

Arup**Scotland**

West Craigs Ltd

West Craigs

Transport Assessment

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Transport Assessment

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Non-Technical Summary

Arup Scotland has been commissioned by West Craigs Ltd to prepare and submit a Transport Assessment (TA) in support of the planning application for the West Craigs development.

The West Craigs development relates to the construction of 650 households of which a minimum of 33% would be affordable housing. To encourage a sense of community, the development will also include facilities such as a new Primary School, local shop, Doctor/ Dentist surgery and a community hall. Connectivity within the site and to the wider local area has been a key criterion within the design of the site layout. The development proposals aim to make the West Craigs area accessible to a range of transport modes, providing existing and future residents with a genuine travel choice for journeys to local and strategic destinations.

West Craigs is located to the west of Maybury Road on land currently designated as green belt, however, this area is well served by both commerce and employment opportunities at the Gyle, Edinburgh Park and the new Gogarburn Royal Bank of Scotland Headquarters. Public transport provision in the general area is well established, particularly the bus services on Glasgow Road. Connectivity between the site and the local public transport network are a desirable and realistic goal for the successful development of the site. Preliminary discussions with local bus operators have been encouraging, indicating that regular bus services from the development to local destinations, including bus and rail interchanges can be established.

It is proposed as part of the development that pedestrian, cycle and public transport links will be created to connect with the existing facilities provided within the surrounding area. One key proposal is to improve the accessibility of the area for pedestrians and cyclists by way of a formal signalised crossing on the busy distributor road of Maybury Road.

The main access to the development will be taken from a fourth-arm at the Bughtlins Roundabout on Maybury Road. A new access road will be constructed to link Maybury Road to Craigs Road. Two strategies to access West Craigs are considered in detail within the TA. The preferred option is centred upon a bus gate on Turnhouse Road, with all private vehicles being re-routed via Bughtlins Roundabout and along the upgraded Craigs Road. Under the preferred option, the existing residents of West Craigs would benefit from a reduction in commercial vehicles using Turnhouse Road as well as the increased range and frequency of bus services.

An alternative option would maintain Newhouse Road in its present arrangement, with some improvements associated with the proposed development. If support for the bus gate option were not forthcoming, the resulting development traffic volumes on Turnhouse Road (to the west of the Glasgow Road off-slip) would still only increase by less than two vehicles per minute during the weekday peak periods, representing an insignificant impact.

Both Maybury and Barnton signal controlled junctions currently operate at or above practical capacity with lengthy queues and delays experienced during peak periods. The analysis indicates that following the opening of the development, these junctions would continue to operate within acceptable tolerances achieving an overall no net detriment situation when compared to the existing situation.

A Travel Plan will be developed to encourage and develop options for the residents of the proposed West Craigs development. The potential measures contained within the plan, which will be issued to all new residents, will centre upon raising awareness of the travel options on offer, which will include membership of the Edinburgh City Car Club.

1 Introduction

Arup Scotland (Arup) has been commissioned by West Craigs Ltd to prepare and submit a Transport Assessment (TA) in support of the proposed West Craigs residential development. The location of the site is indicated in Figure 1, located to the west of Maybury Road.

The proposed development is for some 650 housing units including 33% affordable housing, a primary school, community facilities and extensive landscaping.

The purpose of this report is to examine the accessibility of the development by sustainable modes of transport and assess the impact of the predicted development traffic on the operation of the local road network.

A scoping exercise has been undertaken to define and agree the general methodology of this study with the officers of The City of Edinburgh Council (CEC) in accordance with the Institution of Highways and Transportation (IHT), *Guidelines for Traffic Impact Assessment* and the Scottish Executive's *Transport Assessment and Implementation: A Guide* (TAIG). Also, in consideration of current guidance on both a local and national level, attention has been given to the transport related aspects associated with the concept of sustainable development.

Following this Chapter, the structure of this report proceeds as follows:

- Chapter Two National & Local Transport Policies
- Chapter Three Development Proposals
- Chapter Four Local Transport Network & Accessibility
- Chapter Five Travel Plan Framework
- Chapter Six Traffic Conditions
- Chapter Seven Traffic Impact
- Chapter Eight Summary & Conclusions

2 National & Local Transport Policies

2.1 Introduction

This Chapter summarises the current local and national planning and transport policies in relation to new developments. The following key policy documents are referred to:

- Scottish Planning Policy 17 (SPP17) – Transport and Planning Maximum Parking Standards;
- Planning Advice Note 75 (PAN75) – Transport and Planning;
- Scottish Planning Policy 21 (SPP21) – Green Belts;
- Scottish Planning Policy 3 (SPP3) – Planning for Housing;
- Transport Assessment and Implementation: A Guide (TAIG);
- Edinburgh and Lothians Structure Plan; and
- City of Edinburgh Council (CEC) Local Transport Strategy 2007-2011.

Reference has also been made to the Scottish Executive's *Transport Assessment and Implementation: A Guide* (TAIG), which was published in August 2005. Also, consideration has been given to the *Edinburgh standards for sustainable building, finalised version*, October 2006.

2.2 National Policy

In considering the location of the residential development within West Edinburgh and the surrounding area, consideration has been given to the transport and policy guidelines contained within SPP17, PAN57, the Scottish Executive's report 'Scotland's Transport: Delivering Improvements' and GTAS.

2.2.1 SPP17

SPP17 reaffirms the role of the planning system to integrate land use and transport planning. It sets out the following framework for delivery of this key policy:

- *Location policy;*
- *Maximum parking standards for specified users;*
- *TA methodology ensuring that proposed development incorporates maximum feasible sustainable transport access; and*
- *The use of travel plans.*¹

Noting that residential areas are excluded from the national parking standards on the basis that car ownership within Scotland remains unconstrained;

*"Residential areas should be planned in terms of layout, urban design, and permeability to and by walking, cycling and public transport to minimise dominance by the car, whether moving or parked."*²

SPP17 also notes that developments should be accessible on foot, both internal and external; that cyclists' interests should be accommodated and should be served or proposed to be served by public transport.

The location of this site benefits from its proximity to a range of employment opportunities offered principally at Edinburgh Park. The TA investigates and establishes the willingness

¹ SPP17, paragraph 50.

² SPP17, paragraph 58.

of Lothian Buses, the main local public transport company, to serve the site by providing direct services to Edinburgh Park and Edinburgh City Centre. The various elements of the site will be connected by a network of paths, catering for the needs of pedestrians and cyclists.

2.2.2 PAN75

PAN75 accompanies the policy documents SPP17 providing good practice guidance to be carried out in proposal assessment and project delivery. It reinforces the principles and policy set out in SPP17 aiming to ensure that the transport element of new developments proposes genuine choice *“so that each mode contributes its full potential and people can move easily between different modes.”*³

PAN75 emphasises that careful planning with regards to the location of land uses is required, with consideration given to the needs of the users. PAN75 aims to encourage planning policies and proposals to locate developments in areas suitable for their needs with good accessibility, *“where many people are linked to opportunities by networks of regular, reliable and affordable travel.”*⁴

Within PAN75 accessibility to land use for individual travel has been organised into a general hierarchy:

- Walking;
- Cycling;
- Public transport; and
- Motorised modes.

PAN75 also suggests approaches that can be used in accessibility analysis including the use of isochrones to demonstrate the geographical distribution of impacts.

The guidance contained in PAN75 has been accounted for throughout the development of this TA and considers local accessibility through the use of the isochrone method.

2.2.3 TAIG

These guidelines, like SPP17, concentrate on the overall accessibility of new development as a measure for the suitability of the development within its wider catchment. TAIG expands upon the PAN75 suggested criteria for individual travel in relation to new developments. TAIG concentrates on the overall accessibility of new development as a measure for the suitability of the development within its wider catchment. Three key elements of assessment are detailed:

- Assessment of travel characteristics;
- Measures to influence travel to the site; and
- Assessment of impacts.

This TA considers the proposed development in light of the principles discussed by TAIG. Within the development proposals a range of measures are proposed to influence individual travel through providing infrastructure to accommodate non-car based trips, such as shared footway/ cycleways and formal road crossings. These are complimented by the ongoing discussions between developer, bus operators and CEC, to divert regular bus services through the site.

Following the implementation of the West Craigs development proposals the site will be accessible by foot, cycle and public transport. The measures contained within the West

³ PAN71, paragraph 7.

⁴ PAN75, paragraph 22.

Craigs proposals would also benefit the existing resident population of East and West Craigs through enhancing current transport facilities.

2.2.4 SPP21

The West Craigs proposals are located in an area that is currently designated as Green Belt within the currently adopted Structure Plan. The Scottish Executive's Green Belt Policy is contained in SPP21, published in April 2006. This document states the requirement for all local authorities to define a long term settlement strategy for green belts.

As part of the Structure Plan review, SPP21 requires local authorities to consider the most sustainable pattern of urban growth and how it can be accommodated which includes the possibility of re-designating green belt land around many towns and cities. When considering developments within green belt land:

*"the impact on private car travel must be taken into account. SPP17: Planning for Transport seeks to reduce dependence on car travel and encourage more sustainable modes of transport."*⁵

Through endeavouring to comply with SPP17 the West Craigs development proposal aims to demonstrate that the impacts of private car trips associated with West Craigs are minimised and travel choice maximised.

2.2.5 SPP3

An important policy principal of these guidelines is to ensure that new housing areas are located in easily accessible areas in accordance with SPP17. In addition, the guidance emphasises the significance of well developed internal connections:

*"Pedestrian activity in a residential area adds vitality and increases the feeling of personal safety. Too many developments in recent years have given priority to car travel, both between the housing and other facilities, and within the development itself, and layout have been dominated by access roads and parking areas"*⁶

The West Craigs proposals have been developed to fulfil the requirements of SPP3 and SPP17. Encouraging and prioritising non-car based forms of transport have formed important design parameters within the development of the outline planning application for West Craigs.

2.3 Local Policy

2.3.1 Edinburgh and Lothians Structure Plan 2015

The Structure Plan was adopted in June 2005, with a replacement plan identified for 2008. To achieve a more sustainable pattern of development, the transport policy within the Structure Plan contains a number of transport objectives to:

- *"ensure that the location and design of new development, ..., reduces the need to travel by car and encourages the use of public transport, walking and cycling;*
- *Maximise accessibility for all in the community by foot, cycle and public transport; and*
- *Ensure that development caters for its transport needs."*⁷

Specifically the Structure Plan details suitable locations for new housing developments as those that are:

*"highly accessible by public transport are those that have convenient access by regular and frequent public transport services, or on foot, to the main centres of employment and retailing likely to be used by residents."*⁸

⁵ SPP21, Paragraph 15.

⁶ SPP3, paragraph 14.

⁷ Edinburgh and Lothians Structure Plan 2015, paragraph 5.1.

The West Craigs development will provide a network of pedestrian and cycle routes throughout the site and beyond into the surrounding area. In addition LRT and CEC have stated a willingness to re-route services through the site catering for principal retail and employment destinations such as the Gyle, Edinburgh Park and the City Centre.

2.3.2 City of Edinburgh Local Plans

The City of Edinburgh is currently covered by six adopted local plans. The proposed site straddles two of these:

- The Rural West Edinburgh Local Plan; and
- The South West Edinburgh Local Plan.

Figure 1 presents the boundary between these two local plan areas currently lie in relation to the site. The South West Edinburgh Local Plan is currently in the process of being superseded by the Edinburgh City Local Plan. A finalised version of the updated Edinburgh City Local Plan is currently being reviewed.

2.3.2.1 West Edinburgh Local Plan

The adopted local plan contains a number of objectives with regards to transport:

- *“To ensure that development takes place in locations which encourage the use of public transport, walking and cycling in preference to the private car.*
- *To minimise the incentive to use the car, particularly in areas where the direct adverse impacts of this are most severe.*
- *To minimise the detrimental effects of traffic and parking on communities and the environment.*
- *To ensure the development takes account of user and community safety, having regard in particular to vulnerable groups such as children and cyclists.*
- *To facilitate the improvement of the transport system in ways which provide accessibility for all.”⁹*

These Local Plan objectives compliment national transport policies which the West Craigs development aims to comply with. The range of proposed measures and the layout of the development are aimed at encouraging the use of non-car based modes of transport, alleviating community severance and reducing congestion.

2.3.2.2 The Finalised Edinburgh City Local Plan

It is intended that this local plan will cover the whole of the Council area outwith the Rural West Edinburgh Local Plan. Specific transport objectives within the Finalised Edinburgh City Local Plan are:

- *“To minimise the distances people need to travel*
- *To maximise the accessibility of communities to jobs and essential services*
- *To minimise the detrimental effects of traffic and parking on communities and the environment*
- *To support the provision of necessary network infrastructure”¹⁰*

This local plan is viewed alongside the West Edinburgh Local Plan.

⁸ Edinburgh and Lothian Structure Plan 2015, Schedule 5.2A Housing.

⁹ West Edinburgh Local Plan, Chapter 8 Introduction.

¹⁰ Edinburgh City Local Plan, Chapter 9.

2.3.3 Local Transport Strategy

The current adopted Local Transport Strategy (LTS) for the City of Edinburgh is the Edinburgh Transport Strategy 2004-2007. This document focuses on its Vision to provide “a transport system that is accessible to all and serves all ...”¹¹

The Visions also states that:

“The Council will seek to maximise people’s ability to meet their day to day needs within short distances that can easily be undertaken without having to rely on a car. The city should develop and grow in a form that reduces the need to travel longer distances. Choice should be available for all journeys within the city.”

The adopted LTS is currently review. A draft version of the 2007-2012 LTS is currently being considered, both versions of the LTS are discussed within this section. Visions central to the 2004-2007 document are consistent with the updated version.

Both versions of the LTS contain objectives which summarise the direction of transport policy in the city. Specific objectives for the transport system, as identified within the 2007-2012 LTS are:

- A To facilitate reliable and convenient access to the city and movement within it, in particular by reducing congestion;
- B To increase the proportion of journeys made on foot, by cycle and by public transport;
- C To implement the tram project;
- D To reduce the need to travel, especially by car;
- E To reduce the adverse impact of travel, including road accidents and environmental damage;
- F 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 setting for the city’s built heritage, as well as routes for movement whether by car, bus, bicycle or on foot
- G To improve the ability of people with low incomes and people with mobility impairments to use the transport system, and
- H To ensure that the road footway and cycle network are of a standard suitable for safe and comfortable movement.¹²

In relation to land use planning it is acknowledged that

“The distribution of housing, employment, shopping and leisure opportunities across the city and surrounding areas determines travel patterns.”¹³

2.3.4 Edinburgh Standards For Sustainable Building Finalised Version

The above planning guidance has been adopted and is to be applied to all major planning applications submitted on or after 1st May 2007.

“Major developments’ are those of ... 10 residential units or more”¹⁴

The guidance details the strategies to be adopted for Edinburgh to achieve the Council’s vision:

“to lead the most successful and sustainable city region in Northern Europe by 2015.”¹⁵

¹¹ Local Transport Strategy 2004-2007, Paragraph 1.8.

¹² Local Transport Strategy 2007-2012, page 19.

¹³ Local Transport Strategy 2007-2012, page 98.

¹⁴ Edinburgh Standards For Sustainable Building Finalised Version, Section 2.5

The standards identify 6 broad principles, these are:

- 1) *Quality in Layout, Building and Landscaping Design*
- 2) *Design inclusive, Healthy & Safe Environments*
- 3) *Reduce Climate Change Impacts and Increase Renewable Energy Generation*
- 4) *Encourage use of sustainable resources and materials*
- 5) *Reduce Pollution and encourage recycling*
- 6) *Encourage Sustainable Construction and Operation*¹⁶

The West Craigs development in terms of both location and layout aims to provide residents with a choice of travel modes to key local destinations. Within the published guidance Principle 2 is directly associated with encouraging non-car based transport opportunities, as is presented in the following extract:

*“Proposals need to demonstrate that they are accessible to all, ..., practical alternatives to car use by prioritising ‘desire’ lines for pedestrians and cyclists”*¹⁷

The site proposal is aimed at fulfilling local policy and in turn SPP17 and SPP3, through development a clear network of sustainable transport modes whilst deterring through-site car movements.

2.4 Summary

During the preparation of the West Craigs masterplan, due consideration has been given to both national and local transport policies. Development of the site proposals has embraced the need to provide a genuine transportation choices for the future residents of West Craigs and enhance the travel choice for existing residents in adjoining areas.

¹⁵ Edinburgh Standards For Sustainable Building Finalised Version, Section 1.5

¹⁶ Edinburgh Standards For Sustainable Building Finalised Version, Section 2.3

¹⁷ Edinburgh Standards For Sustainable Building Finalised Version, Section 3.3 Principle 2.

3 Development Proposals

3.1 Introduction

The development proposals relate to the construction of 650 households and associated community facilities.

The site comprises of 135 acres, which are to be developed as follows:

- 45 acres to form a community of 650 homes of these, a minimum of 215 would be developed by Dunedin Canmore Housing Association as affordable housing;
- 60 acres to be landscaped; and the remaining
- 30 acres nearest to Cammo would be landscaped as an informal park, with full public access.

To support the residential area, new community facilities are also proposed, including a primary school, local shop, doctor/ dentist surgery and a community hall.

3.2 Location

The proposed development at West Craigs is located to the west of Maybury Road, close to the existing homes at West Craigs Road and West Craigs Crescent and adjacent to West Craigs Industrial Estate. The site area is currently designated as green belt within the adopted Edinburgh and Lothians Structure Plan.

In selecting the location of the proposed site, West Craigs Ltd has been mindful of current Scottish Planning Policy. Key benefits of the chosen location are:

- Proximity of employment opportunities for residents at Edinburgh Park/ Gyle;
- Quality high frequency public transport services on Glasgow Road linking directly to the City Centre;
- Potential to encourage local bus operators to re-route existing services through the site;
- Proximity to the proposed route of the Edinburgh Tram; and
- Good quality education establishments at both the primary and secondary school level.

3.3 Access Arrangements

3.3.1 Pedestrian and Cycle Accessibility

Figure 2, the site masterplan, presents the various elements of the site and suggests that these will be connected by a well defined network of paths. It is envisaged that the developed path network will comprise of well-lit footway/ cycleways that:

- enable users to be easily seen;
- will follow desire lines; and
- will link with existing infrastructure, external to the site.

3.3.2 Public Transport Accessibility

It is proposed that the link road between Turnhouse Road and Craigs Road be upgraded to enable buses to serve the development. Similarly, the visibility at both of the junctions located at either end of this link will be improved to facilitate bus turning movements.

Bus halts would be located at convenient locations along Turnhouse Road and Craigs Road to serve the development. The strategic aim is to ensure that the majority of housing units would be located within 400m of a regular bus route.

3.3.3 Vehicular Access

The main entrance into the site will be formed by a four-arm roundabout, as shown in Figure 2. A new road is to be constructed to link Maybury Road to Craigs Road.

A secondary vehicle access into the principal residential areas will be provided from the northern section of Meadowfield Road and area E as shown on Figure 2, will be accessed directly from Turnhouse Road.

A key aim of the residential development is to encourage the use of non-car based forms of transport particularly for short distances and for well-used routes. To achieve this objective, longer access roads will be avoided since these can encourage car drivers to have dominance of the road spaces as well as encourage excessive speeds. Additional speed restraining features will be included within the overall design of the site through the use of infrastructure and landscaping.

All roads within the development will be designed and built to adoptable standards, in accordance with the CEC standards.

3.3.4 Local Road Network

Two possible access strategies for the development are considered within this report. These are:

- Option 1 Utilising the existing road network, as shown in Figure 2.
- Option 2 Re-configuration of the local road network hierarchy, through limiting vehicular access on Turnhouse Road. An indication of the re-configured hierarchy is shown in Figure 3.

3.4 Parking Provision

3.4.1 National Parking Policy

The Scottish Planning Policy SPP17 and the associated PAN75 aim to discourage private car usage. A key element to such discouragement is to implement maximum parking standards at trip destinations such as offices although no restrictions are applied to residential areas, since:

“Constraining parking at trip destinations while car ownership remains unconstrained, means more cars will remain parked at home ... Residential areas should be planned in terms of layout, urban design, and permeability to and by walking, cycling and public transport to minimise dominance by the car, whether moving or parked.”¹⁸

SPP17 further states that residential areas, such as West Craigs, should consider approaches to minimise car use through encouraging a well designed site layout that provides residents with a choice of travel options. The development proposals incorporate these principles through providing real travel choice for residents for key destination including Edinburgh Park, the Gyle and Edinburgh City Centre.

3.4.2 Local Parking Policy

Car and cycle parking provision will be provided in accordance with CEC standards. Table 3.1 summarises these standards for the residential site components and the other anticipated site users.

CEC parking standards categorise Edinburgh into zones. The site is currently designated as zone 6 however, the neighbouring established residential area located off Turnhouse Road is classed as zone 4. Consequently, due to the proposed change of land use and improved public transport linkage, the parking standards considered applicable to the development are those identified for zone 4.

¹⁸ Source: SPP17, paragraph 58

Zone 4 is identified within the standards as:

“Medium Accessibility Zone. Built up area of at least 1km². Medium to low public transport accessibility, medium local population density, on street parking less limited than 3a.”¹⁹

Table 3.1 CEC Parking Standards

Site Component	Car	Cycle
Private House	Minimum 1 space per dwelling	For dwellings of 4 or more rooms per dwelling - Minimum 2 spaces per dwelling
Housing Association	Minimum 0.25 space per dwelling (2 or 3 room dwellings) Minimum 0.5 space per dwelling (4 or more dwellings)	
Dr/ Dentist Surgery	Patient parking assessed individually. 1 space per 1.5 staff max.	None
Local Shop	Maximum 1 space per 20m ² for shops under 500m ² 1 space or 4% of total parking, whichever is the greater	Minimum provision of 1 space for customers plus one for employees per 250m ²
Community hall	1 per 40m ² PFA	None

¹⁹ CEC Parking Standards, Table A, page 4.

4 Local Transport Network & Accessibility

4.1 Introduction

SPP17 (Para 51) highlights that significant travel generating land uses should be located in locations where:

- There are immediate links to walking and cycling networks;
- Walking distance to access to public transport networks is no greater than 400m;
- There is a choice of transport modes i.e. not relying solely on the private car; and
- Capacity of the strategic road network will not be detrimentally effected by the new land use.

Following a brief description of the geography of the local area, the remainder of this Chapter will discuss the choice of sustainable transport modes available to future residents of West Craigs. Discussion relating to the capacity of the local road network is discussed in Chapter 6.

4.2 Local Geography

To ensure that the future residents are not reliant on the private car for travel to key local destinations it is essential that key destinations are considered, these fall into the following three categories:

- Education;
- Employment; and
- Leisure Opportunities.

4.2.1 Education

The West Craigs development is located in the catchment area for Corstorphine Primary School and Craigmount High School. However, a new Primary School to cater for the needs of the future population of the West Craigs is proposed within the development masterplan. It is envisaged that the catchment area for this primary school will primarily serve the proposed development.

Further education facilities are offered at a variety of locations throughout the City. Specific consideration has not been given to these locations due to the specialisms offered by the variety of further education establishments within the City.

4.2.2 Employment

Figure 4 presents a choropleth map of the workplace population of the City of Edinburgh. The data for this map has been extracted from the 2001 Census for the standard census sector areas.

The main concentration of employment is the City Centre, accommodating 9.9% of the total working population of the City of Edinburgh. The 2001 Census results indicate that the Edinburgh Park and Sighthill Business Park accommodate 6.3% of Edinburgh based employees. It is important to note that the Royal Bank of Scotland Gogarburn Headquarters was not operations at the time of the Census, although it now forms a significant location of local employment opportunities within West Edinburgh.

4.2.3 Leisure Opportunities

There are a variety of leisure opportunities within the local area, ranging from shops to gyms and outdoor spaces. The neighbouring area of Bughtlins offers local shopping opportunities, whilst The Gyle and Corstorphine offer a wider variety of shops and services.

4.3 Pedestrian Network

4.3.1 Existing Provision

Currently the provision of pedestrian infrastructure in and around the site is limited to a footway along Turnhouse Road, which forms the site's southern boundary. This footway links the Turnhouse Distribution Units to the west with East Craigs. Pedestrians on Craigs Road share the road space with other road users.

There are no pedestrian crossing facilities incorporated within the existing Bugtlin roundabout configuration. Pedestrians are deterred from crossing the eastern and southern arms by the presence of a safety barrier (Photograph 4.1).

Photograph 4.1 Bugtlin Roundabout southern and eastern approach arms



The existing residential area of West Craigs has a well developed network of footways and footpaths. A Toucan crossing facility is linked within the Maybury Road/ Glasgow Road signals. The pedestrian/ cycle crossing phase can be demanded every second cycle, to facilitate the safe crossing of Maybury Road.

Standard 2m wide footways are provided along both sides of Maybury Road. Crossing opportunities of this road are however, limited, with the width of Maybury Road and the speed of vehicles deterring pedestrians from crossing the road at uncontrolled locations. Pedestrian phases are incorporated within the Barnton signals and Glasgow Road signals at either end of Maybury Road, separated by a distance of approximately 2.4km.

Pedestrians can also cross Maybury Road in the vicinity of Craigs Road, where the provision of a kerbed upstand to prevent right turn movements provides a refuge opportunity. Neither of these locations have dropped kerbs or associated facilities to encourage pedestrians to cross Maybury Road.

A new pedestrian crossing is proposed as part of a CEC bus priority package which is detailed in Section 4.5.2 for the southern end of Maybury Road. This crossing is to be located some 210m upstream from the Maybury Road/ Glasgow Road junction. To accommodate this crossing the 40mph speed limit is being extended northwards. This 40mph zone is to be extended northwards to the Barnton junction.

4.3.2 Proposed Improvements

As part of the development proposals, Craigs Road will be upgraded with a combined 3m wide footway/ cycleway along the northern site boundary. Similar footways will be provided along the section of Meadowfield Road, between Craigs Road and Turnhouse Road.

Drawing SK 002 shows proposals to encourage pedestrians and cyclists to cross Maybury Road, suggested measures include:

- dropped kerbs be provided for pedestrians to cross the northern approach arm of the roundabout; and in association with CEC,
- investigate the possibility of introducing a formal crossing point on Maybury Road, in the vicinity of Craigs Road. To introduce a crossing at this location, a speed limit of 40mph or less needs to be in place, this is currently being progressed by CEC.

Reducing vehicular speeds and increasing crossing opportunities on Maybury Road would benefit both the proposed development and the existing local population, providing them with increased opportunities to access the local countryside, particularly the proposed Country Park.

4.3.3 Accessibility

Scottish Executive guidelines on accessibility define short, average and long walk distances as being 400m, 800m and 1,600m respectively. Figure 5 presents these isochrones from the centre point of the residential site.

Some community facilities will be incorporated within the site, residents will also benefit from having the landscaped Country Park within an easy walk distance. Also highlighted, in Figure 5 is Craigmount High School, which is within 20 minutes walk²⁰ of the development. The provision of a formal crossing point on Maybury Road would increase the likelihood of local residents walking to the School, including pupils and those using community facilities.

4.4 Cycling Network

4.4.1 Existing Provision

Craigs Road is subject to a 30mph limit, with low traffic volumes, thus it is considered by Spokes²¹ to be a quiet road suitable for cyclists along both sections either side of Maybury Road as illustrated in Figure 6. Craigs Road forms a well-used link for cyclists to access Cammo Walk, which is two-way for cyclists but one-way southbound to motorised vehicles, at its termination with Craigs Road. Section 4.3.1 mentioned the a kerbed upstand located in the vicinity of Craigs Road. Although this upstand is used, it provides limited space for cyclists to seek refuge from the traffic on Maybury Road, due to its narrow width of approximately 1m.

The nearest formal cycle crossing point of Maybury Road is at the Maybury signals, where a Toucan crossing facility is incorporated within the junction design. Providing a regulated crossing facility, and enabling cyclists to access the shared cycle facilities that are incorporated into Edinburgh's Greenways.

In addition to the Greenways there are a number of off-road cycle routes, paths suitable for cyclists as well as quiet residential streets.

4.4.2 Proposed Improvements

A significant deterrent for cyclists in the West and East Craigs area of Edinburgh is Maybury Road. The width and speed of vehicles along this road discourage cyclists. For those living in East Craigs, Maybury Road hinders their access to areas to the west.

To overcome the perceived barrier formed by Maybury Road it would be beneficial to both the proposed development and local residents if an additional formal crossing facility could be provided in the vicinity of Craigs Road and the established Craigs Road desired route.

²⁰ Based on an able-bodied person walking at 5km/ hr

²¹ Spokes is the Lothian Cycle campaign. It campaigns for better conditions for cyclists, especially in Edinburgh and the Lothians.

As discussed, to encourage cyclists to cross Maybury Road a reduction in the existing speed limit would be necessary. CEC are currently in the process of introducing a 40mph speed limit between the Maybury and Barnton Junctions. Consequently, it is proposed that a formal Toucan crossing be provided. A 2m wide shared footway/ cycleway would be constructed to provide a link to the eastern section of Craigs Road from the proposed Toucan crossing. The junction between Craigs Road and Maybury Road is highlighted as a dangerous crossing point within the Spokes map, the provision of the proposed Toucan crossing would improve this situation significantly.

The traffic impact analysis of providing a Toucan crossing at this location is considered by Section 7.5 of this report.

4.4.3 Accessibility

For cycling trips, short, average and long cycle distances are defined as 1,000m, 2,000m and 5,000m within the Scottish Executive guide on accessibility. These distances are represented in Figure 7.

Extensive areas of employment, including Edinburgh Park and Gogarburn, are located within a 5km isochrone of the site. Both South Gyle and Edinburgh Park railway stations are also located within this distance, both of these stations are served by trains that cater for cyclists and are also provided with secure cycle parking facilities for those not wishing to take their bicycles onboard. Cycle friendly routes provide access to these areas.

The proposed Toucan crossing on Maybury Road would provide a safe crossing facility for West Craigs residents travelling to the east of the site to destinations such as Craigmount High School. An off-road route suitable for cyclists connects Craigs Road with the Boughtlins residential area.

4.5 Local Bus Network

4.5.1 Existing Provision

Distributed along Turnhouse Road are a number of bus halts which are served by Service 68. This service was re-introduced during September 2007 following its withdrawal in Spring 2006 after the annual subsidy from CEC was cancelled. The re-introduced Service 68 will operate under a 5 year contract between CEC and Waverley Travel at a higher frequency of a bus an hour, as opposed to a bus every 1hour 20 minutes.

The principal bus operator within this area of Edinburgh is Lothian Buses (LRT). Table 4.1 summarises the routes that currently pass the development site along Maybury Road. Figure 8 summarises the current routing of these services.

Table 4.1 Summary of local bus services

Route	Description	Frequency (Buses per hour)			Operator
		Mon to Fri	Sat	Sun	
24/ 24A	RBS Gogarburn/ Edinburgh Park – Maybury Rd – Barnton – Davidson’s Mains – Princes St – Marchmont – Royal Infirmary Edinburgh	2	2	1	LRT
31	East Craigs – Princes St – Lasswade Rd – Bonnyrigg Toll then Cockpen Rd or Polton Mill	6	6	2	LRT
68 *	Cyle Centre – Turnhouse – Craigmount High School – Corstorphine Tesco – Clermiston –	1	1	-	E&M Horsburgh

	Craimount High School – Gyle Centre				
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* This service will operate from 24 September 2007 for until September 2012.

Within a short walk distance of the development are the Glasgow Road bus halts. Glasgow Road forms a quality bus corridor into Edinburgh from the west. With the exception of express services, all services utilising this corridor serve the site's local Glasgow Road bus halts. The closest Maybury Road halts to the site are within a 10 minute walk of the site.

Table 4.2 Summary of Glasgow Road local bus services

Route	Description	Frequency (Buses per hour)			Operator
		Mon to Fri	Sat	Sun	
100 (Airlink Express)	City Centre – Murrayfield – Corstorphine – Edinburgh Airport	7	7	7	LRT
X48	City Centre – Murrayfield – Corstorphine – Ingliston Park and Ride – Ratho	4	2	2	LRT
X1	City Centre – Corstorphine – Bathgate - Armadale	1 every 2 hours	-	-	First Edinburgh
12/ 212/ X12	City Centre – Corstorphine – Ingliston – Ratho – Broxburn – Uphall – Livingston – Whitburn	2	2	2	First Edinburgh
16	City Centre – Corstorphine – Ingliston – Ratho – Broxburn – Uphall – Pumpherston – Livingston – Howden – Deans – Bathgate	2	2	-	First Edinburgh
X19	City Centre – Corstorphine – Ingliston – Ratho – Bo-ness – Grangemouth - Falkirk	1 every 2 hours	1 every 2 hours	-	First Edinburgh
38 / 38A / 38B / X38	City Centre – Corstorphine – Ingliston – Ratho – Kirkliston – Linlithgow – Polmont – Falkirk – Larbert – Stirling	3	3	1	First Edinburgh
900	Edinburgh City Centre – Corstorphine – Gogar – Ingliston – Ratho – Newbridge – Harthill – Ballieston – Glasgow Buchanan Street	4	4	3	Scottish Citylink
909	Edinburgh City Centre – Corstorphine – Gogar – Ingliston – Ratho – Newbridge – Grangemouth – Stirling – Cornton – Bridge of Allan – Dunblane	1	1	-	Scottish Citylink

Both First Edinburgh and Scottish Citylink operate a number of limited services throughout the day e.g.X42 and X30 which have one bus per day running in either direction.

4.5.2 Committed Public Transport Improvements

During peak periods extensive queuing is evident on the Maybury Road southbound approach to the Maybury traffic signals. To facilitate public transport movements along this section of the road network, the CEC are committed to introduce a section of Greenway on the Maybury Road approach of the signals. In addition to the Greenway, a new pedestrian crossing is proposed on Maybury Road and consequently the existing 40mph speed limit will be moved northwards to accommodate this new controlled crossing facility. It is anticipated, subject to funding, that this scheme will be completed by Spring 2008.

4.5.3 Proposed Improvements

Initial discussions with LRT have been held, particularly in relation to services 24/24A and 31. Appendix 1 contains items of correspondence indicating the willingness and issues associated with amending existing service schedules to serve the site.

Based upon the discussions to date, it is envisaged that Service 24 would operate in both directions through the site. Amendments to Service 31 are not being considered at present, although a secondary service to the 24 is under consideration.

Preliminary discussions have also been undertaken with E&M Horsburgh, to investigate the opportunity of introducing a shuttle bus to provide a direct link between the development and Corstorphine. This option would have the benefit of providing a regular link to all Glasgow Road bus services.

Bus halts with associated facilities will be provided at regular intervals along the bus route as it passes through the proposed development.

4.5.4 Accessibility

As mentioned within Section 4.1, SPP17 states that walking distance to access the public transport network should be no greater than 40m. The current coverage of the site area based on the location of existing bus halts served by Service 68, is shown in Figure 9. The additional coverage offered by the development proposals as described above is also shown in Figure 9.

Should local bus service be re-routed to serve the West Craigs development, the whole site would benefit from being located within 400m of regular public transport routes.

4.6 Other Public Transport Opportunities

4.6.1 Rail

South Gyle station is located approximately 2.5 km from the centre of the site. An off-road cycle path provides direct access to the station from Glasgow Road as can be seen on Figure 6.

On average, four trains per hour stop at South Gyle. Connections from South Gyle include Edinburgh and all stops on the Fife Circle.

Edinburgh Park station which has connections to Bathgate and Dunblane, is serviced by four trains per hour into Edinburgh and two trains per hour to Brunstane and Newcraighall. Although direct services to Glasgow do not stop at this station at present, there is the potential that they could do so. The LRT bus service 24 would connect the development to this train station.

4.6.2 Tram

It is anticipated that the Airport to Leith tram line will be operational by early 2011. This tram line will connect the airport to development areas in West Edinburgh including the Gyle Business Park and RBS World Headquarters; Edinburgh City Centre and the regeneration areas at the Leith Waterfront.

The nearest tram halt to the West Craigs development will be at the Gyle. Using existing roads to travel between West Craigs and the Gyle halt would be approximately 1,200m from the centre of the development.

On 27th September 2007 the Transport Minister announced that the Edinburgh Airport Rail Link (EARL) was no longer being progressed, and that instead a rail station at Gogar, linked to the tram network, was being considered (Appendix 2). Since West Craigs already has excellent pedestrian connectivity to Gogar, a new rail station and tram halt at Gogar can only further improve the public transport linkages for West Craigs.

4.7 Edinburgh City Car Club

Preliminary discussions have been held with representatives of the City Car Club to establish the appropriate level of provision for a development of this size and nature. The proposal presented by the City Car Club outlines that only 4 car parking spaces would be

needed to serve the entire development. Initially two City Car Club cars would be provided, with a view to provide up to four vehicles as demand for the service increases.

Benefits of the City Car Club to new residents would include:

- The convenience of a car on their doorstep without the burdens of ownership;
- Environmentally responsible transport whilst saving money; and
- Free club membership to residents of the West Craigs development;

A copy of the City Car Club proposal is presented in Appendix 3.

4.8 Local Road Network

Craigs Road is a 7.3m wide road with a 30mph speed limit, which is bisected by Maybury Road. The western section forms the northern site boundary of the residential area, and currently there are few direct frontages onto this section of road although there are no footways provided on either side of the road.

The eastern section of Craigs Road is also subject to a 30mph speed limit and is heavily traffic calmed to deter through vehicles from Maybury Road from avoiding the Maybury Road/ Glasgow Road traffic signals. Craigmount High School is located approximately 500m to the east of Maybury Road and is accessed directly from Craigs Road. To the east of the High School the incidence of frontage access is increased. There are 2m wide footways on either side of this road.

Maybury Road is a dual-two lane all-purpose road that forms a district distributor that links Queensferry Road (A90) and Glasgow Road (A8). The 300m nearest to Queensferry Road is subject to a 40mph speed limit, as is the 300m closest to Glasgow Road, whilst the majority of Maybury Road is subject to the national speed limit. CEC are currently undertaking the process of amending the speed limit along Maybury Road to 40mph along its length. This proposal is separate to the committed public transport scheme discussed in Section 4.5.2.

Turnhouse Road is a 7.3m wide lit urban road with a 30mph speed limit between Maybury Road and the West Craigs Industrial Estate. To the west of the Industrial Estate it is classed as a rural road subject to the national speed limit with footways either side of the road.

4.9 Proposed Improvements For Existing Residents

Within the West Craigs masterplan there are a number of improvements that are specifically designed to benefit existing residents on Turnhouse Road and Craigs Road.

Lennie Cottages are located adjacent to the westernmost boundary of the site. Currently access is taken from Craigs Road which is subject to a 60mph speed limit. Figure 3 indicates that the access road to the Cottages would be stopped up, with a turning head provided for vehicles to turn safely within the road. This road configuration would remove all heavy goods vehicles associated with Turnhouse from passing the frontages of these cottages, significantly reducing any existing noise, vibration or safety issues associated with the heavy goods traffic.

The Cottages adjacent to the Turnhouse Golf Club currently are able to park on-street. To ensure that this situation is maintained following the stopping up of Craigs Road by Lennie Cottages, a parking layby parallel to Turnhouse Road is to be provided for the use of these local residents.

In addition to these improvements, the existing residents will benefit from the proposals described in the remainder of this Chapter, particularly:

- Improved crossing opportunities of Maybury Road at the remodelled roundabout and at the Toucan crossing for assisting pedestrians and cyclists;
- Greater number of shared cycle paths for accessing the local area;
- Proposed new public transport services; and
- Access to the Edinburgh Car Club Facilities.

The greatest perceived benefit of the West Craigs masterplan is associated with Option 2. This Option offers significant benefits to the existing residents of West Craigs, particularly residents on Turnhouse Road and also those living on West Craigs Crescent and West Craigs Avenue.

Automatic Traffic Counters (ATC) were installed on Turnhouse Road to survey how traffic movements fluctuate over a fortnight time period. The ATC were installed to record traffic movements over a fortnight commencing from Thursday 2nd November, 2006. The location of the Turnhouse Road ATC was to the west of the Turnhouse industrial estate. Presented in Table 4.3 is the data associated with the evening peak period gathered over the fortnight period between 2nd November and 15th November.

Table 4.3 17:00-18:00 Turnhouse Road Directional Traffic Volumes (PCU)

Day	Eastbound		Westbound		Combined	
	Week 1	Week 2	Week 1	Week 2	Week 1	Week 2
Monday	101	105	122	129	223	234
Tuesday	96	110	113	115	209	225
Wednesday	35	38	46	42	81	80
Thursday	41	31	45	47	86	78
Friday	110	106	131	124	241	230
Saturday	110	79	123	111	233	190
Sunday	114	140	121	121	235	261
Average 5-day	107		121		228	
Average 7-day	87		99		186	

During the classified counts undertaken on 8th June 2006, the peak hour flows on Turnhouse Road to the east of the November ATC data were:

- Eastbound 165 PCU;
- Westbound 125 PCU; with an
- Overall Total of 290 PCU recorded.

Comparison of these observed traffic flows with the average 5-day volumes presented in Table 4.3, suggest that 62 PCU are associated with the existing residential and business uses on the eastern section of Turnhouse Road, representing 21% of existing traffic volume. Thus, if the Option 2 bus gate were implemented, approximately 79% of existing traffic volumes during the peak hour would be removed from the Turnhouse Road approach arm of the Maybury traffic signals.

4.10 Summary

Table 4.4 summarises the available sustainable transport to key destinations within the immediate vicinity of West Craigs. The distances within the Table are given in terms of the most direct walk/ cycle routes.

Table 4.4 Accessibility to key destinations by sustainable transport

Destination	Approx. Distance	Walk	Cycle	Public Transport	Issue
Proposed facilities e.g. Dr/ dentist; local shop	On-Site	Short	Short	Yes	
New Primary School	On-Site	Short	Short	Yes	
Craigmount High School	1,200m	Long	Medium	No	The proposed Toucan crossing on Maybury Road will increase the likelihood of pupils walking or cycling to School from the proposed development.
Local Shops, Bughtlins.	1,600m	Long	Medium	Y	Provision of pedestrian refuge islands within the remodelled Bughtlins roundabout will assist pedestrians to use the most direct route to these local facilities.
The Gyle Shopping Centre	2,300m	-	Medium	Y	Cross Maybury Road at Maybury Junction's Toucan crossing. Direct bus service
Edinburgh Park	2,500m	-	Medium	Y	Cross Maybury Road at Maybury Junction's Toucan crossing. Signed cycle route from Glasgow Road to the Business Park. Direct bus service
South Gyle Railway Station	2,300m	-	Medium	Y	Cross Maybury Road at Maybury Junction's Toucan crossing. Signed cycle route from Glasgow Road to the Railway Station. Direct bus service
Edinburgh Park Railway Station	3,600m	-	Medium	Y	Cross Maybury Road at Maybury Junction's Toucan crossing. Signed cycle route from Glasgow Road to the Railway Station. Direct bus service.

5 Travel Plan Framework

5.1 Introduction

National policy guidance highlights the importance of Travel Plans in relation to consent being granted for new developments. CEC require a travel plan for all significant travel generating land uses. CEC provide the following definition of a Travel Plan:

“A travel plan is a tool for an organisation to manage its transport needs to minimise environmental impact, maximise efficiency and benefit employee health. It is site based reflecting the different needs and problems of different locations. The principal objective of a plan is typically to minimise car use associated with a development.”²²

This Chapter provides an outline of the potential objectives, implementation methods and monitoring regime for a residential Travel Plan. This framework should only be used as a preliminary outline of the likely contents of the Travel Plan. Specific details of the Travel Plan will be discussed with CEC as the masterplan proceeds into the more detailed stages of design.

5.2 Residential Travel Plans

A travel plan is a package of measures designed to reduce the number and length of car trips generated by a development, which also supports more sustainable forms of travel.

The key role of residential travel plans is to ensure that during marketing of the development that future householders are made aware of the sustainable travel opportunities in their area and are provided with accurate information to enable them to make an informed decision into their choice of travel mode. The Travel Plan would detail how the developer will provide this information and ensure that accessibility by a variety of travel modes namely, walking, cycling and public transport are considered during the design of the site.

Detailed below are the strategies proposed for a residential development at West Craigs:

- Provide sustainable travel information during marketing of the site;
- Raise the awareness of new residents to the availability of sustainable travel within their welcome pack and offer the opportunity to have a personal travel plan developed to answer their travel needs, providing there is sufficient support available from CEC;
- Enter into discussions with local transport operators to offer discounts on season tickets for the first year of occupation;
- Liaise with the Safer Routes to School co-ordinators;
- If considered appropriate allocate spaces for car clubs within the site; and to
- Provide an accessible site with good connectivity for those travelling by foot, bicycle or by public transport.

These strategies comply with the following extract from PAN 75:

“For residential land uses, travel plans may set out measures which will be used as an incentive to house purchasers to use non-car travel modes, but setting targets is generally not practicable for this land use. Sustainability in housing should come through design in relation to walking, cycling and public transport networks.”

²² CEC Parking Standards, Appendix 5.

6 Traffic Conditions

6.1 Observed Traffic Conditions

Classified turning counts were undertaken on Thursday 8th June 2006 at the following locations:

- Maybury Road / Maybury Drive;
- Maybury Road / Craigs Road;
- Maybury Road / Glasgow Road; and
- Cammo Walk / Craigs Road.

A classified turning count of the Barnton traffic signal controlled junction was conducted on Thursday 15th December 2005. This data was obtained from CEC.

The weekday evening network peak hour was identified from these surveys to occur between 17:00 and 18:00.

The observed traffic volumes for the peak hour were converted into passenger car units (PCU) by factoring the observed heavy vehicles (OGV and buses / coaches) by 2.0. The resulting observed PCU flows are summarised within Appendix 4.

6.1.1 Correction Factor

Comparison of the June 2006 and December 2005 shows a slight variance in the observed traffic volumes between Barnton traffic signals and the Maybury Road / Maybury Drive roundabout. A derived correction factor of 1.4 has been applied to the northbound flows.

6.2 Base Traffic Conditions

6.2.1 Annual Traffic Growth

While all capacity assessments have been undertaken for the proposed year of opening of 2010, it was agreed during the scoping exercise that no growth would be applied to the observed traffic flows.

6.2.2 Committed Developments

It was agreed with CEC that the following committed developments should be taken into consideration within this TA:

- Royal Bank of Scotland Group Gogarburn Headquarters; and
- Scottish Agricultural Science Agency Residential Development.

The development of traffic flows associated with each of the above developments were abstracted from the relevant TAs supporting the planning application for each site, and were agreed through consultation with CEC.

6.2.2.1 Royal Bank of Scotland Group (RBS) Gogarburn Headquarters

The RBS Headquarters is located adjacent to the A8, west of Gogar roundabout. The TA prepared for this site considered the development in terms of two phases. Only Phase 1 of the development is committed.

CEC confirmed that Phase 1, which accommodates some 3,250 staff was completed and fully operational during December 2005. Thus, all traffic flows associated with this development were present on the road network when the observed traffic data was collected.

6.2.3 Scottish Agricultural Science Agency (SASA) Residential Development

Cala Homes (East) Ltd commissioned a TA for the proposed redevelopment of the SASA East Craigs site, located on Craigs Road (E). The development proposals are a mix of private and affordable housing. The site is proposed to have four access points on:

- Burnbrae;
- Cragievar Wynd; and
- Two on Craigs Road (E).

Figure 10 summarises the assignment of trips associated with this development. For junctions outwith the SASA residential development TA, the committed development trips have been assigned to the local road network in accordance with observed turning movements.

6.3 Design Year Traffic Conditions

6.3.1 West Craigs Trip Generation

During the scoping process it was agreed that the impact of development related traffic volumes would be considered for a typical weekday evening peak. Trip rates for the development were provided by the CEC, as indicative of developments of the proposed size and nature, these are summarised in Table 6.1.

Table 6.1 Residential trip generation rates for a weekday evening peak hour

Housing Type	Trip Rate per 100m ² GFA		Number of Trips (Vehicles)	
	IN	OUT	IN	OUT
Private	0.53	0.25	230	109
Affordable	0.16	0.12	34	26

6.3.2 Trip Distribution And Assignment

Traffic volumes during the weekday peak hours along the local road network including Maybury Road, Queensferry Road and Glasgow Road, comprise of a significant proportion of commuter related trips. It is therefore considered appropriate that development related trips, associated with West Craigs are distributed in accordance with existing traffic volumes. The resulting percentage distribution is summarised in Figure 11.

Figure 12 presents the trip assignments for the masterplan area. The individual zones shown have been assigned according to the most direct available route, as detailed in Table 6.2.

Table 6.2 Assignment of masterplan zones to the Maybury Road

Development Area (Figure 2)	Development Access Location	Access Maybury Road via	
		Bughtlins Roundabout	Maybury Junction
A (70 private)	Craigs Road	N & S	-
B (100 private)	Craigs Road	N & S	-
C (55 private)	Craigs Road	N & S	-
D (85 private)	Link between Craigs Road & Turnhouse Road	N & S	
E (125 private)	Turnhouse Road	N	S
F (65 affordable)	Turnhouse Road	-	N & S
G (150 affordable)	Turnhouse Road	-	N & S

Note: *N and S respectively represent Northbound and Southbound related movements*

It has been assumed that all vehicles accessing the development from Craigs Road will do so via the new fourth-arm of Bughtlins roundabout.

Option 2 is a sensitivity assessment that considers the effects of limiting the use of Turnhouse Road. Figure 13 presents the re-distributed Turnhouse Road flows. To determine the proportion of Turnhouse Road flows that would be effected, an automatic traffic counter (ATC) was installed on Turnhouse Road for a fortnight during November 2006. The average weekday peak hour traffic volumes have been re-assigned for the assessment of the impact of Option 2 on the local road network.

The sensitivity analysis assigns all trip to Craigs Road and access is gained from Maybury Road, via the roundabout as shown in Figure 14.

6.3.3 Design Year Traffic

The Design scenario traffic is derived from adding the assigned development trips to the Base traffic flows, resulting in the Design traffic conditions as detailed in the relevant tables in Appendix 4.

6.4 Junctions To Be Modelled Within The TA

During the scoping discussions three local road junctions were identified for consideration within this TA. These are noted as follows:

- Barnton Signals;
- Bughtlins Roundabout; and the
- Maybury Signals.

Figure 15 presents the two-way percentage impact of both Options 1 and 2, on the local road network.

For Option 1, the overall increase in traffic flows following the inclusion of the West Craigs development is calculated to be 3.4% at the Maybury signals, and 3.3% at the Barnton junction.

7 Traffic Impact

7.1 Junction Analysis

The operational and capacity assessments of the junctions have been made using the standard industry software packages ARCADY (for roundabout junctions) and TRANSYT (for linked signal controlled junctions). The results of the Base and Design flow analysis are summarised in the tables in Appendix 5 which also contains the full ARCADY and TRANSYT input and output data files contained on the disk within Appendix.

For the signal controlled junctions, junction layouts and copies of the signals specification were obtained from CEC, from which the signal phasing and timings were extracted.

The following performance indicators are identified by the assessment programs:

- Maximum ratio of flow to capacity (RFC) and maximum queue length for the peak 15 minute period within the assessed peak hour; and
- Degree of saturation and mean maximum queue length.

A junction is assumed to be operating at capacity when an RFC value of between 0.85 and 0.90 is recorded or a degree of saturation of greater than 90%.

NO NET DETRIMENT

The traditional definition of a no net detriment situation is:

“when the base situation without the development occurring is over capacity, that the infrastructure improvements associated with the development offset any further increase in individual approach capacity values back to at least the capacity values that the base situation provides.

In certain circumstances all approaches may not be able to provide this requirement and a degree of reasoned flexibility may require to be applied. A majority of approaches demonstrating no net detriment in any particular time period may, therefore, be considered acceptable if the overall level of junction delay is less than or equal to the base situation if the development were not to proceed and the minority of approaches were within a few capacity points of the base situation without the development occurring.”

The Guide to Transport Assessment for Development Proposals in Scotland (GTAS) expands upon how no net detriment can be achieved to include alternative measures, through stating that:

“... a Transport Assessment will start from the basis of planning for desirable mode shares and will propose a package of measures designed to give access to the site while reducing the role of car access as much as possible. Such measures may include the preparation of a Travel Plan, fiscal incentives to discourage car travel to the site, infrastructure improvements to make walking and cycling more attractive or public transport service improvements.”²³

TAIG builds upon the recommendations made in GTAS, through encouraging developments to become less car dependent.

7.2 Bugtllins Roundabout

Bugtllins Roundabout is a three-arm roundabout forming the junction between Maybury Road and Maybury Drive. It has an inscribed circular diameter of approximately 55m.

Observed traffic conditions indicate that there are no significant capacity related issues associated with this roundabout. The year of opening Base flow ARCADY assessment results are summarised in Table D1 (see Appendix 5). These results indicate that the roundabout is operating well within capacity, with an average queue length of 4 PCU likely on the southern approach arm of the roundabout.

²³ Paragraph 2.12.

Drawing SK002 presents an indicative four-arm roundabout proposal for Bughtlins Roundabout. The new western approach arm would provide a new access road that would link Maybury Road and Craigs Road. Table D1 indicates that the indicative scheme would accommodate the predicted flows associated with the West Craigs development proposals and would result in a marginal increase in queues on the northern and southern approaches to the roundabout.

7.2.1 Option 2 – Bus Gate

Option 2, considers the impact on the Bughtlins roundabout under the situation where all of the generated trips associated with the West Craigs proposals are to use this roundabout.

Table D2 presents the results of the ARCADY assessment which indicates that the proposed roundabout layout shown in Drawing SK002 would accommodate the predicted level of flows. The predicted RFC values are all 0.90 or under, indicating that the roundabout has sufficient capacity to accommodate the proposed development related trips.

7.3 Barnton Junction

The Barton signal controlled junction has been assessed through the use of TRANSYT. Figure 16 presents a TRANSYT diagram that replicates the operational configuration of the junction.

During the evening weekday peak hour, the Barnton signals currently experience capacity related problems. Table D3 summarises the Base assessment year scenario. Results from this assessment indicate that vehicles travelling in both direction along Queensferry Road experience significant levels of queuing. The highest degree of saturation vales (greater than 90%) are associated with Queensferry Road (Eastbound), along the short internal links on Queensferry Road (Westbound) for both the straight ahead movement and the right turn into Whitehouse Road, and the right turn from Maybury Road into Queensferry Road.

Generated trips associated with the West Craigs development have the same assignment under both Options 1 and 2, at the Barnton junction. The results for the Design flow scenario is summarised in Table D3. A comparison of queue lengths between Design and Base scenarios indicates that the Queensferry Road right turn movement into Maybury Road would increase by 14 PCU and the Maybury Road right turn into Queensferry Road would increase by 2 PCU. Although this represents a significant increase in queue lengths, the Barnton signals would experience a minimal impact overall.

Following the opening of the new A8000 spur, due to open in Autumn 2007, it is likely that there will be a reduction in traffic volumes through the Barnton junction.

7.4 Maybury Junction

In a similar manner to the Barnton junction, the Maybury signals have also been assessed through the use of TRANSYT, Figure 17 presents the associated Maybury link diagram.

During the weekday evening peak hour the Maybury junction experiences extensive queuing. The base analysis indicates that the left turn from Glasgow Road to Maybury Road has a predicted queue length of 155 PCU and an associated degree of saturation of 125%. The assessment results show that the remaining links have degree of saturation values of less than 90%.

Assessment of the Option 1 assignment of the West Craigs related development trips indicates that the signals can accommodate the predicted development trips through the optimisation of the signal timings. The results shown in Table D4 indicate a slight increase in the average queue length for right turning vehicles from Glasgow Road into Maybury Road. Whilst a drop in the degree of saturation associated with the Glasgow Road left turn movement into Maybury Road would be associated with a decrease in the average queue length for this movement.

7.4.1 Option 2 – Bus Gate

The sensitivity analysis associated with Option 2, would minimise the number of vehicles utilising the left turn slip road from Glasgow Road into Turnhouse Road, with these vehicles re-routing to undertake the left turn movement into Maybury Road through the signals. Consequently, for link 201, the results shown in Table D5 indicate a degree of saturation increase of 14% to 139% and a significant increase in the associated queue. The remaining links all have degree of saturation values of less than 90%.

7.5 Proposed Maybury Road Toucan Crossing

To improve accessibility for pedestrians and cyclists undertaking journeys across Maybury Road a Toucan crossing is proposed.

Table D6 presents the timings associated with the various stages of a Toucan crossing, as derived from TD2.95. These timings form the delay to all road users. The stacking capacity northwards from the proposed Toucan crossing stopline is approximately 200m. The results indicate that there is sufficient roadspace to accommodate the level of queuing predicted with the assessed options.

7.6 Turnhouse Road

Two-way generated traffic volumes associated with the development on Turnhouse Road will be at their greatest to the west of the Glasgow Road off-slip. The percentage impact on two-way flows within Option 1 is approximately 40%. Table D8 provides a summary of the likely average increase in two-way vehicles per minute at this location. The average vehicular increase per minute on this section of Turnhouse Road is predicted to be less than 2 vehicles per minute during the weekday peak periods. This represents an insignificant increase and is likely to have limited impact on the local area.

7.7 Summary

CEC support the bus gate proposals (Option 2) at officer level. A key advantage is the removal of heavy vehicle traffic from the existing west Craigs residential area. Consultations have been undertaken with both local residents and local businesses, to date the only consultee that opposes the bus gate proposal is BAA. A copy of their objection is contained in Appendix 6.

In summary the traffic impact analysis for the West Craigs development proposals indicate that development traffic can be accommodated on the local road network, whilst maintaining a no net detriment situation at junctions that are currently operating above their theoretical capacity i.e. Maybury and Barnton junctions.

The Maybury and Barnton traffic signals have had their layouts maximised in terms of capacity. Manipulation of the signal timings may improve the operation of the junctions. Officers of CEC accept that this is the situation and are supportive of the promotion of alternative solutions to mitigate against the impact of developments on the operation of the local road network. To mitigate against any impact on the local road network associated with the development, the following are proposed:

- Encouraging a regular public transport service to serve the proposed development;
- Reducing car ownership through working in partnership with the City Car Club; and
- Preparing a residential travel plan.

8 Summary & Conclusions

8.1 Summary

Arup has been commissioned by West Craigs Ltd to prepare a Transport Assessment in support of a planning application for a mixed residential development off Craigs Road, Edinburgh.

It is proposed as part of the development scheme that pedestrian, cycle and public transport links will be created and enhanced. A key proposal to improve the accessibility of the area for pedestrians and cyclists would be the introduction of a Toucan crossing on Maybury Road. To improve the connectivity of the development, preliminary discussions have been held with local bus companies, it is envisaged at this stage that Service 24 will be diverted through the site.

Vehicular access to the site will be by way of a new fourth-arm from Bugtllins roundabout or by way of Turnhouse Road. All junctions associated with the development will be designed in accordance with the City of Edinburgh Council's (CEC) road standards.

Discussions were held with officers of CEC in order to agree the scope of this Transport Assessment.

The predicted operation of the junctions on the surrounding road network for the both the Base and Design scenarios have been assessed for a weekday evening peak hour. The Design scenarios consider two assessment options:

- Option 1. No restrictions applied to vehicle movements on the local road network.
- Option 2. Introduction of a bus-only gate to Turnhouse Road which would restrict vehicles movements with destinations outwith the eastern 30mph zone of Turnhouse Road will no longer. These vehicles would have to use the proposed fourth-arm of the Bugtllins roundabout.

8.2 Conclusions

The results of this Transport Assessment indicate the following:

- The development proposals aim to make the West Craigs area accessible to a range of transport modes, to provide future residents with genuine travel choices to local destinations;
- The proposed masterplan design, outlines measures enabling the development to comply with the current national and local transport planning policies, including:
 - Internal footpath/ cycleway network linking the various elements of the site; and
 - Internal road network that will be designed to encourage car drivers to drive slowly.
- A new link road will be designed and constructed that will link into the existing Bugtllins roundabout by way of a fourth arm. This roundabout is predicted to operate within practical capacity with minimal queuing at the proposed year of opening under both Options 1 and 2.
- Maybury and Barnton signal controlled junctions currently operate above their theoretical capacity. Following the application of the Design flows this situation will continue however, optimisation of the signal timings will minimise any impacts to their operation.
- A Travel Plan will be developed to encourage and develop options for the future residents. The potential measures centre upon raising awareness.