options:

- A High Quality Conventional Bus – Mercedes Benz Citaro;
- Articulated Bus – Van Hool AG300; and
- Ftr StreetCar.

¹⁴Edinburgh Orbital Bus Project Rolling Stock Options, Working Paper, Halcrow Group Ltd, March 2008

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- 5.3.4 A high quality conventional standard single deck vehicle bus was selected for use in the costing as given the proposed speeds; this was the most appropriate vehicle. Vehicles with a high proportion of standees are unsuitable for higher speed operation – and to exceed 56mph all seats must be fitted with seatbelts. This was also the lowest cost option at £140,000 per vehicle.

Fixed Costs

- 5.3.5 Fixed costs are directly linked to the number of vehicles required to run the service. Table 5.4 shows the criteria included in the calculation of fixed costs and the assumptions underlying each.

Table 5.4: Fixed Cost Criteria

Fixed Costs	Assumptions
Vehicles	£140,000 per vehicle
Vehicle Tax	£330 per vehicle
Insurance	Assumed 3% of vehicle purchase costs
Vehicle Operators License	£224 fee
Vehicle Disc Fee	£7 per vehicle per month
Fee Register Bus Service	£57 fixed fee
Fee Large Bus Permit	£20 per bus
PSV Test Fees	£84 per bus

- 5.3.6 Many of the above costs are based on the number of vehicles required. This was calculated using the two way journey times of the routes and service frequency and the optimum number of vehicles calculated. This is shown on the Table in Appendix D. Two additional vehicles were added to account for maintenance periods, break downs etc.

Semi-Variable Costs

- 5.3.7 Semi-Variable costs account for staff costs. This was based on the number of drivers required to operate the service given the required service frequencies and time periods. The weekly bus hours were calculated then divided by 45 as this is the maximum number of hours a driver can operate a vehicle for per week. Two drivers were then added to account for holidays and possible sickness. This figure was then multiplied by £26,000, which is the average annual wage for a bus driver in Edinburgh.

Variable Costs

- 5.3.8 Variable costs included in the analysis are fuel costs, lubricant costs and repairs and maintenance costs which can vary over time. Table 5.5 show the assumptions used to calculate these costs.

Table 5.5: Variable Cost Criteria

Variable Costs	Assumptions
Fuel	0.98 pence per litre, fuel consumption rate 5km per litre.
Lubricant	Assume 10% vehicle purchase costs.
Maintenance & Repairs	Assume 3% vehicle purchase costs, rising by inflation each year.

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- 5.3.9 Fuel costs were based on the annual vehicle kilometres travelled by the buses on each of the routes, as can be seen in Appendix D.

Total Operating Costs

- 5.3.10 Taking into account the fixed, variable and semi-variable costs, the total costs of operating the different routes were calculated and the results derived as shown in table 5.6.

Table 5.6: Summary of Operating Costs

Route Designation	Service Level	Annual Operating Costs
Route A	12 buses per hour	£3.19m
Route A5	12 buses peak; 6 buses off-peak	£2.21m
Route B	12 buses per hour	£2.45m
Route B17	12 buses peak; 6 buses off-peak	£1.68m
Routes B18	12 buses peak; 6 buses off-peak	£1.68m
Route C	12 buses per hour	£3.08m
Route C5	12 buses peak; 6 buses off-peak	£2.15m

Note: all costs are at 2008 prices

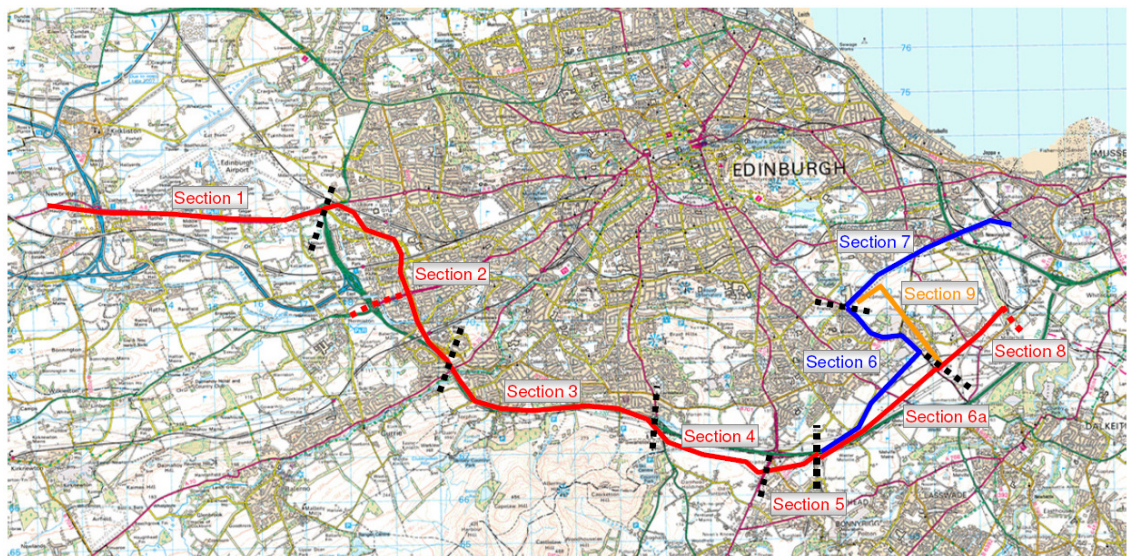
- 5.3.11 The higher operating costs figures for Routes A and C, and the sub-options associated with these routes, reflect the longer length of these routes and therefore increased journey times.

6 Economic and Business Case Analysis

6.1 Background

- 6.1.1 The economic appraisal and business case analysis was carried out using output from the modelling phase¹⁵. Cost/benefit analysis was undertaken for the various options tested, both for the whole scheme and for individual sections, which are illustrated in Figure 6.1 below.

Figure 6.1: Scheme Sections



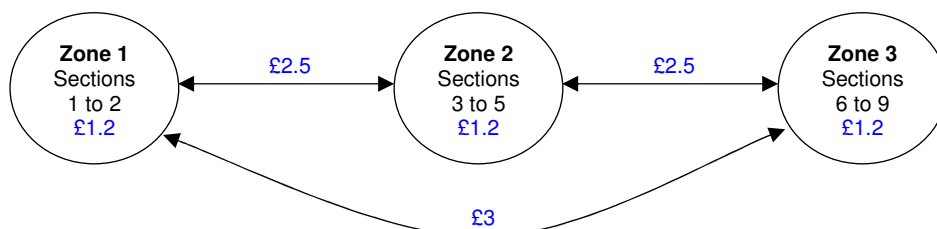
6.2 Process and Assumptions

- 6.2.1 Economic analysis was carried out using the DfT's Transport Users Benefit Analysis (TUBA) program¹⁶. Standard economic parameters from WebTAG Unit 3 were used. The first year of opening assumed for the economic appraisal was 2012 and standard economic parameters and rates have been used, including the 3.5% and 3% discount rates split respectively between the first half and the second half of the 60-year appraisal period. All prices were discounted to 2002 values as per WebTAG. Capital and operational costs from Chapter 5 were used in the analysis.
- 6.2.2 Revenue was calculated outside TUBA, by applying a fare of £1.2 per passenger for the flat fare options. Additional tests were carried out with an incremental fares system, with fares of £1.2, £2.5 and £3 depending on the distance travelled, as illustrated in the following figure. The resulting annual revenues were also discounted for all future years.

¹⁵ EOBP Model Analysis and economic Appraisal, Technical Note, Scott Wilson June 2009

¹⁶ TUBA v1.7a, Department for Transport, September 2006

Figure 6.2: Fare Zones System



6.3 Economic Appraisal Results

- 6.3.1 The costs for each option are broken down into four categories and the contributions of each determined, as shown in Table 6.1. Route C5 has the highest Present Value of Costs (PVC) of the options at circa £139.4m. Further details on the breakdown of costs by individual section are included in the TEE tables in Appendix E.

Table 6.1: Breakdown of Costs per Route

Route Designation	Capital Expenditure (x1000)	Operating Expenditure (x1000)	Maintenance (x1000)	Taxes (x1000)	PVC
Route A5	£25,509	£51,454	£26,241	£21,649	£124,853
Route B17	£30,498	£36,226	£31,373	£16,761	£114,857
Routes B18	£21,904	£35,915	£22,533	£16,761	£97,113
Route C5	£33,351	£49,956	£34,308	£21,815	£139,430

Note: all monetary values are discounted to 2002 prices

- 6.3.2 The potential Present Value of Benefits (PVB) from each route were then broken down as revenues and other benefits such as journey time savings, accident reductions, Vehicle Operating Costs (VOC) savings and carbon reductions. Route C5 produces the highest PVB at circa £299.6m. Routes B17 and B18 have identical PVBs as they are almost identical routes with B17 only being 140m longer on one section.

Table 6.2: Breakdown of Benefits per Route

Route Designation	Revenue (x1000)	Benefits (x1000)	PVB (x1000)
Route A5	£72,805	£150,878	£223,683
Route B17	£80,268	£129,720	£209,988
Routes B18	£80,268	£129,720	£209,988
Route C5	£74,346	£155,249	£229,595

Note: all monetary values are discounted to 2002 prices

- 6.3.3 Using these costs and benefits the overall performance of the routes can be measured using standard economic indicators including, the Net Present Value (NPV), Benefit-to-Cost Ratio (BCR) and ratio of Revenues over Operating Costs (R/O). The results for each route using these criteria are shown in Table 6.3 overleaf.

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Table 6.3: Key Indicators of Performance

Route Designation	NPV	BCR	R/O
Route A5	£98,830	1.79	1.41
Route B17	£95,131	1.83	2.22
Routes B18	£112,875	2.16	2.23
Route C5	£90,165	1.65	1.49

Note: all monetary values are discounted to 2002 prices

- 6.3.4 The results show Route B18 produces the highest NPV and best BCR and R/O, and is closely followed by B17 with the second highest BCR and R/O although its NPV is below Route A5.

7 Conclusions

7.1 Introduction

- 7.1.1 SEStran (South East Scotland Transport Partnership) appointed Scott Wilson to carry out a high-level evaluation of potential options for a Bus Rapid Transport (BRT) system linking Newbridge and Queen Margaret University (QMU) at Newcraighall via Edinburgh International Airport, the Edinburgh Royal Infirmary and a number of key employment, retail, and park and ride sites located within the vicinity of the A720 Edinburgh City Bypass. This report sets the study within the context of land use impacts and environmental constraints before examining the scheme development. The capital and operating costs of the scheme were then considered to produce an economic and business case analysis.

7.2 Land Use Impacts

- 7.2.1 Overall there are a number of land use proposals which will influence the final alignment of the EOBP route option to be brought forward for safeguarding. There are also a number of planning applications which have been granted consent or that are pending consideration which may have an impact. In particular the planning applications for the Edinburgh Royal Infirmary to the Wisp link road. However, these planning applications have considered the safeguarded public transport link.
- 7.2.2 There are no current developments which would sterilise the route options, although some minor changes may be required to the route alignment as a result of the implementation of land use proposals and planning applications.
- 7.2.3 Furthermore there are various structure plans and master plans covering the route which may need to be considered during the development of the EOBP.

7.3 Environmental Constraints

- 7.3.1 There appear to be minimal environmental constraints or receptors which would impact on or be impacted by the proposed route option. In particular there are very few physical environmental receptors within the middle sections (3, 4, 4h, 5 and 5h) that could affect the alignment of the Scheme. Sections 6 and 8 have the potential to cause significant effects on historic and landscape designations, although negative effects can be avoided or minimised through the use of mitigation measures or changes to the alignment of the route option.

7.4 Scheme Development

- 7.4.1 An important component of the study was the integration of the proposed EOBP system with the existing transport network (including other public transport facilities such as existing stations) and the surrounding land-uses. Scott Wilson undertook various site visits of the proposed route/alignments and prepared preliminary drawings showing possible alignments for any new EOBP system in the area.

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- 7.4.2 The options were tested using the Transport Model for Scotland (TMfS) version 5a, to identify potential demand at each stop and along various alignments. Those which attracted significant volumes of demand were kept and those which performed poorly were discounted. The modelling included current and future land-use developments so as to take into account future potential travel demand in the study area. The modelling results were discussed with SEStran throughout the modelling work. An iterative process was followed, whereby the results of one option were used to formulate or refine other options which took the best performing alignments/stops and collated them into an optimum scheme.
- 7.4.3 As part of the optioneering process the potential to enhance or strengthen integration with existing public transport facilities was also considered. This was deemed important, as experience has shown that the new EOBP options will need to ensure that all journeys by EOBP are as straightforward as possible and integration between different modes will help to achieve this aim. This 'seamless' approach helps to improve patronage and journey experience.
- 7.4.4 To maintain high average running times, where appropriate, the alignment of the new EOBP was segregated from other modes of transport (and protected from traffic congestion) integrated with other modes or a combination of the two. Proposed stops/interchanges were sited close to the potential users' to encourage usage and there was also consideration for Park-and-Ride / Choose interchanges.
- 7.4.5 From the STAG Part 2 Appraisal and associated modelling using TMfS, 4 options emerged as the best performing for each of the alignments (i.e. North, South and combinations of the two).

7.5 Capital and Operating Costs

- 7.5.1 Capital and Operating Costs were computed for each route. The overall route is broken down into a number of sections, and these are configured slightly differently to present seven distinct options. These differences in alignment account for differences in capital and operating costs for each route.
- 7.5.2 The capital costs were based on the approximate estimates and were defined under various infrastructure categories, each of which indicates the type of works undertaken for each section of the route.
- 7.5.3 The analysis revealed that those route alignments that incorporate hard shoulder running represent the lower cost options. Of these, route option B18, the southern route alignment, represents the lowest cost option. There is no doubt that hard shoulder running substantially reduces the capital costs by removing the necessity of additional earthworks and new pavement construction. Route C5 had the highest capital costs, reflecting the alignment and also the greater uncertainty of the route.
- 7.5.4 Using the same alignments operating costs were calculated. The overall operating costs are highly dependant on the length of route served and route alignment conditions. Furthermore, the size and type and performance of vehicle operated also has a significant impact on operating costs. For the purpose of this study a high quality conventional standard single deck vehicle bus was selected for use in the costing as given the proposed speeds; this was the most appropriate vehicle.

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- 7.5.5 The operating costs were split into three categories consisting of fixed costs (e.g. vehicles, insurance, maintenance etc.), semi-variable costs (staff costs), and variable costs (e.g. fuel and maintenance).
- 7.5.6 Taking into account the fixed, variable and semi-variable costs, the total costs of operating the different routes were calculated. Of the four preferred routes, options A5 and C5 have the highest annual operating costs at circa £2.21m and £2.15m respectively, this can be attributed to the longer route lengths. Routes B17 and B18 are almost identical at circa £1.68m due to their alignments which differ little.

7.6 Economic & Business Case Analysis

- 7.6.1 Route C5 has the highest PVC of the options at circa £139.5m. Similarly, Route C5 produces the highest PVB at circa £299.6m. Route B17 and B18 have identical PVBs as they are almost identical routes with B17 only being 140m longer on one section.
- 7.6.2 Using the costs and benefits the overall performance of the routes were then measured using standard economic indicators including, the Net Present Value (NPV), Benefit-to-Cost Ratio (BCR) and ratio of Revenues over Operating Costs (R/O).
- 7.6.3 The results show Route B18 produces the highest NPV and best BCR and R/O, and is closely followed by B17 with the second highest BCR and R/O although its NPV is below Route A5.