



Gogar Station Interchange

Transport Assessment

October 2009

Network Rail



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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
A	08 October 2009	PR Goodenough	J Dooley	A Oldfield	First issue

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Executive Summary

Introduction

Mott MacDonald has been appointed to prepare a Transport Assessment in support of a planning application for a new inter-modal transport interchange on land north of the A8/A720 gyratory at Gogar, City of Edinburgh.

The development will comprise a two platform station for heavy rail services, with a covered pedestrian footbridge over the Edinburgh Tramway providing access to a two platform tram stop to the south east. A subway will be constructed to the south east of the interchange to enable pedestrian movement under the A8 Glasgow Road to the retail/employment areas to the south. Bus/taxi stopping facilities and car/cycle parking will also be provided as part of the interchange development.

Policy Context and Relevant Studies

The proposed development is fully compliant with the current national, regional and local planning policy framework, and contributes directly to the achievement of CEC's specific objectives for the transport system, as outlined in the Local Transport Strategy.

Relevant studies include the West Edinburgh Transport Appraisal – Part 1, the Strategic Transport Projects Review and the Edinburgh Airport Surface Access Strategy 2007-2011. The proposed inter-modal transport interchange at Gogar is one of the key interventions identified in each study to address the transport issues identified.

Existing Transport Conditions

Our review of existing transport conditions in the vicinity of the proposed development suggests that Gogar Roundabout currently operates within capacity during the AM peak period. Accident figures are consistent with the national average for a junction of this type, and there is no apparent safety problem relating to vulnerable road users. Regular bus services operate along the A8 Glasgow Road, with stops provided on the eastbound offslip and westbound

onslip of Gogar Roundabout. Designated cycle routes are provided on the north and south sides of the A8 Glasgow Road, adjacent to the development site.

We have observed existing problems with on-street parking in the Turnhouse Road/West Craigs Crescent area, and on-street parking extends northwards from the 30mph speed limit zone boundary, more than 1km walk distance from the proposed development.

With regard to existing rail services, surveys of boarding and alighting rail passengers were undertaken at South Gyle station, between 0630 and 0900 on Tuesday 4th August 2009 and between 0700 and 0930 on Tuesday 1st September 2009. The surveys indicate that a small minority of boarding rail passengers parked their car at South Gyle station, representing 6% (10 passengers) of the total boardings recorded during the August 2009 survey, and 9% (15 passengers) of the total boardings recorded during the September 2009 survey.

However, the station car park reaches capacity between 0800 and 0830. Site observations suggest that the majority of parking demand is associated with car drivers parking within the (free) car park and boarding either the RBS or Edinburgh Park (HSBC) shuttle bus to complete their journey to work.

Proposed Development

The site for the proposed interchange fronts the north side of the A8 Glasgow Road and covers an area of approximately 1.0ha. This excludes the area covered by the tram stop which is being progressed as part of the Edinburgh Tram works. The proposals include parking for 100 cycles and 18 cars (comprising four disabled, four staff and ten short-stay spaces), together with two bus stands and three bus layover bays.

The Edinburgh Tram works also include the construction of a maintenance and stabling facility on land to the northwest of Gogar Roundabout, with a single carriageway access road. The site layout for the proposed interchange facility has been designed to accommodate the dualling of the tram depot access road at a later date if required, to accommodate the proposed Gogar Link (identified in the

West Edinburgh Transport Appraisal) connecting Gogar Roundabout with the Airport and Eastfield Road.

Liaison with Lothian Buses, First in Scotland East, E&M Horsburgh and SEStran has taken place to define likely future requirements for bus interchange at Gogar. Lothian Buses and First in Scotland East expressed scepticism regarding the ability for bus services to be diverted into the interchange without significantly adding to journey time and operating costs, as well as inconveniencing existing bus passengers. However, the possibility of new/additional revenue support from CEC to facilitate route diversions was not discussed, and Lothian Buses have suggested that there is some potential to extend route 18 from the Gyle Shopping Centre to terminate at Gogar Interchange. E&M Horsburgh is keen for its (supported) services to be diverted to serve the new interchange.

SEStran is keen for the proposed Orbital Bus services to stop at Gogar Interchange, with layover facilities for buses terminating there rather than at the Airport, and “future proofing” so as to accommodate 18.0m length articulated bus operation in the future.

Construction works are programmed to commence in July 2010. Staged occupation of the A8 Glasgow Road will be required to facilitate subway construction, and traffic management proposals for these stages have been submitted for discussion/agreement with CEC as the roads authority. As the development site adjoins the strategic road network, construction HGVs will not be required to traverse local residential roads. Staff/HGV movements will be timed to avoid the peak periods on the local road network. The most significant effect will be during the construction of the pedestrian subway. Traffic management measures will be imposed to mitigate this effect. No other significant effects due to construction traffic are expected.

Weekday person trip and vehicle trip movements associated with the proposed Gogar Interchange have been estimated with reference to heavy rail passenger demand analysis undertaken by MVA for the GRIP Stage 2 and 3 reports, together with consultations with local bus operators and SEStran to define likely future bus movements.

The impact of the development on the local road network has been assessed with reference to background traffic (factored to future years using National Road Traffic Forecasts (Great Britain) 1997 central growth factors) and development traffic (car and bus based). The percentage increase in vehicular traffic as a result of Gogar Interchange is small in the context of background traffic growth. There is no evidence that this small increase will cause a consequential increase in road traffic accidents.

We do not consider that current car parking conditions will be significantly worsened in the vicinity of Gogar Interchange as a result of the development and the absence of long term parking provision, on the following grounds:

- reduced service levels at South Gyle will have a limited impact, as rail borne Park & Ride activity at South Gyle has been shown to be low by the two surveys we have undertaken, and the additional walk/cycle distance to Gogar Interchange is relatively small. With provision of the new subway, we do not anticipate a major impact on the current travel behaviour of rail users;
- the Edinburgh Tram and proposed Orbital Bus services will provide frequent connections to free Park & Ride facilities elsewhere, which is likely to represent an attractive alternative to parking at Gogar Interchange if integrated public transport ticketing can be achieved;
- the timing and extent of future rail improvements (with the opening of the Dalmeny Chord) and developments within the International Business Gateway have yet to be confirmed. Providing for car parking at this stage could lead to significant over or under provision; and
- indiscriminate parking in the Turnhouse Road area is already a problem, and any additional on-street parking is likely to occur further north, more than 1km from the station, which for motorists would be an unattractive option.

Sustainable Access Strategy

The scheme has been designed to promote the use of sustainable travel modes for access and egress from the heavy rail station, facilitate safe internal circulation and be fully accessible to all members of the community.

1. Introduction

1.1 Purpose of Report

Mott MacDonald has been appointed to prepare a Transport Assessment in support of a planning application for a new inter-modal transport interchange on land north of the A8/A720 gyratory at Gogar, City of Edinburgh.

The development will comprise a two platform station for heavy rail services, with a covered pedestrian footbridge over the Edinburgh Tramway providing access to a two platform tram stop to the south east. A subway will be constructed to the south east of the interchange to enable pedestrian movement under the A8 Glasgow Road to the retail/employment areas to the south. Bus/taxi stopping facilities and car/cycle parking will also be provided as part of the interchange development.

1.2 Key Assumptions

This Transport Assessment has been prepared to cover the scope of work agreed at Mott MacDonald's meeting with City of Edinburgh Council (CEC) on 3 July 2009 (minutes included as **Appendix A**).

It is anticipated that the inter-modal transport interchange will be used by residents and employees of South Gyle and the Turnhouse Road area, as well as by heavy rail passengers transferring to tram services for their onward journey to Edinburgh Airport and other Edinburgh Tram destinations. Consequently pedestrian linkages between the interchange and surrounding residential and employment areas have been considered in this Transport Assessment, as well as capacity and safety on the local road network. Capacity has been investigated with reference to patterns of car parking demand at South Gyle railway station and on Turnhouse Road, together with consideration of existing bus shuttle services and additional bus services which may be provided with the inter-modal interchange in place.

This Transport Assessment also provides commentary on the potential impact of construction traffic, and summarises outline traffic management measures to be implemented during the construction phase. However, the report focuses primarily on the longer term operational phase.

1.3 Structure of Report

The report is sub-divided into the following sections:

- Section 2 sets out the relevant policy context for the development, and summarises the findings of relevant studies;
- Section 3 describes the existing transport conditions in the vicinity of the site;
- Section 4 describes the development proposals in more detail and estimates the number of person trips (i.e. cars, buses and pedestrian/cycle trips) which may be generated by the development;
- Section 5 considers the impact of the development on the surrounding transport network;
- Section 6 provides details of the proposed internal and external access arrangements for the development, covering all the modes of travel using the interchange; and
- Section 7 summarises the findings of the above sections.

The Appendices provide further information used within this report.

2. Policy Context and Relevant Studies

2.1 National Planning Policy and Guidance

2.1.1 Scottish Planning Policy 17: Planning for Transport

This guidance highlights the positive role that the integration of land use and transport planning can play in supporting the Scottish Government's transport delivery agenda. Locating new development to maximise the choice of transport modes is crucial to minimise the impact on existing transport networks and the environment.

2.1.2 Planning Advice Note 75: Planning for Transport

PAN 75 reinforces the policy and principles set out in SPP17. By providing a greater choice of transport modes, land use and transport planning can assist in promoting sustainable travel behaviour. Consideration of transport issues should be a priority at an early stage in the design process to maximise the likelihood of achieving a successful outcome.

2.2 Regional Planning Policy and Guidance

2.2.1 SEStran Regional Transport Strategy

The RTS is a blueprint for transport development in South East Scotland for the 21st century, to achieve SEStran's (South East Scotland Transport Partnership) vision of a regional transport system which:

"provides all citizens of South East Scotland with a genuine choice of transport which fulfils their needs and provides travel opportunities for work and leisure on a sustainable basis"

The projects and initiatives which are being carried out to deliver the RTS fall into three main themes:

- Region-wide initiatives – these include travel awareness campaigns, public transport through ticketing, maximum parking standards, Park & Ride/Share, bus and rail timetable and service integration and Public Transport Information strategy;
- Initiatives for specific areas and groups – these involve the identification of areas with low car ownership and poor access to health care services and employment opportunities, and providing funds for improved public transport; and
- Network based initiatives – these are primarily concerned with targeted public transport improvements towards the main regional commuter corridors, including Edinburgh West (Corstorphine Road,

Calder Road) which has been identified as one of the highest priorities for intervention. The measures considered in the RTS include bus/tram interchanges in West Edinburgh, bus priority measures at Gogar Roundabout and improved orbital bus services.

2.3 Local Planning Policy and Guidance

2.3.1 Local Transport Strategy 2007-2011

The LTS outlines measures which will contribute to CEC's broader economic, environmental and community objectives by helping reduce pollution and congestion, improving health and safety and providing a transport system accessible to all.

The measures include examining the potential for improved orbital bus services on the city bypass corridor, in partnership with SEStran partners. This would allow buses from outside Edinburgh to access areas such as Edinburgh Park without passing through the city centre. It would also allow the Park & Ride sites to act as transport hubs, linking with the major edge of city economic growth areas. With regard to rail schemes, the LTS highlights the need to maximise the capability of the existing railway.

Gogar Interchange will contribute to the achievement of CEC's Local Transport Strategy objectives

Page 19 of the LTS sets out a series of specific objectives for the transport system. As an inter-modal interchange, the proposed development will contribute to achieving many of these objectives, which are as follows:

- to facilitate reliable and convenient access to the city and movement within it, in particular by reducing congestion;
- to increase the proportion of journeys made on foot, by cycle and by public transport;
- to implement the tram project;
- to reduce the need to travel, especially by car;
- to reduce the adverse impacts of travel, including road accidents and environmental damage;
- to recognise the many roles that streets have for the community – as places that people live and work, as areas that people meet, shop and relax, as a setting for the city's built heritage, as well as routes for movement whether by car, bus, bicycle or on foot
- to improve the ability of people with low incomes and people with mobility impairments to use the transport system; and
- to ensure that the road, footway and cycle network are of a standard suitable for safe and comfortable movement.

2.3.2 Rural West Edinburgh Local Plan

The RWELP was formally adopted by CEC in 2006. However, to address Edinburgh Airport growth plans, an RWELP alteration was drafted in October 2008 for consultation.

The thrust of transport policies contained within the RWELP relate to the A8 corridor and improving access to and from the City of Edinburgh and Edinburgh Airport by road and public transport. The schedule of transport proposals includes the West Edinburgh tram, the Edinburgh Airport Rail Link, Park & Ride facilities at Hermiston and Gogar, Edinburgh Airport road links and the A8000 road improvement scheme.

2.3.3 West Edinburgh Planning Framework 2008

The WEPF was published jointly by the Scottish Government, Scottish Enterprise and CEC in May 2008. It sets out a long term strategic vision for an area considered to be nationally important in terms of economic development, global connectivity, transport and the environment. It has the status of a Scottish Planning Policy (SPP) and will also serve as an important input to the Development Plan for the area.

The WEPF for West Edinburgh sets out a vision for West Edinburgh which includes the development of an International Business Gateway on land to the south of the airport, comprising high quality and high value international business development, to be the subject of master plan preparation. The WEPF identifies the delivery of a rail station in the vicinity of Gogar, within the International Business Gateway, to improve accessibility from other parts of Scotland and the UK. This would incorporate a high quality public transport interchange with Edinburgh Tram, and facilitate onward journeys by tram to the airport, development sites in West Edinburgh and the Ingliston Park & Ride.

2.4 Compliance with Current Policy

The review of relevant national, regional and local policies presented above demonstrates that the proposed development is fully compliant with the current policy framework.

2.5 Relevant Studies

2.5.1 West Edinburgh Transport Appraisal – Part 1

The various transport interventions identified in the WEPF require an appraisal to support their implementation. This appraisal, the West

Edinburgh Transport Appraisal (WETA), follows the Scottish Transport Appraisal Guidance (STAG) process and takes account of development, accessibility, environmental and implementation objectives and other proposed improvements to the strategic transport network in the area.

A meeting was held with Halcrow, WETA consultants, on 19th August 2009 to discuss the project and issues relevant to Gogar Interchange. Strategic interventions which are currently being appraised include:

- tram halt at the centre of the International Business Gateway;
- rapid transit scheme from the WEPF area to link with the Bus Rapid Transit proposals across the existing Forth Bridge connecting Fife and Livingston and possible Edinburgh Orbital Bus at Gogar Interchange;
- a road link between Gogar Roundabout and the Airport/Eastfield Road via the International Business Gateway. Referred to as the “Gogar Link”, this may be built to dual carriageway standard, potentially with one lane allocated to buses. This may lead to the diversion of some existing bus services away from the A8 Glasgow Road corridor, to penetrate the International Business Gateway; and
- improvements at Gogar Roundabout in association with the Gogar Link, to cater for traffic from the A720 City Bypass and A8 Glasgow Road from Edinburgh city centre. Initial modelling has been undertaken at the roundabout but the specific improvements have not been confirmed at the time of writing.

Work is ongoing on the WETA, with strategic transport interventions currently being taken forward for further analysis in STAG Part 1 following feedback received from WETA consultees.

2.5.2 Strategic Transport Projects Review

On the basis of issues arising from forecast long-term economic growth, there are many challenges facing Scotland’s national strategic transport network. Addressing these challenges is the key to supporting the Scottish Government’s Purpose, i.e. achieving higher sustainable economic growth. The STPR has been undertaken in this context on behalf of Transport Scotland, and completed with the objective of identifying those interventions which can play the most effective role in addressing the transport issues identified.

The Edinburgh to Glasgow Rail Improvements Programme is one of the strategic projects which have been subject to review. Within this programme, the preferred strategy includes a new station at Gogar to serve Edinburgh Airport (via tram) and a new curve at Dalmeny to allow

Edinburgh to Glasgow services to access the new station. Other elements include route electrification and service frequency improvements.

The preferred strategy has been appraised against the STPR objectives, STAG criteria, Key Strategic Outcomes, the Scottish Government's Strategic Objectives and implementability criteria. In summary, the STPR concludes that the intervention provides a key linkage from the rail network to Edinburgh Airport, encouraging rail use in preference to the private car. As a committed scheme, it has a strong business case, offering value for money.

2.5.3 Edinburgh Airport Surface Access Strategy 2007-2011

The 2003 UK Government White Paper, *The Future of Air Transport*, identifies the provision of "good quality, well integrated surface access, capable of supporting airport development" as a key objective to help reduce road congestion and air pollution.

In the above context, the Edinburgh Airport Surface Access Strategy sets out BAA Edinburgh's objectives and targets for surface access provision over a five-year period. The implementation of the strategy is intended to support the sustainable growth of the airport to handle 1.16 million passengers per annum. The strategy aims to increase the proportion of passengers arriving by public transport to 27% in 2011, compared with the 22% achieved in 2006, and reduce the proportion of passengers being set down at the airport by private car.

Initiatives and measures to achieve the above include:

- proposals for the construction of a transport hub at the eastern end of the terminal, including a rail station, tram halt, bus stops and all transport options (prior to suspension of EARL project);
- provision of new bus routes by identifying 'corridors' of unfulfilled demand in partnership with bus operators;
- a high level feasibility study into the potential for a bus interchange on the A8 Glasgow Road; and
- examination of the feasibility of introducing a 'taxi share' scheme and ways to reduce the proportion of empty taxi journeys.

The Surface Access Strategy highlights the importance of partnership working to achieve the objectives and targets set. To this end an Airport Transport Forum has been set up, meeting twice yearly. This comprises transport providers, airport operators, neighbouring local authorities, SEStran, Scottish Government, Edinburgh Chamber of Commerce and the Edinburgh Airport Consultative Committee.

BAA Edinburgh has also launched a Staff Travel Plan. Benefiting all 3,800 staff working at the airport, this sets out measures to be implemented by BAA Edinburgh between 2008 and 2012. These include partnership working with the Edinburgh Airport Transport Forum to develop and improve travel options for both staff and passengers (including possible new bus routes), promotion of the existing airport car sharing scheme, the continued offer of the Cycle to Work scheme to BAA Edinburgh staff and free cycle maintenance to those who cycle to work, and raising awareness of available travel options through regular Travel Clinics, information leaflets and travel advice on request. The following Travel Plan targets have been set:

- Increase the percentage of staff travelling to work by public transport from 12.8% to 16% by 2012, with the target being reviewed when tram services start to operate;
- Increase the percentage of staff cycling to work from 0.6% to 2% by 2012; and
- Increase the percentage of staff travelling by car who share from 10% to 15% by 2012.

3. Existing Transport Conditions

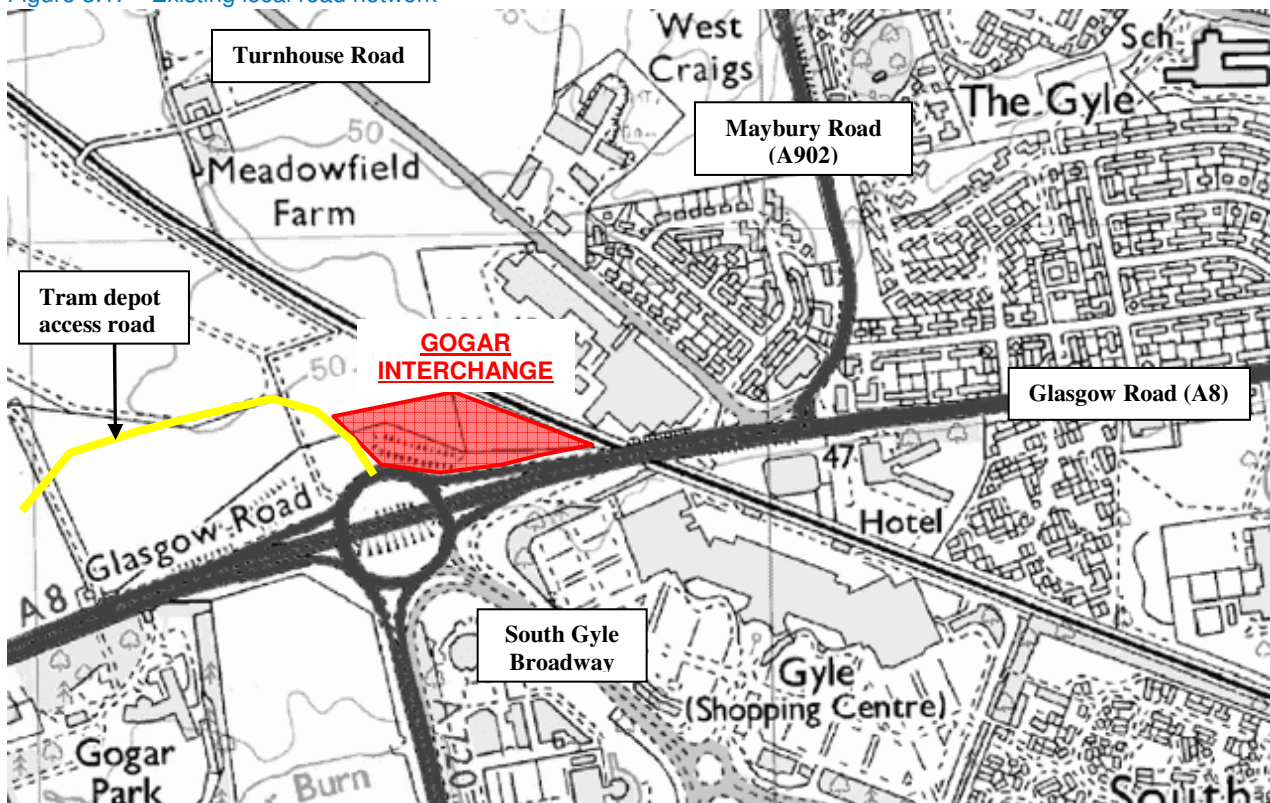
3.1 Existing Road Network

Existing road links in vicinity of development site

The proposed development is located approximately 200m to the north east of the A8/A720 Gogar Roundabout, a grade separated dual carriageway junction with a signalised gyratory. A single carriageway access road from Gogar Roundabout is currently under construction to provide access to the Edinburgh Tram depot approximately 400m to the west of the development site. The roundabout and its approach arms are subject to a 40mph speed limit.

Figure 3.1 indicates the site boundary in its local context.

Figure 3.1: Existing local road network



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From Gogar Roundabout, to the south the dual carriageway A720 City Bypass provides access to the M8 motorway at Hermiston and skirts Edinburgh's western and southern boundary to connect with the A1 to the east of the city. To the south east, the dual carriageway South Gyle Broadway provides access to the Gyle Shopping Centre and employment/residential areas beyond. To the west, the dual

carriageway A8 Glasgow Road provides access to the Royal Bank of Scotland offices at Gogarburn, and to Edinburgh Airport approximately 4km distant. To the east, the A8 Glasgow Road forms one of the primary road corridors into Edinburgh City Centre, via Maybury and Corstorphine.

Approximately 600m walking distance to the northeast of the development site, Turnhouse Road is a single carriageway road providing access to Turnhouse village and the airport freight terminal. With residential frontages on the north east side, the road is subject to a 30mph speed limit.

3.2 Existing Traffic Flows

No turning movement data for Gogar Roundabout is currently held by CEC. An understanding of existing traffic flows in the vicinity of the development site has therefore been gained by a sample turning movement count undertaken by Mott MacDonald on Wednesday 19th August 2009 (at the commencement of the school term), for selected movements at Gogar Roundabout during the AM peak period (0740-0840). The results of this turning movement survey are presented in **Table 3.1** below.

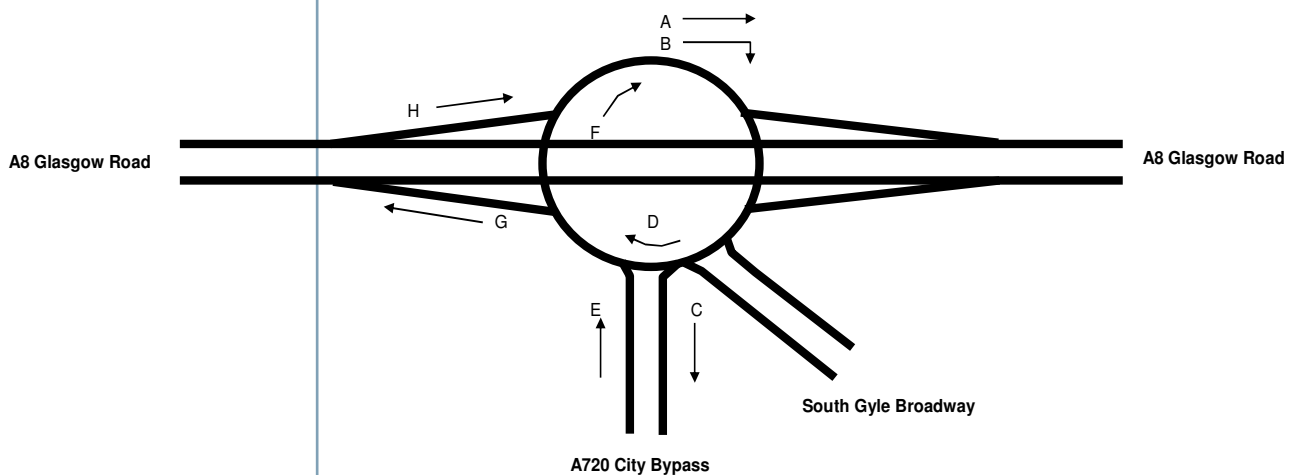


Table 3.1: AM peak turning movements – A8/A720 Gogar Roundabout, Wednesday 19th August 2009

Movement	Vehicle Type	Time						Total
		0740-0750	0750-0800	0800-0810	0810-0820	0820-0830	0830-0840	
A	Car	130	139	132	127	123	117	768
	HGV	8	6	10	4	10	4	42
	Bus	1	5	1	5	1	0	13
	Total	139	150	143	136	134	121	823
B	Car	366	411	386	398	441	384	2386
	HGV	7	6	5	4	4	6	32
	Bus	2	4	2	5	2	2	17
	Total	375	421	393	407	447	392	2435
C	Car	171	146	185	167	184	174	1027
	HGV	7	14	3	4	7	7	42
	Bus	0	1	1	3	0	2	7
	Total	178	161	189	174	191	183	1076
D	Car	36	44	62	56	53	64	315
	HGV	6	7	0	0	0	0	13
	Bus	1	3	5	5	2	4	20
	Total	43	54	67	61	55	68	348
E	Car	352	310	335	338	297	292	1924
	HGV	11	4	14	2	11	6	48
	Bus	1	6	0	0	1	0	8
	Total	364	320	349	340	309	298	1980
F	Car	266	246	246	243	238	217	1456
	HGV	9	7	14	2	9	5	46
	Bus	0	5	1	2	1	0	9
	Total	275	258	261	247	248	222	1511
G	Car	122	108	151	151	112	139	783
	HGV	8	4	0	0	2	1	15
	Bus	2	4	4	3	2	4	19
	Total	132	116	155	154	116	144	817
H	Car	230	304	272	282	326	284	1698
	HGV	6	5	1	6	5	5	28
	Bus	3	4	2	8	2	2	21
	Total	239	313	275	296	333	291	1747

Source: Mott MacDonald observations, 19/08/09

AM peak sample turning movement counts undertaken by Mott MacDonald

The recorded flows were cross-checked with Automatic Traffic Count (ATC) data supplied by Transport Scotland for the A8 Glasgow Road, 800m west of Gogar Roundabout and the A720 City Bypass, 1.6km north of M8 Junction 1. The ATC data indicates a distinct peak in flows between 0700 and 0900, suggesting that the sample turning movement count undertaken by Mott MacDonald between 0740 and 0840 is a robust reflection of typical peak hour traffic conditions. The PM peak period was identified from the ATC data as 1700-1800 for the A8 Glasgow Road and 1600-1700 for the A720 City Bypass. **Table 3.2** and **Table 3.3** shows 5 day average hourly link flows covering the AM peak hours and PM peak hour for the two ATC sites.

Table 3.2: Link Traffic Flows - A8 Glasgow Road, west of Gogar Roundabout (August 2009 ATC)

Peak Hour	Average Weekday Link Flows, 03/08/09 – 07/08/09		
	Eastbound	Westbound	Total
0700-0800	2200	1498	3698
0800-0900	2237	1559	3796
0740-0840*	2224	1539	3763
1600-1700	2018	1869	3887

* Flows calculated from recorded hourly data

Table 3.3: Link Traffic Flows – A720 City Bypass, 1.6km north of M8 Junction 1 (August 2009 ATC)

Peak Hour	Average Weekday Link Flows, 03/08/09 – 07/08/09		
	Southbound	Northbound	Total
0700-0800	905	1783	2688
0800-0900	1037	1777	2814
0740-0840*	993	1779	2772
1600-1700	2270	1083	3353

* Flows calculated from recorded hourly data

Tables 3.2 and 3.3 also indicate flows for the 0740-0840 period calculated using linear interpolation. These flows are reasonably consistent with the sample turning movement count undertaken by Mott MacDonald.

Existing problems with on-street car parking on Turnhouse Road

Accident figures are consistent with the national average for a junction of this type

3.3 On-street Car Parking

Problems with on-street parking on Turnhouse Road were highlighted during MM's meeting with CEC officers on 3rd July 2009. These problems have been attributed to commuters bound for Edinburgh city centre, who park their cars on-street and then continue their journey by public bus services. Observations of the extent of on-street parking on Turnhouse Road were made by MM during the morning of Tuesday 28th July 2009. Seven cars were parked on the east side of the road to the north of the 30mph speed limit zone boundary. Within the 30mph zone, 14 cars were parked on-street and two on the footway. Most of these cars were parked opposite an industrial area. At the same time, the car park adjoining the Marionville Models shop was also fully occupied by seven cars, which suggests that it is being used either by employees at the adjoining industrial area, or as an informal Park & Ride commuter car park.

Further observations were made during the afternoon of Tuesday 4th August 2009. These indicated that 12 cars were parked on-street within the 30mph zone and one on the footway. The Marionville Models car park was again fully occupied with seven cars. During both the early morning and afternoon periods, indiscriminate parking at the junctions of Turnhouse Road/West Craigs Crescent and Turnhouse Road/residential access road was observed, restricting junction visibility. Neither junction is protected by yellow line waiting prohibitions.

3.4 Road Safety

Accident data was supplied by City of Edinburgh Council for the five year period between January 2004 and December 2008. The study area comprises Gogar Roundabout and its approach arms.

The data has been examined, with due reference to the ROSPA Road Safety Engineering Manual, in order to identify any clusters and trends in the pattern and location of the accidents.

Analysis of this data indicates 33 personal injury accidents, 31 of which were of slight severity and two serious. One serious injury accident occurred on the northbound carriageway of the A720 City Bypass approximately 100m south of the roundabout, during the daytime in wet weather. This involved a collision between a car changing lane and a motorcycle going ahead. The motorcyclist skidded and sustained serious injuries. The second serious injury accident occurred on the A8 eastbound carriageway, 50m west of its junction with the A720 within



the roundabout underpass. This involved a shunt between four vehicles, with one car passenger sustaining slight injuries and an LGV driver sustaining serious injuries.

None of the 33 personal injury accidents resulted in pedestrian casualties.

The figures are consistent with the national average for a junction of this type. Furthermore there is no apparent safety problem relating to vulnerable road users.

The full accident data is included as **Appendix B**.

3.5 Existing Bus Services

The closest bus stops are located approximately 400m to the southwest to the site, on the A8 Glasgow Road west of Gogar Roundabout on the eastbound offslip and westbound onslip. These stops are served by regular bus services between Edinburgh Airport and the City Centre, as well as by regional bus services. Footways are provided on both sides of Glasgow Road. However, pedestrian connectivity from the bus stop on the westbound onslip to the development site is hindered by the absence of controlled pedestrian crossings across the gyratory slip roads, although dropped kerbs are provided.

Other bus services stop on the A8 Glasgow Road in Maybury, adjacent to the Marriott Hotel approximately 700m to the east of the site, and at the Gyle Shopping Centre, approximately 600m to the southeast.

Table 3.4 provides details of the public bus services stopping in the vicinity of the site.



Table 3.4: Existing Public Bus Services in Vicinity of Site

Service	Route	Closest Bus Stop to Site	Mon – Sat Frequency (mins)	Sun Frequency (mins)	Operator
18	Royal Infirmary – Gyle Centre	Gyle Shopping Centre	30	60	Lothian Buses
31	East Craigs – Rosewell	Maybury Road	10	30	Lothian Buses
35	Edinburgh Airport – Ocean Terminal	A8 (W of Gogar Rbt)	15	30	Lothian Buses
48	Sheriffhall – Ingliston P&R/Ratho	Maybury, Marriott Hotel	Inter peak only: 20 (P&R), 40 (Ratho)	30	Lothian Buses
X48	Sheriffhall – Ingliston P&R/Ratho	Maybury,	AM/PM peaks	No service	Lothian Buses

Service	Route	Closest Bus Stop to Site	Mon – Sat Frequency (mins)	Sun Frequency (mins)	Operator
		Marriott Hotel	only: 10 (P&R), 40 (Ratho)		
100 (Airlink)	Edinburgh Airport – Waverley Bridge	Maybury, Marriott Hotel	8	8	Lothian Buses
N22	Edinburgh Airport/Waverley – Ocean Terminal	A8 (W of Gogar Rbt)	30	30	Lothian Buses
12	Whitburn – Edinburgh	A8 (W of Gogar Rbt)	30	30	First in Scotland East
16	Bathgate – Edinburgh	A8 (W of Gogar Rbt)	60	No service	First in Scotland East
38	Stirling – Edinburgh	A8 (W of Gogar Rbt)	30	30	First in Scotland East
X38	Linlithgow or Falkirk – Edinburgh	Maybury, Marriott Hotel	30	No service	First in Scotland East
63	South Queensferry – South Gyle – Edinburgh Park	A8 (W of Gogar Rbt)	60	No service	E+M Horsburgh
64	Edinburgh Airport – South Gyle – Western General Hospital	A8 (W of Gogar Rbt)	60	No service	E+M Horsburgh
555	Livingston – Sighthill/Edinburgh Airport circle	Gyle Shopping Centre	60	120	E+M Horsburgh
777	Livingston – Edinburgh Airport/Sighthill circle	Gyle Shopping Centre	60	120	E+M Horsburgh
747	Heriot Watt or Edinburgh Airport – Inverkeithing	A8 (W of Gogar Rbt)	60	No service (via Showground only)	Stagecoach in Fife
900	Glasgow – Edinburgh	Maybury, Marriott Hotel	15	15	Scottish Citylink
909	Dunblane or Stirling University - Edinburgh	Maybury, Marriott Hotel	60	No service	Scottish Citylink
68	Gyle – Turnhouse/Clermiston circle	Gyle Shopping Centre	60	No service	Waverley Travel

Source: www.travelinescotland.com



In addition to public bus services, during the AM and PM peak periods two employee shuttle bus services are operated from South Gyle railway station. One service operates to the Royal Bank of Scotland offices at Gogarburn, and the other service to Ratho (for HSBC) and to Edinburgh Park.

3.6 Existing Rail Services

The closest rail station is South Gyle, approximately 1.5km to the southeast of the development site. South Gyle is served by First ScotRail Newcraighall – Edinburgh – Fife Circle – Edinburgh – Newcraighall services. From Monday to Saturday, this service provides

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approximately four trains per hour eastwards to Edinburgh City Centre, and the same frequency northwards to Dunfermline, Cowdenbeath and Kirkcaldy. On Sunday approximately one to two trains per hour are provided.

2km to the south of the development site, Edinburgh Park rail station is served by two trains per hour from Edinburgh Waverley to Bathgate from Monday to Saturday, and one train per hour on Sundays.

A sample survey of rail boarding and alighting movements, together with access/egress travel mode, was undertaken at South Gyle rail station between 0630 and 0900 on Tuesday 4th August 2009. The results of this survey are presented in **Table 3.5** below.

Table 3.5: AM Peak Boarding/Alighting Surveys, South Gyle Rail Station

Arrival Time	Total Boardings	Rail Station Access Mode				Total Alightings	Rail Station Egress Mode ¹				
		Walk	Cycle	Car parked	Car set down		Walk	Cycle	Car pick up	HSBC Shuttle	RBS Shuttle
0633	4	1	1	2	0	3	3	0	0	0	0
0652	2	2	0	0	0	12	11	1	0	0	0
0705	3	2	0	0	1	7	7	0	0	0	0
0719	10	8	0	2	0	21	15	3	0	3	0
0734	17	16	0	0	1	39	28	1	0	10	0
0738	7	5	0	0	2	21	10	0	0	4	7
0745	9	8	0	1	0	25	11	0	0	10	4
0804	33	25	0	5	3	46	24	0	0	8	14
0822	27	21	0	0	6	38	36	2	0	0	0
0831	18	16	2	0	0	34	12	4	0	8	10
0835	15	15	0	0	0	24	7	0	0	0	0
0841	6	6	0	0	0	25	8	0	0	16	18
0858	5	4	1	0	0	26	26	0	0	0	0

¹ For the HSBC and RBS shuttle buses, the number of passengers egressing may include non-rail passengers, i.e. car drivers parking in the station car park to continue their journey by shuttle bus

Arrival Time	Total Boardings	Trains to Fife									
		Rail Station Access Mode				Total Alightings	Rail Station Egress Mode				
		Walk	Cycle	Car parked	Car set down		Walk	Cycle	Car pick up	HSBC Shuttle	RBS Shuttle
0627	2	2	0	0	0	3	3	0	0	0	0
0641	2	2	0	0	0	0	0	0	0	0	0
0718	1	1	0	0	0	3	3	0	0	0	0
0727	1	1	0	0	0	12	4	0	0	4	4
0751	3	2	1	0	0	13	3	0	0	0	9
0815	2	2	0	0	0	18	2	0	0	2	14
0823	8	7	1	0	0	30	3	0	0	14	12
0846	3	3	0	0	0	11	11	0	0	0	0
0856	3	3	0	0	0	4	4	0	0	0	0

Source: Mott MacDonald observations, 04/08/2009

Ten rail passengers parked their car at the station, representing 6% of recorded boardings during the survey period

Table 3.5 indicates that the largest passenger flow is associated with alightings from Edinburgh-bound trains. 321 passenger alightings were recorded during the survey period. Boardings of Edinburgh-bound trains represent approximately 50% of the alighting flow, with 156 passenger boardings recorded during the survey period.

Boarding/alighting passenger flows associated with Fife-bound trains are significantly lower. As with Edinburgh-bound trains, the highest passenger flow is associated with alightings. 94 passenger alightings and 25 boardings were recorded for Fife-bound trains during the survey period.

With regard to rail access mode, Table 3.5 shows that ten passengers parked their car at the station, representing only 6% of the 181 boardings (to Edinburgh and Fife) recorded during the survey period. The large majority of rail passengers arrived at South Gyle station on foot.

In terms of rail egress mode, Table 3.5 indicates that a significant proportion of passengers use the RBS and Edinburgh Park (HSBC) shuttle buses for their onward journey. However, observations suggest that some of the shuttle bus boardings, particularly from 0800 onwards, are associated with car drivers parking within the (free) car park and boarding the bus to complete their journey to work.



A significant proportion of car park users could be RBS/Edinburgh Park (HSBC) employees using the facility as a Park & Ride for the shuttle buses, not the rail service

Table 3.6 below presents the results of a car park occupancy survey at South Gyle station, undertaken at the same time as the rail boarding/alighting survey.

Table 3.6: AM Peak Car Park Occupancy Survey, South Gyle Rail Station

Time	Number of spaces occupied	% of official car park capacity (63 spaces)
0630	5	8%
0645	6	10%
0700	7	11%
0715	10	16%
0730	19	30%
0745	45	71%
0800	49	78%
0815	71	113%
0830	76	121%
0845	77	122%
0900	81	129%

Source: Mott MacDonald observations, 04/08/2009

Table 3.6 indicates that, despite only ten rail passengers being observed to park their cars at the station, the car park reached capacity soon after 0800. By the end of the AM peak period, the number of cars parked exceeded the official capacity of 63 spaces (source <http://www.nationalrail.co.uk/stations/sgl/details.html>) by almost 20 vehicles, with widespread parking in unmarked spaces.

The site observations suggests that a significant proportion of car park users could be RBS/Edinburgh Park (HSBC) employees using the facility as a Park & Ride for the shuttle buses, not the rail service. It may also be possible that South Gyle station car park is being used as a Park & Share facility, or as an overspill area for residential parking.

CEC expressed concerns regarding the accuracy of the above findings, due to the combination of a single survey, the school holidays and the general summer holiday period. To address this, a further survey was undertaken at South Gyle rail station between 0700 and 0930 on Tuesday 1st September 2009. The results are shown in **Table 3.7** below.

Table 3.7: AM Peak Boarding/Alighting Surveys, South Gyle Rail Station

Arrival Time	Total Boardings	Trains to Edinburgh				Total Alightings
		Rail Station Access Mode				
		Walk	Cycle	Car parked	Car set down	
07:05	4	4	0	0	0	9
07:18	7	7	0	0	0	19
07:24	6	6	0	0	0	21
07:31	6	5	0	1	0	25
07:48	23	20	0	2	1	23
08:05	16	11	0	3	2	65
08:30	36	30	0	2	4	69
08:35	13	10	0	2	1	44
08:41	7	6	0	1	0	32
08:45	2	0	0	0	2	33
08:55	6	5	0	1	0	36
09:05	14	13	0	1	0	6
09:21	11	11	0	0	0	16

Arrival Time	Total Boardings	Trains to Fife				Total Alightings
		Rail Station Access Mode				
		Walk	Cycle	Car parked	Car set down	
07:18	3	3	0	0	0	2
07:24	1	0	1	0	0	9
07:47	2	1	0	0	1	21
08:15	1	0	1	0	0	18
08:20	5	4	0	1	0	17
08:45	1	1	0	0	0	19
08:55	5	4	0	1	0	12
09:15	2	2	0	0	0	2

Source: Mott MacDonald observations, 01/09/2009

The results of the 1st September 2009 survey generally support those of the 4th August 2009 survey

Table 3.7 indicates that the results of the 1st September 2009 survey generally support those of the 4th August 2009 survey. The largest passenger flow was again associated with alightings from Edinburgh-bound trains, with boardings of Edinburgh-bound trains representing less than half of the alighting flow. Boarding/alighting passenger flows

9% of rail boardings recorded during the survey were made by passengers parking their car at the station



associated with Fife-bound trains is significantly lower than for Edinburgh-bound trains.

With regard to rail access mode, Table 3.7 shows that 15 passengers parked their car at the station, representing only 9% of the 171 boardings (to Edinburgh and Fife) recorded during the survey period. This is comparable with the ten boarding rail passengers observed to use the car park during the 4th August 2009 survey. The large majority of rail passengers again arrived at South Gyle station on foot.

Table 3.8 presents the findings of a car park occupancy survey undertaken at the same time as the rail boarding/alighting survey.

Table 3.8: AM Peak Car Park Occupancy Survey, South Gyle Rail Station

Time	Number of spaces occupied	% of official car park capacity (63 spaces)
07:00	6	10%
07:15	8	13%
07:30	12	19%
07:45	25	40%
08:00	42	67%
08:15	54	86%
08:30	63	100%
08:45	72	114%
09:00	73	116%
09:15	74	117%
09:30	74	117%

Source: Mott MacDonald observations, 01/09/2009

Table 3.8 indicates that the car park reached its official capacity of 63 spaces at approximately 0830. 74 vehicles were parked by the end of the survey period, slightly lower than the 4th August 2009 survey.



Boarding counts were also undertaken for the RBS and Edinburgh Park (HSBC) shuttle bus services, shown in **Table 3.9** below.

Table 3.9: Shuttle Bus Boarding Counts, South Gyle Rail Station

Edinburgh Park (HSBC) Shuttle Bus		RBS Shuttle Bus	
Arrival Time	Boardings	Arrival Time	Boardings
07:22	2	07:20	2
07:30	9	07:30	11
07:35	3	07:40	8
07:50	6	07:50	12
08:10	11	08:00	8
08:22	8	08:10	13
08:32	11	08:20	8
08:40	15	08:30	10
08:50	21	08:40	23
09:00	14	08:50	16
09:10	1	09:00	6
09:30	6	09:10	0
		09:20	0
		09:30	1

The level of shuttle bus usage indicated in Table 3.9, together with general observations during the survey, suggest that the majority of these boardings are associated with car drivers parking at the station car park, especially from 0800 onwards.

In summary, the two surveys undertaken in August and September 2009 both indicate that rail borne Park & Ride activity at South Gyle is limited, suggesting that the majority of cars parked are associated with users of shuttle buses to the surrounding employment areas.

3.7 Pedestrian and Cycle Routes



Access to the site for pedestrians and cyclists from the north and west is good, with a shared cycleway/footway provided along the north side of the A8 Glasgow Road, around Gogar Roundabout. This provides access to the East/West Craigs residential area to the northeast and the RBS headquarters (via a road overbridge), Ratho Station and Newbridge to the west.



A shared cycleway/footway is also provided on the south side of the A8 Glasgow Road, but users are required to cross the South Gyle Broadway and A720 City Bypass exits from Gogar Roundabout via uncontrolled crossings, although dropped kerbs are provided. This route connects with a shared use path on the north east side of South Gyle Broadway and routes through the Gyle Shopping Centre to the residential area.

Both routes are designated as cycle paths on the Edinburgh Cycle Network map, and are provided with lighting and good quality destination signage.

Footways and dropped kerbs are provided on the western and eastern overbridges at Gogar Roundabout, although high traffic volumes on the slip roads discourage movement between the footways/cycleways on the north and south sides of the A8 Glasgow Road. Alternative routes for crossing the A8 necessitate large diversions, via the RBS overbridge approximately 800m to the west of the roundabout, or via signal controlled pedestrian crossings at the Turnhouse Road/A902 Maybury Road/A8 Glasgow Road junction approximately 600m to the east.

4. Proposed Development

4.1 Site Location

The site for the proposed interchange fronts the north side of the A8 Glasgow Road and covers an area of approximately 1.0ha. This does not include the area covered by the tram stop which is being progressed as part of the Edinburgh Tram works.

The site currently has multiple owners. The largest proportion is owned by CEC, with other landowners being the Scottish Ministers, Saica Packaging UK Ltd, Network Rail, West Craigs Ltd (formerly Meadowfield Developments) and Gyle Shopping Centre Partner Ltd/CEC.

The site is currently used by contractors for the Edinburgh Tram construction works, with no obvious vegetation on site.

4.2 Development Proposals

Parking for 100 cycles and 18 cars (including four spaces for Blue Badge holders and four for First ScotRail staff) will be provided, together with two bus stands and three layover bays

This Transport Assessment accompanies a planning application for a new inter-modal transport interchange on land to the northwest of the A8/A720 Gogar Roundabout. The proposals include a heavy rail station with two 265m length platforms (with partial canopies), lifts and footbridge between platforms, ticket office, waiting rooms and retail kiosk. Parking for 100 cycles and 18 cars (including four spaces for Blue Badge holders and four for First ScotRail staff) will be provided, together with two bus stands and three layover bays. Level access to the tram stop will be provided via a footbridge over the tramway cutting, with lifts providing step free access to the tramway stops below. A subway under the A8 Glasgow Road, to the east of Gogar Roundabout, will be provided, forming the main gateway to the interchange from the Gyle area.

A proposed site layout plan is provided as **Appendix C**.

4.3 Relevant Committed Developments

4.3.1 Turnhouse Road light industrial development

At the meeting with CEC officers on 3rd July 2009 a proposed light industrial development on Turnhouse Road was identified as the only committed development which is relevant to this Transport Assessment. CEC supplied the Transport Assessment report for this development (Waterman Boreham Consulting, 16th July 2009) to Mott MacDonald.

The proposed light industrial development is located on the site of the former RAF Turnhouse base, approximately 3km walking distance northwest of the Gogar development site and consists of up to 3,291m² GFA of offices and up to 16,550m² of light industrial units.

No specific issues (such as on-street parking) affecting Turnhouse Road were identified in the Waterman Boreham report.

Consideration of the impact of the proposed light industrial development on the operation of Gogar Roundabout was not made in the Waterman Boreham report, therefore the predicted trip generation has not been incorporated in our assessment.

4.3.2 Gogar Link

The site layout has been designed to accommodate the dualling of the tram depot access road at a later date if required

Although not a committed development, the site layout has been designed to accommodate the dualling of the tram depot access road at a later date if required, to accommodate the proposed Gogar Link connecting Gogar Roundabout with the Airport and Eastfield Road.

4.3.3 Gogar Tram Depot

As part of the development of the Edinburgh Tram network a tram maintenance and stabling facility will be constructed on land to the northwest of Gogar Roundabout. Opening is scheduled for 2011.

It is understood from CEC officers that no Transport Assessment was submitted for this development, although a site layout drawing available online as part of the planning application documents shows a total of 112 car parking spaces will be provided, presumably for staff and operational use. It has been indicated anecdotally that staff will work on a shift-based pattern and that shift changeover times will be outside the peak periods on the local road network. Trip generation associated with the tram depot has therefore not been incorporated in our assessment.

4.4 Consultations with Key Stakeholders

4.4.1 Overview

Liaison with Lothian Buses, First in Scotland East, E&M Horsburgh and SEStran has taken place to define likely future requirements for bus interchange at Gogar. Preliminary interchange layouts were circulated for their consideration, which indicated the key access principles, i.e.

bus access to Gogar Interchange via the tram depot access road and bus stands adjacent to the heavy rail station.

With regard to the potential diversion of bus services into Gogar Interchange, bus operators were invited to express their views as to whether this would be commercially viable, i.e. the possibility of new/additional revenue support being provided by CEC for existing bus services was not discussed.

The key issues arising from this liaison are summarised in the following sections.

4.4.2 Lothian Buses

The main comments made by Lothian Buses were as follows:

- irrespective of the prospects for commercial bus operation to Gogar Interchange, or operation under contract (which Lothian Buses believe is likely to be the case for any future Orbital Bus service), replacement bus services will be required when rail and tram services are disrupted. Therefore infrastructure capable of accommodating bus services will be required in any case;
- scepticism was expressed regarding the ability for bus services to be diverted without significantly adding to running time, which could lead to increased operating costs and a perception of the route being circuitous for any through passengers not boarding or alighting at the station;
- stops on the slip roads to the east of Gogar Roundabout may be usable, provided that attractive walk egress to the interchange can be achieved (it was subsequently identified by Mott MacDonald that, due to the limited land available and the road safety issues associated with conflicting traffic movements, the provision of additional bus stop or lay-by provisions on the A8 is not feasible);
- more interest was expressed in serving the station proper by terminating services. In particular, the tram route will not provide a link from the Corstorphine corridor or from the south western suburbs. There may therefore be some potential to extend existing route 18 from the Gyle Shopping Centre to Gogar Interchange, but this will be a matter of commercial judgement, weighing up the probable revenue against the increased operating cost, as well as the specific access arrangement and the capacity for buses to take layover;
- the potential future diversion of route 31 (East Craigs – Rosewell) via Turnhouse road as and when the West Craigs development takes place was indicated. Under this scenario, Lothian Buses would be keen to have direct access to the northeast side of Gogar

There may be some potential to extend existing route 18 from the Gyle Shopping Centre to Gogar Interchange

First would be unlikely to inconvenience its existing Corstorphine and City Centre bound passengers by making a time consuming diversion

Interchange (there are no elements within the scheme design which would preclude the provision of such access in the future).

4.4.3 **First in Scotland East**

The main comments made by First in Scotland East were as follows:

- First would require much more detail of the planned road layout before committing to enter Gogar Interchange;
- Some passenger movements would benefit from the diversion of services into the interchange, for example passengers travelling from Broxburn or Winchburgh to Fife, but these are likely to be in a minority;
- First would be unlikely to inconvenience its existing Corstorphine and City Centre bound passengers by making a time consuming diversion, consistent with the view taken regarding the routeing of buses via RBS at Gogarburn; and
- There are no current plans to increase bus service frequencies along the corridor, indeed from 19th October 2009 the frequency of route 38 will be reduced from four to three buses per hour.

4.4.4 **E&M Horsburgh**

The main comments made by E&M Horsburgh were as follows:

- the likelihood is that routes 63, 64, 555, 559 and 777 would all stop within Gogar Interchange;
- all of the above routes are currently operated under contract, however routes 555 and 777 will become commercial in 2010; and
- route 64 currently serves the airport and the feasibility of diverting routes 63 and 559 via the airport is being investigated.

4.4.5 **SEStran**

Mott MacDonald attended a meeting with SEStran officers and the CEC Public Transport officer on 20th August 2009, primarily to discuss the Orbital Bus proposals and the potential requirements for interchange at Gogar. The main issues arising from the meeting were as follows:

- the aspiration for Orbital Bus is to provide 12 buses per hour during peak periods between Musselburgh and the Airport, with six buses per hour off-peak;
- SEStran would very much like Orbital Bus services to stop within Gogar Interchange;
- a layover facility at Gogar Interchange is desired, as some buses may terminate there during the AM and PM peak traffic periods, as demand for the Airport is low at those times;

Provision of stopping/layover facilities for Orbital Bus services at Gogar Interchange is desired

- Orbital Bus services are likely to be operated by single deck vehicles, but this will be the operator's decision. However, the interchange layout should be "future proofed" so that 18.0m length articulated bus operation can be accommodated in the future;
- double deck bus operation is possible. There are no height restrictions within the scheme design which could prevent this;
- SEStran would not encourage the provision of long-term car parking at Gogar Interchange. If parking were to be provided, provision to the south west of the railway track would encourage car parking for the purpose of commuting to Edinburgh. SEStran reported that a more desirable parking location would be to the north east of the railway track, with access from Turnhouse Road (there are no elements within the scheme design which would preclude the provision of such facilities in the future).

4.5 Construction Traffic Movements

Construction works are programmed to commence in July 2010. It is anticipated that construction vehicles will access the development site from three locations:

- from the tram depot access road running north from Gogar Roundabout;
- from the A8 Glasgow Road. This access will be to facilitate subway construction. Staged occupation of this area is required which will be agreed with CEC as the roads authority. **Appendix D** shows the proposed traffic management arrangements to be implemented during the four phases of subway construction; and
- from the Gyle Shopping Centre car park, again to provide access to the subway construction works.

Some abnormal loads are envisaged. These may include prefabricated elements of the scheme such as the railway footbridge and the link structure between the station and the vertical circulation building.

It is anticipated that HGV movements will be restricted to daytime hours only (i.e. 0700 to 1800 Monday to Saturday), although some limited night time working may be necessary to work outwith railway operational hours. The shifts of construction workers will be timed to avoid the peak periods on the local road network.

No sensitive receptors have been identified which may be affected by traffic generated during the construction phase. As the development site adjoins the strategic road network, construction HGVs will not be required to traverse local residential roads. No significant negative effects are therefore expected to occur during the construction phase,

impacting either on the surrounding transport infrastructure or on the local community.

4.6 Development Trip Generation

Estimated weekday person trip and vehicle trip movements associated with the proposed Gogar Interchange, across a variety of travel modes, have been estimated with reference to the following information sources:

- heavy rail passenger demand analysis undertaken by MVA for the GRIP Stage 2 and 3 reports;
- consultations with local bus operators (Lothian Buses, First in Scotland East and E&M Horsburgh) to define likely future requirements for bus interchange at Gogar;
- discussions with SEStran regarding their proposals for Orbital Bus services to be routed via the A720 City Bypass and their requirements for bus interchange at Gogar.

4.6.1 Estimated Person Trip Generation

The estimated future annual demand at Gogar Interchange for different passenger types, incorporating demand to longer distance destinations such as Perth, Dundee, Aberdeen and Inverness, is presented in **Table 4.1** below, for opening and future years.

Table 4.1: Estimated annual passenger demand (heavy rail), Gogar Interchange

Passenger type	2011	2016	2020	2025	2030
Airport customers	208000	401000	470000	528000	586000
Airport employees	17000	34000	39000	42000	45000
Gyle/Edinburgh Park commuters	324000	413000	407000	406000	405000
Gyle/Edinburgh Park leisure passengers	44000	97000	104000	114000	124000
West Edinburgh Planning Area (WEPA) commuters	0	0	70000	70000	70000
Total	593000	945000	1090000	1160000	1230000

Source: Table 4.14, GRIP Stage 3 Report

NB Demand represents the number of single journeys (both outbound and return) made during the course of a year.

The annual passenger demand was converted into daily demand for the 2011 opening year and 2025 future year using the following factors: