LOCAL DEVELOPMENT PLAN

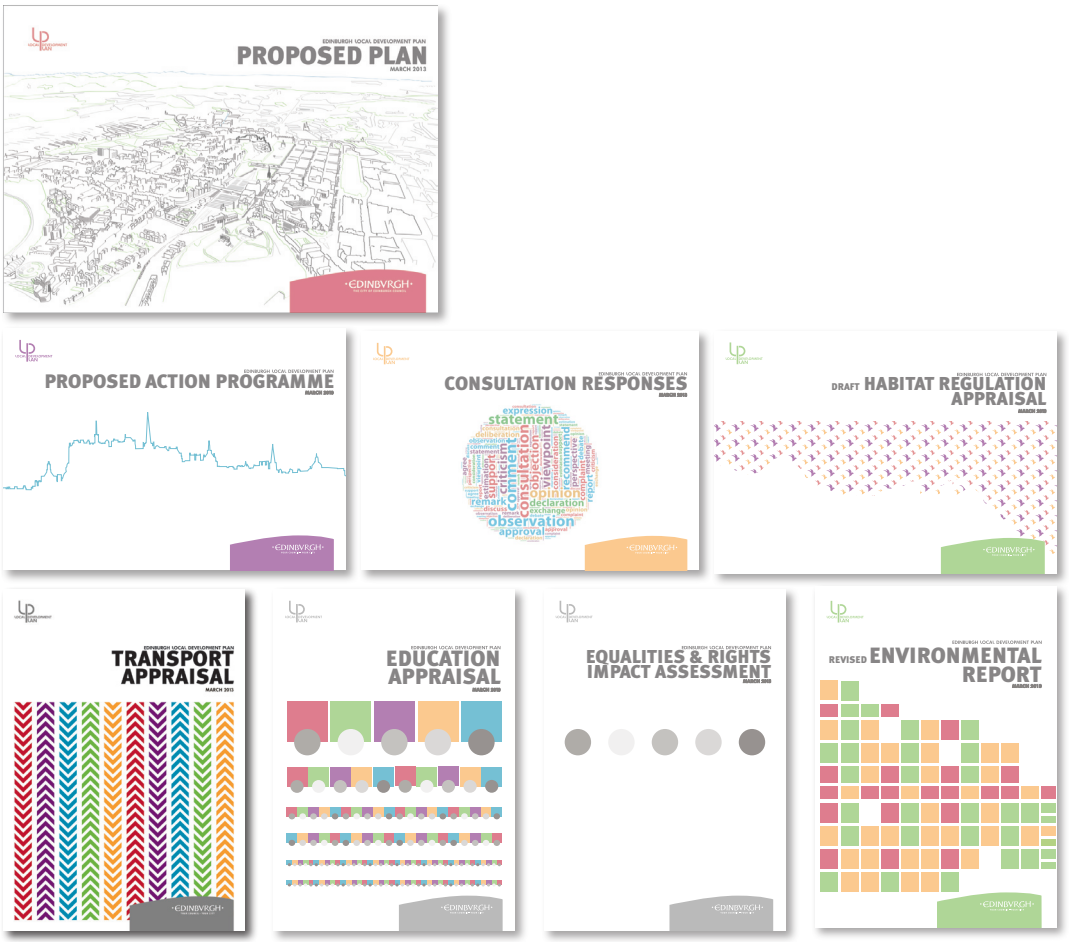
EDINBURGH LOCAL DEVELOPMENT PLAN

TRANSPORT APPRAISAL

VOLUME 1

MARCH 2013

EDINBVRGH
YOUR COUNCIL – YOUR CITY



The Local Development Plan sets out policies and proposals to guide development.

The Action Programme sets out actions to deliver the Plan.

The Schedule of Consultation Responses explains how consultation informed the Plan.

The Habitats Regulations Appraisal assesses the Plan's impact on internationally important bird habitats.

The Transport Appraisal identifies transport actions to support the Plan.

The Education Appraisal identifies new and expanded schools to support the Plan.

The Equalities & Rights Impact Assessment checks what impact the Plan will have on people.

The Revised Environmental Report assesses the impact of the Plan and explains the selection of new housing sites.

See the documents and other information at: www.edinburgh.gov.uk/localdevelopmentplan

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Published in 2011

Edinburgh Local Development Plan

Transport Appraisal

The City of Edinburgh Council

March 2013

Overview of Transport Appraisal

This section sets out the context for the preparation of the Transport Appraisal and explains how it has been used to inform the Proposed Local Development Plan and Proposed Action Programme.

As part of the preparation of the Local Development Plan, the Council, in line with national guidance, commissioned the preparation of a Transport Appraisal. The purpose of the appraisal was to assess the impact of the Edinburgh Local Development Plan strategy on the transport network, and to identify and outline the transport interventions that will be required to ensure that the strategy does not have an unacceptable negative impact on the transport network. The Transport Appraisal is one of a number of background documents informing the Proposed Plan and the proposed Action Programme.

The Council commissioned Halcrow Group Limited to carry out the Transport Appraisal on its behalf. The project involved close working between Halcrow and Council Planning and Transport officers to ensure a rigorous approach. Transport Scotland were also involved in the process and attended the initial inception meeting and a workshop where the initial results were presented for discussion.

This report sets out the outcomes of the appraisal. The LDP includes a range of proposals, many of which are continued from existing local plans or relate to current planning permissions. The appraisal focuses on the new housing proposals identified in the Proposed LDP centres as this is where quantifiable additional impact on the transport network is likely to arise. The appraisal included a document review to consider numerous previous transport studies to inform the development of the methodology and identification of mitigation measures. A copy of the document review can be made available on request.

Appendix C provides a site summary sheet for each of the 15 new housing proposals. These include a list of recommended transport interventions. Where appropriate these have been included in the Proposed Plan, either as a Transport Proposal or referred to in the relevant site brief or development principles. Other transport interventions are included in the Proposed LDP Action Programme which will be updated when more detailed transport assessment work is undertaken or as further information becomes available.

The Transport Appraisal recommends a residential travel plan be prepared for each of the 15 housing sites. It considers that travel plans are relevant but not necessary to support development. The Proposed Plan requires travel plans to be prepared for major travel generating proposals in locations not well served by public transport. Accessibility by public transport was one of the main criteria used in identifying the new housing sites and a number of interventions have been identified to provide access to public transport and promote active travel. Travel plans are a useful tool in promoting sustainable travel and helping to meet mode share targets. However, these are not considered to be essential to support development the new housing sites and therefore are not a requirement of the Proposed Plan.

If you have any queries on the LDP Transport Appraisal, please contact Keith Miller, Senior Planning Officer on 0131 469 3665 or keith.miller@edinburgh.gov.uk.

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Volume One

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1 Introduction

1.1 Context for this study

Halcrow has been commissioned by The City of Edinburgh Council (CEC) to provide a strategic transport appraisal to support Edinburgh's emerging Local Development Plan (LDP).

The LDP is being prepared within the context of the Strategic Development Plan (SDP) for Edinburgh and South East Scotland. The Proposed SDP requires the LDP to identify land for 2,000 houses in West Edinburgh and 1,000 houses in South East Edinburgh. CEC needs to understand the transport impacts that additional housing sites would have and what transport interventions are needed to help mitigate any impact.

The transport appraisal focuses on a range of new housing sites to be included in the Proposed LDP in addition to sites identified in previous local plans (Edinburgh City Local Plan and Rural West Edinburgh Local Plan).

1.2 Objectives of the study

The objectives of the study, as set out in the original project brief, were as follows:-

- Identify locations where transport issues (traffic, public transport, walking, cycling) require to be addressed.
    - Depending on the type of issue, such locations might be, for example:-
        - an area that will lack an appropriate level of public transport service;
        - a junction at which the traffic generated by new development is likely to significantly worsen delays (especially for public transport) or cause problems for pedestrians and cyclists; and
        - a 'missing link' between the development and places that people living/working there are likely to wish to access.
- Carry out a literature review of relevant, previous work to inform the study.
- Identify, in outline, interventions to tackle these issues.

- Identify any significant risks associated with the interventions.

By meeting these objectives, this study will therefore enable:-

- The individual and cumulative impact of LDP housing sites on the multi-modal transport network within Edinburgh to be understood;
- The impact of LDP proposals (focusing on residential) on the strategic transport network (road and public transport) and on cross-boundary networks to be established;
- CEC officers to be equipped with the information required to be able to assess the impacts of different scenarios of development and consider the effect of various mode share targets;
- The views of CEC officers and key stakeholders to be included into the process and, in particular, to the development of potential transport solutions to the accessibility requirements of LDP proposals; and
- A series of transport interventions to be developed which aim to mitigate detrimental impacts of estimated demand, in particular by encouraging additional trips to be made by non-private car modes where possible.

2 Study approach and assumptions

2.1 Introduction

This section sets out the approach undertaken in relation to the analysis carried out within this study. The aims of the demand assessment have been to consider the impact of the set of additional residential LDP sites on the multi-modal transport network in Edinburgh.

2.2 Detailed approach to demand analysis

This section sets out the step-by-step approach to demand assessment, using the core information available in the study, being the estimated upper and lower limits of housing units per assessment site, as shown in Table 2-1.

2.2.1 Step 1: Establish location, extent and programme of proposed development, and sensitivity levels

This information has been sourced from CEC, together with an estimated phasing schedule of units delivered per year. For the analysis, units have been grouped to be delivered from 2014 to 2019/20, and full build-out by 2024/25. It is recognised that not all development is likely to be in place by 2025, but it is important to envisage what Edinburgh will look like with the full development potential allocated. Infrastructure, and developer contributions to infrastructure, can be phased with actual delivery.

LDP Development (residential)	Units (housing) – lower range	Units (housing) – upper range
Maybury 1	550	650
Maybury 2	450	600
International Business Gateway	300	400
Edinburgh Park/The Gyle	450	700
Cammo	450	550
Burdiehouse 2	250	350
Gilmerton 1	50	70
Gilmerton 2	450	550
Drum 1	125	175
Newcraighall 1	225	315
Newcraighall 2	275	385
Burdiehouse 1	475	665
Riccarton Mains Road	50	50
Curriemuirend	100	100
Moredunvale Road	50	50
TOTAL	**4,250**	**5,610**

As per guidance from CEC, it is assumed that 25% of units will be affordable housing and are, therefore, classed as "rented" accommodation for trip generation purposes.

The new LDP residential sites are shown in Figure 1.

CEC provided a list of 15 sites to be assessed in terms of impact on the transport network. It was decided to use a density assumption approximately halfway between lower and upper estimates as set out in Table 2.2. It is anticipated that the number of houses built will be between the lower and upper figure and will vary site by site, so an average value for the analysis should balance out.

CEC also requested the impacts of proposals be assessed over two different time periods - 2020 (five years after the LDP is adopted) and 2025(the plan period). CEC provided an indicative programme for build out of the various sites. Sites were programmed based on

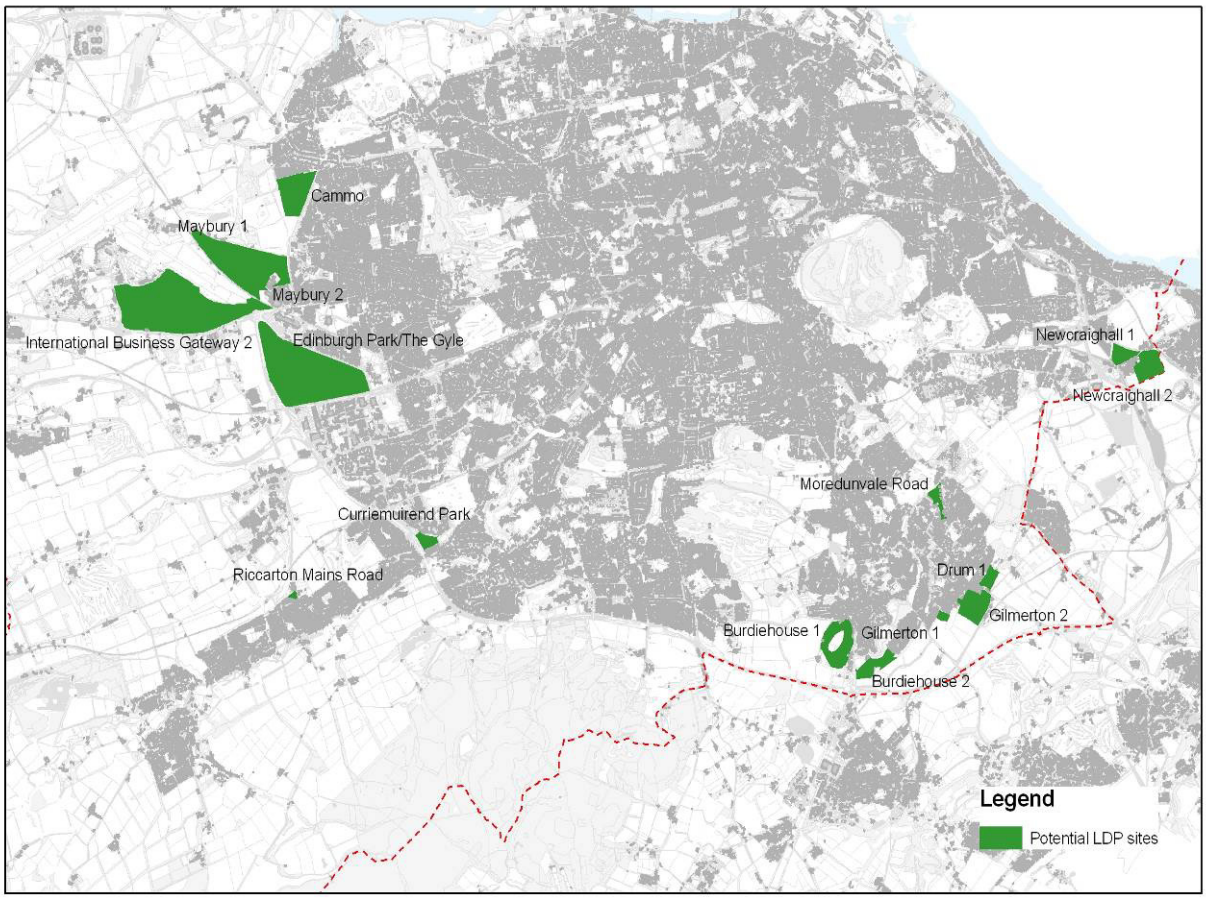
previous experience of similar sites across the city, taking into account the time required for site acquisition and planning permissions needed.

Table 2-1 Development of additional LDP residential sites

Site	Units (housing)
Maybury 1	600
Maybury 2	525
International Business Gateway	350
Edinburgh Park/The Gyle	575
Cammo	500
Burdiehouse 1	570
Burdiehouse 2	300
Gilmerton 1	60
Gilmerton 2	500
Drum 1	150
Moredunvale Road	50
Newcraighall 1	270
Newcraighall 2	330
Riccarton Mains Road	50
Curriemuirend	100
TOTAL	**4,930**

The transport appraisal is being undertaken before the completion of the Proposed SDP examination. Any post examination changes to the SDP housing requirements may have implications for the LDP. Unresolved representations currently being considered at examination may result in an increase in the overall strategic housing land requirement for Edinburgh. For example, this may mean that strategic sites in North West and South West Edinburgh, currently contrary to the SDP, need to be considered in the LDP. Such changes will also have implications for the transport interventions required to support the LDP.

Figure 1: Map of LDP residential sites



2.2.2 Step 2a: Estimate demand - trip rates

A daily person trip rate per unit of housing was generated from TRICS[1] (Trip Rate Information Computer System), with values of 8.8 for privately owned houses and 7.2 for rented houses, respectively, calculated. It was not possible to differentiate between flats and house size at this point, as this aspect is still to be determined definitively through the planning application process.

These trip rates were then applied to each of the LDP housing sites, with 25% of units allocated to affordable housing, in line with current

[1] TRICS is a database system containing over 6,300 transport surveys at a wide range of development types across all regions of UK and Ireland. It is the national standard system of trip generation and analysis in the UK and Ireland. http://www.trics.org/

CEC policy, for two time periods – units implemented by 2020 and the remaining units implemented by 2025.

2.2.3 Step 2b: Estimate demand – modal splits

After an estimated number of trips were generated for each development, it was necessary to assign these trips by mode. This was done by applying modal splits. Modal split was assigned based on an estimated modal share for 2010. This estimated modal split was based on a baseline of modal share from 2001 Census data from 'travel to work' statistics for five edge-of-city wards, which was then adjusted with more recent Scottish Household Survey data (in the absence of 2011 Census data, not published at the time of writing).

Average census splits from 2001 and adjusted modal splits used in the analysis of our Baseline (Do Nothing) scenario are shown in Table 2.3.

Table 2-2 Base Modal Splits

Census Wards (and Census Ward code)	% as car driver	% as car passenger	% by train	% by bus	% by bicycle	% on foot	other - other, taxi, m/c, work from home
14S02 Baberton	54.8%	5.8%	0.9%	20.2%	1.9%	7.1%	9.3%
14S03 Dalmeny/Kirkliston (part)	58.5%	7.5%	0.8%	15.4%	1.2%	7.9%	8.6%
14S13 East Craigs	48.3%	5.9%	0.4%	29.6%	1.6%	8.4%	5.7%
14S56 Gilmerton	51.3%	7.7%	0.3%	27.8%	1.2%	5.6%	6.1%
14S04 Queensferry; Dalmeny/Kirkliston (part)	56.5%	6.6%	5.8%	14.0%	0.8%	10.0%	6.3%
CEC (city wide averages)	39.9%	4.7%	1.4%	26.4%	3.0%	17.7%	6.9%
Average for 5 edge of city wards	53.9%	6.7%	1.6%	21.4%	1.4%	7.8%	7.2%

Census Wards (and Census Ward code)	% as car driver	% as car passenger	% by train	% by bus	% by bicycle	% on foot	other - other, taxi, m/c, work from home
SHS adjusted modal split for outer wards	58.9%	6.0%	1.7%	21.6%	2.0%	7.8%	2.0%

Further detail on modal splits and how these figures have been derived is discussed in later sections of this report. For the Baseline scenarios, a uniform set of modal splits was applied across all developments (as per the table above). For the Do Minimum scenarios and the Do Something scenarios however, different modal splits were applied to each site. This was done to reflect a more realistic scenario of how the transport system might look in future years with "committed" and LDP transport interventions in place, respectively, affecting individual sites. These are reported more fully in Sections 3, 5 and 8.

Demand forecasting was applied to the following scenarios, to indicate the level of demand over a medium and long timescale:-

- projected residential build-out of LDP sites by 2019/20; and
- the full residential build-out of LDP sites, with an assumed completion year of 2024/25.

The demand forecasting was also carried out for the average number of housing units for each housing site as per **Error! Reference source not found.** above).

2.2.4 Step 3: Establish a spatial framework for analysis

In order to both distribute trip demand spatially across the transport network (Step 5 below), and to provide a spatial structure for the development of multi-modal solutions, a broad spatial framework was developed for this study.

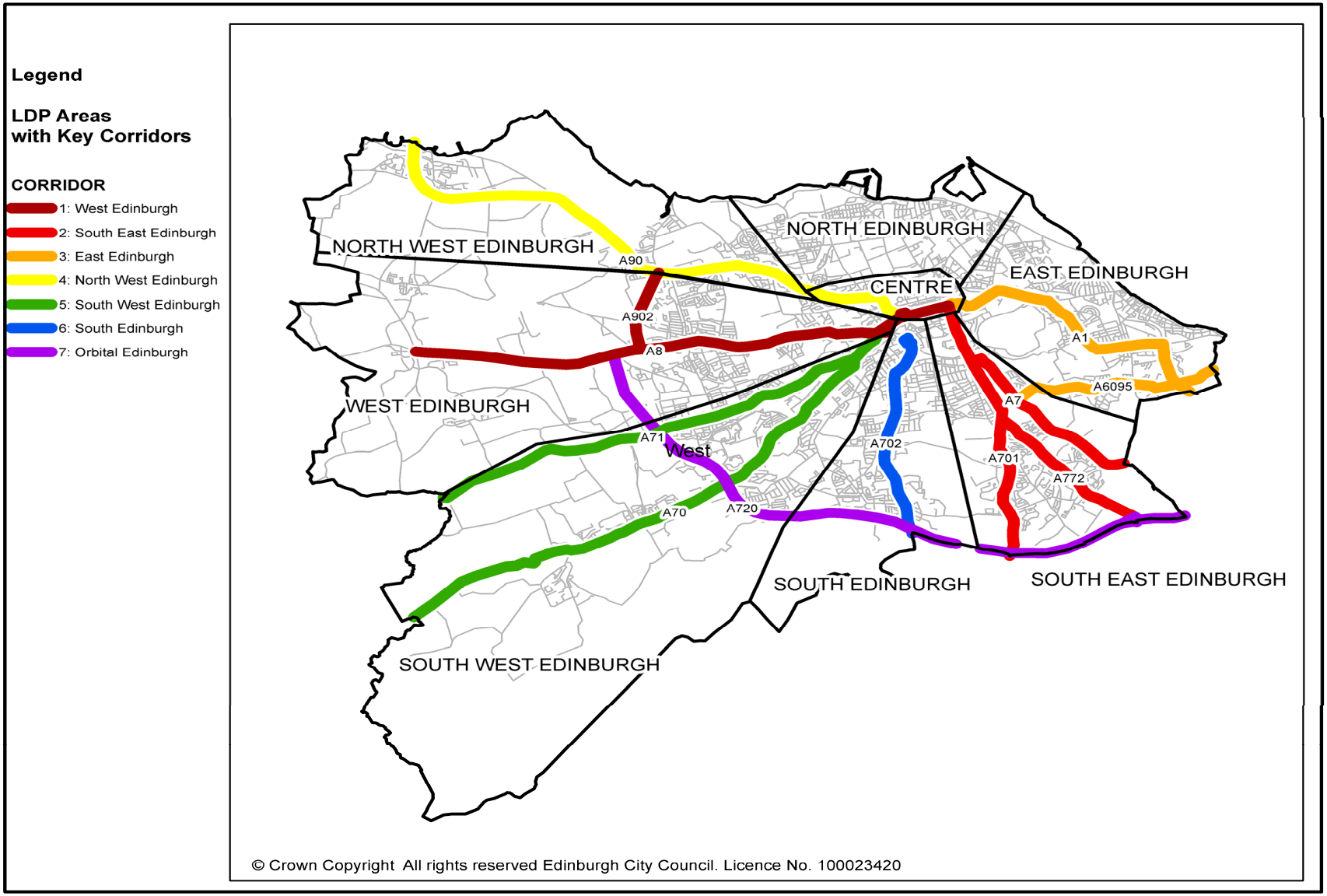
This focused on a set of strategic corridors, produced in line with the SDP strategy. Key road and public transport routes were identified within these corridors. The framework is shown in Table 2.4 and Figure 2.

It should be noted that a North Edinburgh corridor has not been assessed as no additional development sites have been identified that would impact on it.

Table 2-3 Spatial framework for analysis

Corridor	Road (and bus) corridor	Other public transport in addition to local bus services (*future in italics*)
1 West Edinburgh	A8 Glasgow Road/St John's Road; Bankhead Drive/Broomhouse Drive/Stenhouse Drive (secondary route)	P&R – Ingliston; Rail: Gyle, Edinburgh Park, *Gogar (Edinburgh Gateway). Tram: Edinburgh Park Station, Ed Park Central, Gyle Centre, Edinburgh Gateway, Gogarburn, Ingliston P&R*
2 South East Edinburgh	A701 Liberton Road; Lasswade Road (secondary); A772 Gilmerton Road; A7 Old Dalkeith Road	*Rail – Shawfair;* P&R – Sheriffhall
3 East Edinburgh	Links from Musselburgh and Newcraighall – A1/ A199; A6095	Mainline rail Newcraighall via Brunstane (2 hourly); P&R – Newcraighall, Wallyford
4 North West Edinburgh	A90 Queensferry Road (A902 Maybury Road considered a connecting link)	*Forth Replacement Crossing Public Transport Strategy*
5 South West Edinburgh	A70 Lanark Road; A71 Calder Road	Rail – Curriehill; P&R - Hermiston
6 South Edinburgh	A702 Biggar Road/Comiston Road/Morningside Road	P&R - Straiton
7 Orbital Edinburgh	Outer Orbital route - A720 City Bypass Inner Orbital route – comprised of a number of road sections including Gilmerton Dykes Street, Frogston Road East/West, Oxgangs Road, Redford Road, Wester Hailes Road.	

Figure 2: Spatial framework for analysis – Corridor Map



2.2.5 Step 4: Estimate background demand in the future

Forecasting demand from the LDP sites into the future is not sufficient however to fully understand the impact of the sites on the transport network. A picture must be built up, to the best of current knowledge, of other factors that may influence the transport network in the future.

In Step 4, two additional factors were considered:-

- trip demand from a set of "committed" residential sites, that is, residential allocations already present in approved development plans across the City of Edinburgh; and
- projected growth in traffic levels up to 2019/20 and 2024/25.

A sensitivity test was also applied to demonstrate the impact on the analysis from a higher level of trip demand in the future than was taken into account by the two additional factors above.

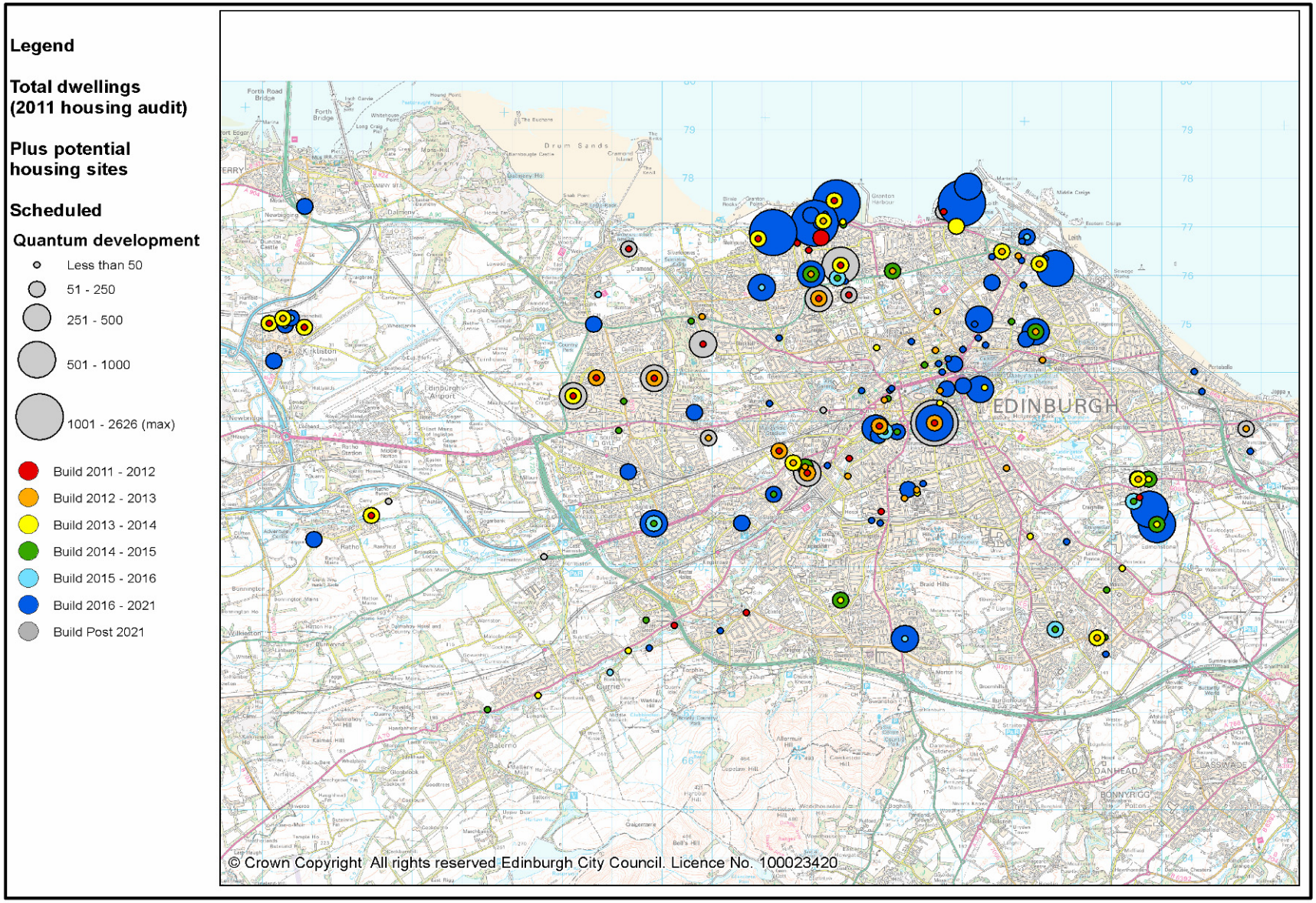
Demand from "committed" residential sites

CEC issued Halcrow with a housing schedule, sourced from the Housing Land Audit, of all committed residential development up to 2018 and then post-2018, as shown in Figure 3. Relevant committed residential development in the vicinity of the LDP proposed sites was incorporated into the analysis, with number of units identified for delivery up to 2018. There was no specific % estimated to be delivered by 2020, so the % to be delivered by 2018 was used as the best proxy for development likely to be in place by 2020. This was therefore fed into the first LDP appraisal year of 2020.

A total set of units from all scheduled housing units was then collated and included in a full-build scenario, constituting the second LDP appraisal year of 2025.

Trip demand forecasts were generated for these units using the same approach as Step 2 above. This provides estimated additional trips on strategic corridors from committed development alone and then additionally from the new housing sites.

Figure 3: Residential development - scheduled and potential



2.2.6 Projected Traffic Growth – establishing factors

Whilst the focus of this study has been to estimate the transport impact of a set of additional residential sites proposed in the next CEC LDP, it is necessary to consider that impact in the context of changing background conditions. Hence, the forecast demand from the potential housing sites is set against the background of moderate growth in overall traffic levels which may happen in the absence of the LDP proposals.

Traffic count data was gathered from CEC and Transport Scotland for appropriate points on the road network in the vicinity of LDP proposals, to establish a baseline of 2010/11.

Next, data on vehicle kilometres travelled has been extracted from Scottish Transport Statistics data (as a proxy for traffic levels and / or trips made, in this appraisal). Table 2.5 presents this data for local roads and trunk roads, within the City of Edinburgh Council area, as sourced from Scottish Transport Statistics.

Table 2-4 Traffic data on roads (million veh kms) 1995-2010 for City of Edinburgh Council area (Scottish Transport Statistics)

	1995	2000	2005	2010	% change 1995-2010	% change 2000-2010	% change 2005-2010	Rolling average of change over each 5 yr period – 1995-2010	Rolling average of change over each 5 yr period – 2000 -2010
Trunk roads - Edinburgh	515	599	688	677	+ 31.5%	+13%	-1.6%	**+14.3%**	**+5.7%**
Local authority roads – Edinburgh	2,072	2,171	2,285	2,207	+ 6.5%	+1.7%	-3.4%	**+1.6%**	**-0.9%**
All roads - Edinburgh	2,587	2,770	2,973	2,885	+11.5%	+4.2%	-3%	**+4.2%**	**+0.6%**

The STS data shows that in the last five years there has been a reduction in million vehicle kilometres travelled, across both trunk roads and local roads within the CEC area. This recent period spans a period of significant economic uncertainty and indeed recession.

Across the 10-year period, 2000-10 is generally recognised as a period of economic boom in the UK and a period of significant growth in house-building and jobs across Edinburgh, the Lothians and Fife. Vehicle kilometres increased, however, it should be noted that, on local roads, vehicle kilometres only grew by 1.7% (2010 figures over 2000 figures). Over the same period, bus and cycle use in Edinburgh grew significantly more than this.

The economic outlook remains unclear. The analysis for this study has been carried out using relatively simple assumptions, appropriate the level of strategic appraisal being applied.

Therefore, these statistics have been used to develop a background growth factor (as shown in Table 2.5) which have been applied to background (baseline) traffic levels up to 2020, and 2025. Professional judgement has been applied to in deriving these growth estimates – based on growth observed over comparable periods in the past, but tempered by the reality of decreasing traffic levels in recent years. It is considered this will demonstrate potential impacts of growth in traffic volumes across the region, and the relative impacts this has on this strategic transport appraisal.

Table 2-6 Background traffic growth assumptions

	2010-2020 – Scenarios 1, 2, 3	2010-2025 – Scenarios 1, 2, 3
Trunk roads - Edinburgh	+6%	+10%
Local authority roads – Edinburgh	+1%	+2%

Sensitivity tests were considered, whereby a greater level of background growth was applied. However, this would offer little additional information of value to the appraisal of the LDP proposals - indeed, it would serve to diminish their impact as per the methodology used in this study.

2.2.7 Step 5: Distribute trip demand spatially

With trip demand established by site for each of the housing sites, and the background of committed residential schemes, the next step was to distribute this demand across the spatial framework established in Step 3.

To assist with this, gravity models were developed and applied. These gravity models focused on the number of people in employment in each ward, using 2001 Census data as the "pull" factor[2]. The "push" factor, or origin of trips, were the set of potential housing sites, and clusters of committed residential sites included in our analysis (clustered by Census ward). A coefficient of "2" was applied after testing initial results against observed Census data (Journey to Work distance profiles). This means that, in reality, people are more likely to travel a shorter distance to a job than a longer distance. Further information on how this coefficient was derived is presented in Appendix D.

The gravity models produced a distribution of trips by broad spatial corridor for the potential housing sites and committed residential sites. This distribution was then applied to the trip demand within the demand analysis.

A further distribution of these trips was carried out within corridors by mode (using the Census modal splits shown above in Table 2.3; by peak hour (10% of all trips); and finally, for car trips, by road. Professional judgement was used to assign proportions of peak car trips across individual **key** roads within strategic corridors, based on knowledge of the City, consultation with Council officers, and comparison with the distribution of existing traffic from ATC data.

2.2.8 Step 6: Identify transport impacts at a strategic and local level

Finally, the peak hour trip demand was assessed in terms of its impact on the transport, in both quantitative and qualitative ways.

Quantitatively, peak hour car trips generated by various scenarios of development (potential housing sites, committed, potential housing sites plus committed, and by time period interim or full) were assessed as a % of the baseline traffic flows on specific routes. This is a traditional approach in transport assessment, applied to this appraisal at a strategic level to give merely an "indicator" of where the greatest impacts from travel demand may occur.

At a more local level, trip generation from each potential housing site was produced (using the same methodology above), with a greater

[2] UV76 NS-SeC (workplace population): All employed people aged 16-74 in area excluding full-time students

focus on localised impacts (e.g. access points to the local road network, local junctions).

Qualitatively, a workshop with CEC transport and planning officers helped to produce a commentary on where existing strengths and weaknesses were in the multi-modal transport network, and the magnitude of impact the generated trip demand may have.

Following a literature review of a number of previous studies and existing development schemes that impact on the Edinburgh area, a list of 'committed' transport interventions was researched and produced (which were then included within the Do Minimum scenario – see Section 5). The review sought to establish identified transport interventions proposed to support particular projects that might influence the LDP. This list comprises those transport schemes that are deemed more than likely to proceed within the timescales covered by this transport appraisal and which would have some impact on mitigating demand from the LDP proposals, as well as the committed residential development and background growth. It is recognised that whilst the schemes are deemed to be committed, some do not yet have approved designs or secured funding.

The agreed 'committed' transport interventions are:-

- Initial phases of CEC Active Travel Action Plan (ATAP) measures city-wide[3] provided in the medium term;
- West Edinburgh Planning Framework area – dualling of Eastfield Road and upgrade of Dumbbells;
- Edinburgh Gateway train / tram interchange at Gogar;
- Forth Replacement Crossing and associated roads infrastructure, and some public transport enhancements at South Queensferry;
- Borders Railway;
- Edinburgh trams (Airport to City Centre);
- Ocean Drive Extension;

[3] A series of policies and interventions to improve infrastructure for cycling and walking in Edinburgh, including a Family Network of signed cycle paths, improved cycle parking facilities, priority pedestrian corridors and improved public realm. Set out in Active Travel Action Plan, City of Edinburgh Council, 2010 http://www.edinburgh.gov.uk/info/1528/transport_policy/548/transport_planning/5

- Greendykes/Royal Infirmary of Edinburgh bus link;
- Lower Granton Road Improvement Scheme;
- Further phases of ATAP measures city-wide provided in the longer term;
- WETA Active Travel Package;
- Hermiston Park & Ride Extension;
- Selective Vehicle Detection at Key Junctions (city-wide);
- Minor Bus Priority Measures on Key Bus Corridors (city-wide);
- A89 Bus Priority Measures;
- A8 New Junction at Royal Highland Show;
- Newbridge Junction capacity enhancements;
- Gogar Junction capacity enhancements; and
- Sheriffhall Junction Grade Separation.

In addition, it should be noted this study has not modelled the capability of these interventions to accommodate trips generated by all committed CEC developments and background growth.

The matrix of impact assessment was applied within the strategic analysis framework and led to Step 7, the generation of interventions (solutions) to accessibility needs.

2.2.9 Step 7: Develop interventions at a strategic and local level and assess

Informed by two workshops with CEC officers, a list of potential interventions was produced with the intention of mitigating detrimental impacts of additional trips associated with the LDP development. These interventions were designed in response to the demand estimated for the development scenario assessed in this study, and the analysis of strengths and weaknesses in the multi-modal transport network. They were also developed with the intention of encouraging as many additional trips as possible to be made by sustainable travel modes (i.e. not by single occupancy private car or taxi modes).

An assessment has been made, to indicate if it is likely that levels of demand may be absorbed by committed interventions in the corridor in question, and / or if there is still likely to be levels of residual demand that require further interventions to be developed. This is referred to as the Do Minimum scenario below. Estimates of possible mode share change arising from the impacts of committed transport interventions were assessed.

The envisaged residual demand is therefore the focus of the proposed interventions discussed in Section 6, which constitute the Do Something scenario and which includes the development of mode share targets that could be applied to individual sites.

2.2.10 Step 8: Recommendations

The final step in the process has been the production of suggested transport interventions that are considered necessary and appropriate to accommodate or mitigate (as far as possible) the impacts of 15 sites included in the Proposed Plan. Taking forward the interventions developed in Step 7, these were assessed to consider their suitability, using a set of agreed transport planning criteria for consistency and logic. Following the assessment, sets of recommended interventions for individual sites were produced. It is intended these could be used to inform the subsequent planning process and suggested planning conditions. The interventions would also help inform the preparation of an associated LDP Action Programme.

2.3 Specific assumptions

In the course of this analysis, some assumptions have had to be made. The following is a summary of these assumptions:-

1. 15 residential sites – being taken forward by CEC for inclusion in the Proposed Plan. This includes the suggested site capacity in numbers of housing units. Build densities have been set at 25 units/hectare and 35 units per hectare.
2. Build-out rates – set by CEC, with rates based on historical data.
3. Demand in the north of the city from committed developments – mainly absorbed by public transport and minimal impacts on the transport networks on the edges of the city, where all the new LDP housing sites are located.
4. Background traffic growth – based on historic 10-year and 15-year data analysis.
5. Baseline traffic flows – 10% of total daily traffic flow was used as an estimate of the peak hour traffic flow. This follows guidance in Design Manual for Roads and Bridges (DMRB). Data was gathered from a number of sources including CEC directly, and from Transport Scotland. Data for both directions across all lanes was amalgamated into a single traffic flow figure for the route in question.

6. Baseline ATC data – a number of Key Corridor roads did not have ATC data at relevant points, resulting in estimates in peak period two-way flow being applied – A71 – 2000; A701 Burdiehouse Road – 1500 and A702 Biggar Road – 1000.
7. Gravity model coefficient – set at 2, following testing and analysis to best reflect employment travel distances to work from Edinburgh wards.
8. Distribution of car trips – allocated to Key Corridors. Considered to be worse case impact, as recognised some trips will use other local road routing options.
9. Cross-boundary demand into Edinburgh from other local authority areas and employment and other non-residential related trip demand – the analysis has used observed traffic data. This is data for all traffic on the road network within CEC area, and includes traffic of any origin (including from large growth areas that have occurred over the past decade in e.g. Fife and West Lothian). As a result, it is considered that the range of background growth factors applied in Table 2.5 give an indication of the impact of growth scenarios over coming years.
10. Full build out has been assumed to occur at 2025, in order to consider the impact of full development proposals. Given historic build out rates, such a scenario is unlikely to be realised, hence the results should be considered as conservative.

3 Demand and mode share scenarios

3.1 Introduction

This section describes the various scenarios that have been tested.

3.2 Demand scenarios tested

Three different scenarios of demand were tested as part of the analysis.

- Scenario 1 - Baseline (Do Nothing) – this scenario presents a description of the transport network during the LDP appraisal period if modal splits in travel observed in a baseline of 2010 continue, without any additional interventions made to promote modal shift to more sustainable modes. For this scenario, an adjusted mode share for 2010 was developed based on 2001 Census and more up to date Scottish Household Survey data. This was then applied to the demand assessment of the Proposed LDP development scenario. The demand from this scenario is shown against an interim timescale, up to 2020, and a full timescale, up to 2025 – to illustrate the impacts from a phased approach.
- Scenario 2 - Do Minimum – this scenario represents the proposed LDP development, taking into account the potential impacts of a series of "committed" transport interventions (Table 5.1) that are considered likely to proceed, but, without any additional accessibility enhancements directly related to the 15 LDP housing sites. For the purposes of analysis, results are only shown for the full built-out of development to demonstrate the estimated maximum impact. This is discussed in more detail in Section 5.
- Scenario 3 - Do Something – this scenario estimates demand from the 15 new LDP housing sites after a series of suggested site-specific transport interventions, generated by this study to mitigate impacts and effect modal shift to sustainable modes, have been considered For the purposes of analysis, results are only shown for the full built-out of development, to demonstrate the estimated maximum impact. This is discussed in more detail in Section 8.

A uniform background growth rate has been applied across all the three scenarios above.

3.3 Modal share

The key differentiator between the scenarios tested in this study is modal share. Achieving a high share of trips by sustainable modes is a key objective of the transport interventions.

Therefore, there different sets of modal split have been applied to the three demand scenarios, as follows:-

- Scenario 1 – Baseline (Do Nothing) – an adjusted baseline modal share was calculated using 2001 Census data for journey to work for outer wards, and adjusting it with more up-to-date Scottish Household Survey (SHS) modal share data (all for journey to work). An adjusted baseline for modal share was thought appropriate for this Scenario, as it assumes no significant transport interventions.
- Scenario 2 - Do Minimum – this scenario represents the proposed LDP housing sites, taking into account the potential impacts of a series of "committed" transport interventions that are considered likely to proceed, but without any additional accessibility enhancements directly related to individual sites. Adjusted modal shares are based on professional judgement of the potential impact of committed transport schemes on relevant corridors (e.g. Edinburgh tram on the West Edinburgh corridor modal share).
- Scenario 3 - Do Something – this scenario estimates demand from the 15 new LDP housing sites after a series of site-specific transport interventions that generally seek to encourage modal shift to sustainable modes and minimise adverse traffic impact have been considered. This scenario illustrates the estimated outcomes of the proposed interventions identified in this study. It should be noted this scenario does not provide for 100% mitigation of all detrimental impacts from the LDP housing sites, but attempts to reduce the impact on vehicular trips.

3.4 Definition of sustainable modes

Throughout this report, sustainable modes are defined as those trips undertaken by walking, cycling, public transport (bus, train and tram), motorcycle and as a car passenger. Taxi trips are excluded, as they considered to frequently constitute a private vehicle trip.

3.5 Sensitivity tests

The assessment tool created for this study is flexible and permits input data to be easily adjusted, so that a range of sensitivity tests could be carried out if required. To date, no such tests have yet been undertaken but it would be feasible, for example, to apply a greater level of background growth to the Do Minimum and the Do Something scenarios to illustrate the potential impact on the network of a larger period of traffic growth. It is also feasible to adjust mode share values for individual sites, in order to test the impact of seeking higher levels of sustainable travel.

However, as mentioned previously, increasing background traffic growth would not result in any significant change in the impact of the LDP housing sites specifically, other than reducing the percentage impact. They would however highlight the scale of general traffic increase that might be envisaged across the network and place the LDP housing proposals in that context.

4 Baseline Scenario (Do Nothing) – Scenario 1

4.1 Introduction

The Baseline Scenario (also considered as Do Nothing) assesses demand from the 15 new LDP housing sites assuming background traffic growth in the network and the delivery of committed residential development. In terms of modal share, it assumes a baseline (2010) modal split of trips, based on existing values. The scenario assumes no improvements will be made in terms of modal shift to more sustainable transport modes and the modal split observed currently continues.

4.2 Demand assessment

For the baseline scenario, modal split is deemed to consistent across all sites, with values as set out in Table 4.1. Realistically, there may be some variation for individual sites but the applied values are considered reasonable for this scenario.

The impact analysis results for Scenario 1 – Baseline are shown below, by corridor (Table 4.2) and by site (Table 4.3).

Table 4-1 Baseline (Do Nothing) scenario – % modal splits by site (uniform)

Site	Corridor	Car Driver +taxi	Car pax	Train	Bus	Cycle	Walk	Other	Total Sustainable
Maybury 1	**W**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Maybury 2	**W**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
IBG	**W**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Edinburgh Park	**W**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Cammo	**W**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Burdiehouse 1	**SE**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Burdiehouse 2	**SE**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Gilmerton 1	**SE**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Gilmerton 2	**SE**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Drum 1	**SE**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Moredunvale Road	**SE**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Newcraighall 1	**E**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Newcraighall 2	**E**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Riccarton Mains Road	**SW**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**
Curriemuirend	**SW**	58.9	6.0	1.7	21.6	2.0	7.8	2.0	**41.1**

Table 4-2 Baseline (Do Nothing) Scenario 1 – estimated demand by corridor

		CORRIDOR 1 - West Edinburgh		CORRIDOR 2 - South East Edinburgh				CORRIDOR 3 - East Edinburgh		CORRIDOR 4 - North West Edinburgh	CORRIDOR 5 - South West Edinburgh		CORRIDOR 6 - South Edinburgh	CORRIDOR 7 - Orbital Edinburgh	
		A8 Glasgow Road	**Stenhouse / Broomhouse**	**A701 Liberton Road**	**A772 Gilmerton Road**	**A7 Old Dalkeith Road**	**Lasswade Road**	**A1**	**A6095**	**A90 Queensferry Road**	**A71 Calder Road**	**A70 Lanark Road**	**A702 Biggar Road**	**A720 - Outer orbital**	**Inner Orbital**
2019/20	**Corridor impact - by car (peak car trips)**	**99**		**261**				**151**		**19**	**77**		**0**	**67**	
2019/20	*LDP only*	84	16	90	109	33	30	60	91	19	31	46	0	58	9
	LDP only as % over baseline peak hour flow	**1.9%**	**1.2%**	**6.0%**	**9.9%**	**1.7%**	**1.6%**	**1.1%**	**10.4%**	**0.5%**	**1.5%**	**1.9%**	**0.0%**	**0.9%**	**1.1%**
	Background growth 2019/20	44	13	15	11	19	7	320	9	230	20	25	10	376	9
	Committed residential 2019/20	138	20	45	56	13	16	17	26	13	22	32	0	31	5
	LDP only as % over baseline peak hour flow plus background plus committed	**1.8%**	**1.2%**	**5.8%**	**9.3%**	**1.7%**	**1.6%**	**1%**	**10.0%**	**0.5%**	**1.5%**	**1.8%**	**0.0%**	**0.9%**	**1.0%**
	LDP and committed residential and growth 2019/20	**267**	**49**	**149**	**176**	**64**	**53**	**397**	**125**	**261**	**72**	**103**	**10**	**464**	**23**
	% over 2011 baseline peak hour flow	**6.0%**	**3.7%**	**10.0%**	**16.0%**	**3.4%**	**2.8%**	**7.5%**	**14.3%**	**6.8%**	**3.6%**	**4.2%**	**1.0%**	**7.4%**	**2.6%**
2024/25	**Corridor impact - by car (peak car trips)**	**1092**		**787**				**309**		**223**	**77**		**0**	**272**	
2024/25	*LDP only*	972	120	305	307	74	100	123	185	223	31	46	0	234	38
	LDP only as % over baseline peak hour flow	**21.8%**	**9.0%**	**20.3%**	**27.8%**	**4.0%**	**5.3%**	**2.3%**	**21.2%**	**5.8%**	**1.5%**	**1.9%**	**0.0%**	**3.7%**	**4.3%**
	Background growth 2024/25	89	27	30	22	37	15	533	18	383	40	49	20	627	18

		CORRIDOR 1 - West Edinburgh		CORRIDOR 2 - South East Edinburgh				CORRIDOR 3 - East Edinburgh		CORRIDOR 4 - North West Edinburgh	CORRIDOR 5 - South West Edinburgh		CORRIDOR 6 - South Edinburgh	CORRIDOR 7 - Orbital Edinburgh	
	Committed residential 2024/25	223	40	45	56	13	16	17	26	28	26	39	0	36	6
	LDP only as % over baseline peak hour flow plus background plus committed	**20.4%**	**2.7%**	**14.9%**	**26.0%**	**3.9%**	**5.3%**	**2.1%**	**1.8%**	**5.2%**	**1.5%**	**1.8%**	**0.0%**	**3.4%**	**4.2%**
	LDP and committed residential and growth 2024/25	**1284**	**186**	**380**	**385**	**124**	**131**	**674**	**228**	**634**	**97**	**135**	**20**	**897**	**62**
	% over 2011 baseline peak hour flow	**28.9%**	**14.0%**	**25.3%**	**34.9%**	**6.6%**	**7.0%**	**12.6%**	**26.1%**	**16.5%**	**4.8%**	**5.5%**	**2.0%**	**14.3%**	**7.0%**

Table 4-3 Baseline (Do Nothing) Scenario 1 – estimated demand by site

NUMBER OF PEAK HOUR TRIPS GENERATED	**INTERIM**	**INTERIM**	**INTERIM**	**INTERIM**	**INTERIM**	**INTERIM**	**INTERIM**	**INTERIM**	**INTERIM**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**
	2019/20	2019/20	2019/20	2019/20	2019/20	2019/20	2019/20	2019/20	2019/20	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25
LDP sites	**Committed sites in the vicinity of LDP sites**			**LDP sites only**			**LDP plus committed sites**			**Committed sites in the vicinity of LDP sites**			**LDP sites only**			**LDP plus committed sites**		
	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail
Maybury 1	30	11	1	39	14	1	69	25	2	30	11	1	336	123	10	366	134	11
Maybury 2	30	11	1	0	0	0	30	11	1	30	11	1	294	108	8	324	119	9
International Business Gateway	0	0	0	0	0	0	0	0	0	0	0	0	196	72	6	196	72	6
Edinburgh Park/The Gyle	53	19	2	42	15	1	95	35	3	106	39	3	322	118	9	428	157	12
Cammo	0	0	0	42	15	1	42	15	1	45	17	1	280	103	8	325	119	9
Burdiehouse 2	34	13	1	56	21	2	90	33	3	34	13	1	168	62	5	202	74	6
Gilmerton 1	26	9	1	34	12	1	59	22	2	26	9	1	34	12	1	59	22	2
Gilmerton 2	26	9	1	42	15	1	68	25	2	26	9	1	280	103	8	305	112	9
Drum 1	26	9	1	56	21	2	82	30	2	26	9	1	84	31	2	110	40	3
Newcraighall 1	23	8	1	112	41	3	135	49	4	23	8	1	151	55	4	174	64	5
Newcraighall 2	23	8	1	56	21	2	79	29	2	23	8	1	185	68	5	208	76	6
Burdiehouse 1	34	13	1	84	31	2	118	43	3	34	13	1	319	117	9	353	129	10
Riccarton Mains Road	14	5	0	28	10	1	42	15	1	14	5	0	28	10	1	42	15	1
Moredunvale Road	5	2	0	28	10	1	33	12	1	0	2	0	28	10	1	33	12	1
Curriemuirend	14	5	0	56	21	2	70	26	2	0	5	0	56	21	2	70	26	2
TOTAL number of trips generated	433	159	12	674	247	19	1107	406	32	552	209	16	2758	1012	80	3329	1221	96

4.3 Challenges and opportunities on corridors – a qualitative assessment

The Baseline Scenario shows some corridors will be impacted by new LDP housing sites more than others, as might be expected. However, this assessment of potential impact should be placed in the context of existing conditions on the corridors, in terms of traffic flow and capacity.

Table 4.4 below provides some qualitative analysis, based on the joint professional judgement of CEC Officers and the Halcrow team, produced during a workshop as part of the study process. The issues discussed have informed the judgements of modal share made in the Do Minimum, and the interventions proposed in the Do Something.

The results suggest there will impact on the various corridors, of varying degrees and that, even with implementation of likely committed transport interventions, some further interventions will probably be necessary for most corridors. In addition, for some corridors, there may be opportunities to apply higher than average sustainable mode share targets to particular housing sites.

Table 4.4. Review of Baseline scenario demand assessment and strengths and weaknesses by route and corridor

		CORRIDOR 1 - West Edinburgh		CORRIDOR 2 - South East Edinburgh				CORRIDOR 3 - East Edinburgh		CORRIDOR 4 - North West Edinburgh	CORRIDOR 5 - South West Edinburgh		CORRIDOR 6 - South Edinburgh	CORRIDOR 7 - Orbital Edinburgh	
		A8 Glasgow Road	Stenhouse / Broomhouse	A701 Liberton Road	A772 Gilmerton Road	A7 Old Dalkeith Road	Lasswade Road	A1	A6095	A90 Queensferry Road	A71 Calder Road	A70 Lanark Road	A702 Biggar Road	A720 - Outer orbital	Inner Orbital
2019/20 full scenario (LDP plus committed plus growth)	% of total trips generated of baseline peak hour flow 2010/11	6.7%	3.7%	10.0%	17.1%	4.1%	2.8%	7.5%	14.3%	6.9%	3.8%	4.4%	1.0%	7.5%	2.7%
Scale of demand - high 3, moderate 2, low 1	Scale of impact over baseline - 2019/20	1	1	2	2	1	1	1	2	1	1	1	1	1	1
2024/25 full scenario (LDP plus committed plus growth)	% of total trips generated of baseline peak hour flow 2010/11	29.5%	14.0%	25.3%	33.7%	5.9%	7.0%	12.6%	26.1%	16.2%	3.8%	4.1%	2.0%	14.3%	6.9%
Scale of demand - high 3, moderate 2, low 1	Scale of impact over baseline - 2024/25	3	2	3	3	1	1	2	3	3	1	1	1	2	1
3- significant strategic and local issues, 2 some strategic and local issues, 1 some local issues	Assessment of corridor currently - road traffic issues	2	1	2	2	1	1	1	1	2	1	2	1	3	2
no=2, partially / possibly = 1, yes but small impact = -1 yes and significant impact = -2	Committed transport scheme to tackle road vehicle space / flow?	Yes	No	No	No	Yes?	No	No	No	Yes	No	No	No	Yes	No
	score	-2	2	2	2	-1		2	2	-1	2	2	2	-1	-1
	overall road vehicle assessment 2019/20	1	3	6	6	2		4	5	2	4	5	4	3	2
	overall road vehicle assessment 2024/25	3	6	7	7	3		4	6	4	5	6	5	4	3
	peak hour PT trips 2019/20	100	14	53	70	23	18	31	46	13	22	33	0	36	6
Scale of demand from dev - high 3, moderate 2, low 1		2	1	2	2	1	1	1	1	1	1	1	0	1	1

	peak hour PT trips 2024/25	485	63	138	149	39	46	56	84	95	24	36	0	108	18
Scale of demand from dev - high 3, moderate 2, low 1		3	2	3	3	1	1	2	2	2	1	1	0	2	1
3-significant issues, 2 some issues, 1 minimal issues	Assessment of corridor currently - bus transport issues	1	1	2	1	1	1	1	1	1	1	1	1	3	1
no=2, partially /possibly = 1, yes but small impact = -1 yes and significant impact = -2	**Committed transport scheme to tackle bus transport?**	tram and train measures	tram	Existing bus priority in place but bus capacity issues on existing services (full within CEC)	Possibly (bus priority?)	Possibly (bus priority?)			Possibly (bus priority?)	Cammo - significant bus issue. Maybury buses - need to divert through interchange to serve Maybury sites.	Hermiston P&R extension		Possibly (bus priority?)	Key junction improvements? Possible bus priority?	Inner orbital bus schemes
	score	-2	-1	-1	-1	-1	2	2	-1	-1	1	2	-1	-2	-1
3-significant issues, 2 some issues, 1 minimal issues	Assessment of corridor currently - rail transport issues	car parking capacity?	Edinburgh Park	no nearby rail	no nearby rail	no nearby rail	No nearby rail	Brunstane – car parking capacity restricted	New craighall station	Nearest rail is a substantial walk (Dalmeny)	Curriehill frequency. Parking capacity?	frequency issue	no nearby rail	no nearby rail	no nearby rail
	score	1	1	2	2	2	2	1	1	2	1	2	2	2	2
no=2, partially / possibly = 1, yes but small impact = -1 yes and significant impact = -2	**Committed transport scheme to tackle rail transport?**	Edinburgh Gateway and tram - trains from Fife.	Tram	No	No	No	No	No	No	Tram?	No	No	No	No	No
	score	-2	-2	2	2	2	2	2	2	1	2	2	2	2	2
	Scope for a higher than average MST for sustainable modes? Yes, no	Yes	Yes	No	No	Yes	No	No	No	Yes -	No	Yes	No	No?	Yes
	Physical intervention still required - yes, no	Yes	Yes	Yes	Yes.	Yes	Yes	No Sites already consented	No Sites already consented	Yes	No	Yes	Yes	Unlikely to be site-specific for majority of locations. Cumulative impact?	Yes

5 Do Minimum: Scenario 2

5.1 Introduction

The Baseline Scenario took no account of transport interventions that can be classified as "committed" for the purposes of this study. These are interventions which are broadly assumed to have a moderate or high degree of certainty of delivery over the assessment period of the LDP housing scenario.

The Do Minimum scenario therefore takes into account potential modal share impacts of these "committed" schemes on the LDP housing sites. (This is effectively the 'Reference' case, in transport appraisal terms.)

The objective of the assessment of this scenario is to understand any residual impacts on the transport network from the 15 LDP sites that would then still require bespoke transport interventions.

5.2 Committed transport interventions – potential modal share impact

A largely qualitative analysis has been carried out on the potential modal share impacts of a set of committed transport interventions and are shown in Table 5.1.

5.3 Analysis of impacts on baseline modal share

Following the analysis of the potential impact of committed transport schemes, adjusted modal share values were estimated and applied within the demand assessment tool. Given the differing impacts, differing values were applied on a site-by-site basis, as shown in Table 5.2.

Table 5-1 Committed transport interventions – potential modal share impact (journey to work)

Committed Intervention	Affected Corridors	Comment
Initial phases of CEC Active Travel Action Plan measures city-wide	All	Likely to increase cycling trips for those LDP sites close to measures. Bigger increase likely for leisure trips as commuters may already cycle.
WEPF – dualling of Eastfield Road and upgrade of dumbbells	West	Localised improvement to access – reduce delay for buses but also attract private car. Impact on IBG site only?
Edinburgh Gateway train/tram interchange	West	Significant increase in PT trips, with associated walk/cycle trips to interchange. Influenced by train services. IBG, Maybury sites and Edinburgh Park.
Forth Replacement Crossing, with associated roads infrastructure and some PT measures	None	Some increase in PT trips if capacity enhanced but potentially a private vehicle attractor. Little impact on LDP housing sites.
Borders Railway	Unlikely	Little impact on LDP housing sites.
Edinburgh Tram	West	Major PT mode share increase for those sites directly served by tram.
Ocean Drive Extension	None	No impact on LDP housing sites.
Greendykes/RIE bus link	Unlikely	Some potential minor increase in PT trips, depending on service routing. Minor increase in cycling trips.
Lower Granton Road Improvement Scheme	None	No impact on LDP housing sites.
Future phases of ATAP measures city-wide	All	Likely to increase cycling trips for those LDP sites close to measures. Bigger increase likely for leisure trips as commuters may already cycle.
WETA Active Travel Package	West	Should increase sustainable trips – confined to IBG site.

Committed Intervention	Affected Corridors	Comment
Hermiston P&R Extension	South West	Minor increase in PT trips for Currie and Balerno sites – associated cycle and private car trips to/from facility.
Selective Vehicle Detection at Key Junctions	All	Very minor increase in PT trips for those LDP sites served by bus services using key junctions. But capacity and frequency more critical.
Minor Bus Priority on Key Bus Corridors	All	Minor increase in PT trips for those LDP sites served by bus services using key corridors. But capacity and frequency more critical.
A89 Bus Priority Measures	None	Unlikely to have any impact on LDP housing sites.
A8 New Junction at RHS	West	Improve access – private vehicle attractor. No impact on LDP sites, other than IBG site.
Newbridge Junction capacity enhancement	West	Reduce delay for bus services but also private cars – unlikely to change sustainable modes. Only impact on West Edinburgh sites.
Gogar Junction capacity enhancement	West	Reduce delay for bus services but also private cars – unlikely to change sustainable modes. Only impact on West Edinburgh sites.
Sheriffhall Junction Grade Separation	East	Reduce delay for cross-boundary bus services but likely to be attractor to private cars. Impact on East Edinburgh sites but unlikely to increase sustainable travel mode share

5.4 Adjusted modal share

As a result of the analysis above, an adjusted set of modal share splits by site were produced, shown in Table 5.2. It should be noted these values are estimates, based on professional judgement, and any resulting actual values could be lower or higher.

Table 5-2 Do Minimum Scenario 2 – estimated adjusted % mode share by site

Site	Corridor	Car Driver + taxi	Car Pax	Train + Tram	Bus	Cycle	Walk	Other	Total	Total Sustainable
Maybury 1	**W**	**44.9**	6.0	17.7	18.6	2.5	8.3	2.0	100.0	**55.1**
Maybury 2	**W**	**48.9**	6.0	13.2	19.6	2.3	8.0	2.0	100.0	**51.1**
IBG	**W**	**39.9**	6.0	21.7	17.6	3.5	9.3	2.0	100.0	**60.1**
Edinburgh Park	**W**	**40.9**	6.0	21.7	18.6	2.5	8.3	2.0	100.0	**59.1**
Cammo	**W**	**58.9**	6.0	1.7	21.1	2.3	8.0	2.0	100.0	**41.1**
Burdiehouse 1	**SE**	**56.9**	6.0	1.7	22.6	2.5	8.3	2.0	100.0	**43.1**
Burdiehouse 2	**SE**	**56.9**	6.0	1.7	22.6	2.5	8.3	2.0	100.0	**43.1**
Gilmerton 1	**SE**	**57.9**	6.0	1.7	21.6	2.5	8.3	2.0	100.0	**42.1**
Gilmerton 2	**SE**	**56.9**	6.0	1.7	22.6	2.5	8.3	2.0	100.0	**43.1**
Drum 1	**SE**	**56.9**	6.0	1.7	22.6	2.5	8.3	2.0	100.0	**43.1**
Moredunvale Road	**SE**	**57.9**	6.0	1.7	21.6	2.5	8.3	2.0	100.0	**42.1**
Newcraighall 1	**E**	**58.9**	6.0	1.7	21.6	2.0	7.8	2.0	100.0	**41.1**
Newcraighall 2	**E**	**58.9**	6.0	1.7	21.6	2.0	7.8	2.0	100.0	**41.1**
Riccarton Mains Road	**SW**	**54.9**	6.0	1.7	24.6	2.5	8.3	2.0	100.0	**45.1**
Curriemuirend	**SW**	**56.9**	6.0	1.7	22.6	2.5	8.3	2.0	100.0	**43.1**

5.5 Demand assessment results for Do Minimum

The impact analysis results for Scenario 2 – Do Minimum are shown below, by corridor (Table 5.3) and by site (Table 5.4).

Table 5-3 Do Minimum Scenario 2 – estimated demand by corridor – Full build out by 2025

	CORRIDOR 1 - West Edinburgh		CORRIDOR 2 - South East Edinburgh				CORRIDOR 3 - East Edinburgh		CORRIDOR 4 - North West Edinburgh	CORRIDOR 5 - South West Edinburgh		CORRIDOR 6 - South Edinburgh	CORRIDOR 7 - Orbital Edinburgh	
	A8 Glasgow Road	**Stenhouse / Broomhouse**	**A701 Liberton Road**	**A772 Gilmerton Road**	**A7 Old Dalkeith Road**	**Lasswade Road**	**A1**	**A6095**	**A90 Queensferry Road**	**A71 Calder Road**	**A70 Lanark Road**	**A702 Biggar Road**	**A720 - Outer orbital**	**Inner Orbital**
Corridor impact - by car (peak car trips)	**856**		**761**				**308**		**190**	**67**		**0**	**245**	
LDP only	772	83	295	297	72	97	123	185	190	27	40	0	211	34
LDP only as % over baseline peak hour flow	**17.4%**	**6.3%**	**19.7%**	**27.0%**	**3.8%**	**5.2%**	**2.3%**	**21.1%**	**4.9%**	**1.3%**	**1.6%**	**0.0%**	**3.4%**	**3.9%**
Background growth 2024/25	89	27	30	22	37	15	533	18	383	40	49	20	627	18
Committed residential 2024/25	197	27	43	55	12	15	17	26	24	28	42	0	34	6
LDP only as % over baseline peak hour flow plus background plus committed	**16.3%**	**1.9%**	**14.4%**	**25.2%**	**3.7%**	**5.1%**	**2.1%**	**1.8%**	**4.5%**	**1.3%**	**1.6%**	**0.0%**	**3.0%**	**3.8%**
LDP and committed residential and growth 2024/25	**1058**	**138**	**368**	**374**	**122**	**127**	**673**	**228**	**597**	**95**	**132**	**20**	**872**	**58**
% over 2011 baseline peak hour flow	**23.8%**	**10.3%**	**24.5%**	**33.9%**	**6.5%**	**6.8%**	**12.6%**	**26.1%**	**15.6%**	**4.7%**	**5.3%**	**2.0%**	**13.9%**	**6.5%**

Table 5-4 Do Minimum Scenario 2 – estimated demand by site

NUMBER OF PEAK HOUR TRIPS GENERATED	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**
	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25
LDP sites	**Committed sites in the vicinity of LDP sites**			**LDP sites only**			**LDP plus committed sites**		
	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail / tram	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail/ tram	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail / tram
Maybury 1	23	9	9	363	150	143	385	160	152
Maybury 2	25	10	7	128	51	34	153	61	41
International Business Gateway	0	0	0	133	59	72	133	59	72
Edinburgh Park/The Gyle	74	33	39	223	102	119	297	135	158
Cammo	45	16	1	280	100	8	325	116	9
Burdiehouse 2	33	13	1	162	64	5	195	78	6
Gilmerton 1	25	9	1	33	12	1	58	22	2
Gilmerton 2	25	10	1	270	107	8	295	117	9
Drum 1	25	10	1	81	32	2	106	42	3
Newcraighall 1	23	8	1	151	55	4	174	64	5
Newcraighall 2	23	8	1	185	68	5	208	76	6
Burdiehouse 1	33	13	1	308	122	9	341	135	10
Riccarton Mains Road	13	6	0	26	12	1	39	18	1
Moredunvale Road	0	2	0	28	10	1	32	12	1
Curriemuirend	0	5	0	48	19	5	68	27	2
TOTAL number of trips generated	502	204	66	2427	967	407	2953	1173	470

5.6 Discussion of results – residual impacts

As a result of committed transport interventions, particularly in the West Edinburgh corridor where the tram will have the most significant impact on trip modal share, it is estimated that some of the potential demand generated by LDP housing sites will be absorbed by sustainable transport modes, therefore reducing the impact of the LDP housing scenario in terms of peak hour vehicular trips.

However, the analysis suggests that, for some corridors, there are still some significant residual impacts that need to be mitigated against. There needs to be an emphasis on seeking to reduce the number of private car trips, especially during the peak periods, when the road network experiences the worst congestion. Further transport interventions should be encouraging sustainable transport modes travel or reducing the need to travel, in line with national, regional and local policy. Even for those corridors that might not experience any significant impact arising from potential housing development, the sites should be maximising sustainable travel, in order to limit car trips.

Whilst walking and cycling will be encouraged and will see an increasing proportion of modal share in the future, public transport will still be the main sustainable mode of transport for many 'journey to work' trips. For many of the sites, it is likely that improved access to public transport services or increased capacity may be necessary and, therefore, a necessary intervention.

Table 5.5 summarises the modal share analysis in each scenario and the residual impacts they address on a site-per-site basis. The 2010 baseline is the 2001 Census data for journey to work trips, adjusted to a 2010 level, taking account of 2009/2010 SHS data. The suggested mode share target (MSTs) for sustainable modes arising from committed interventions is the baseline value adjusted by the main interventions likely to affect a particular site and estimates of likely impact have been set out. It should be noted that some committed interventions (such as a junction improvement) may have a negative impact by potentially encouraging private car journeys. The adjusted values are used in the 'Do Minimum' scenario.

Thereafter, each site has been assessed and potential interventions identified with the possible mode share impact of the main ones estimated, using professional judgement. As mentioned previously,

realised sustainable mode share values could end up be lower or higher, depending on the success of the interventions.

Table 5-5 Modal share impacts of baseline, committed and outline of issues driving "Do Something" interventions.

Site	Units	2010 Baseline (applied % trips by sustainable modes)	Suggested MST arising from committed interventions (estimated % trips by sustainable modes)	Main committed interventions affecting site (could have positive or negative impact)	Suggested MST with additional site-specific interventions (% trips by sustainable modes)	Comments relating to future MST
Maybury 1	600	41	55	ATAP measures +1; Edinburgh Tram +14; Edinburgh Gateway +2 – positive. Newbridge Junction -1; Gogar Junction -2 – negative.	60	Needs direct bus services and quality access to tram stop and Edinburgh Gateway +3. Quality walk/cycle link to The Gyle/Edinburgh Park +2.
Maybury 2	525	41	51	ATAP measures +0.5; Edinburgh Tram +10.5; Edinburgh Gateway +1 – positive. Newbridge Junction -1; Gogar Junction -1 – negative.	57	Needs direct bus services and quality access to tram stop and Edinburgh Gateway +4. Quality walk/cycle link to The Gyle/Edinburgh Park +2.
International Business Gateway	350	41	60	ATAP measures +1; Edinburgh Tram +18; Edinburgh Gateway +2; WETA Active Travel package +2 – positive. Eastfield Road and dumbbells upgrade -2; Newbridge Junction -1; Gogar Junction -1 – negative.	65	Part of WETA. Provide direct bus services +3. High quality walk/cycle links +2.
Edinburgh Park/The Gyle	575	41	59	ATAP measures +1; Edinburgh Tram +20 – positive. Newbridge Junction -1; Gogar Junction -2 – negative.	63	Eventual improved train services? +2. Walking/cycling access to jobs & retail +2.
Cammo	500	41	41	ATAP measures +0.5 – positive. Gogar Junction -0.5 – negative.	48	Would need direct bus service +5. High quality walk/cycle route to tram/train interchange +2.
Burdiehouse 1	570	41	43	ATAP measures +1; SVD at junctions +0.5; minor bus priority +0.5 – positive.	48	Some accessibility to PT services – need enhancements +3. Good walk access +2.
Burdiehouse 2	300	41	43	ATAP measures +1; SVD at junctions +0.5; minor bus priority +0.5 – positive.	49	Needs bus service through site to improve MST +6.
Gilmerton 1	60	41	42	ATAP measures +1 – positive.	43	Limited accessibility to PT services – unlikely to enhance. Improve walk/cycle facilities +1.

Site	Units	2010 Baseline (applied % trips by sustainable modes)	Suggested MST arising from committed interventions (estimated % trips by sustainable modes)	Main committed interventions affecting site (could have positive or negative impact)	Suggested MST with additional site-specific interventions (% trips by sustainable modes)	Comments relating to future MST
Gilmerton 2	500	41	43	ATAP measures +1; SVD at junctions +0.5; minor bus priority +0.5 – positive.	48	Limited accessibility to PT services – need enhancements +3. High quality walk/cycle links +2
Drum 1	150	41	43	ATAP measures +1; SVD at junctions +0.5; minor bus priority +0.5 – positive.	46	Limited accessibility to PT services – need enhancements +3.
Moredunvale Road	50	41	42	ATAP measures +1; SVD at junctions +0.5; minor bus priority +0.5 – positive. Sheriffhall Junction -1 – negative.	45	Reasonable accessibility to PT services – small site. Potential BioQuarter bus service enhancements +2. Improve walk links +1.
Newcraighall 1	270	41	Not applicable – has consent			
Newcraighall 2	330	41	Not applicable – has consent			
Riccarton Mains Road	50	41	45	Hermiston P&R extension +2; ATAP measures +1; SVD at junctions +0.5; minor bus priority +0.5 – positive.	47	Limited accessibility to PT services – small site. Improve access to bus stops +1 Improve walk/cycle links +1.
Curriemuirend	100	41	43	ATAP measures +1; SVD at junctions +0.5; minor bus priority +0.5 – positive.	44	Reasonable accessibility to PT services. Improve walk/cycle links +1.

6 Developing interventions to mitigate residual LDP impact – "Do Something" (Scenario 3)

6.1 Introduction

This section discusses how transport interventions have been developed for individual sites to address potential transport network impacts derived from the demand analysis reported in Section 5. It was considered appropriate for the proposed interventions to be assessed against a number of transport planning criteria, in order to provide justification.

6.2 Criteria for appraisal of interventions

6.2.1 Developing criteria for appraisal of interventions

Whilst this study is not a formal transport appraisal, a process of objective-setting was undertaken involving CEC officials and Halcrow staff to establish appropriate criteria. Consistent with published transport and land use policy, there is an overarching objective to promote access by sustainable modes, those being active travel (walking and cycling) and public transport.

It was considered appropriate to apply criteria that are viewed as concise and relevant to this appraisal, whilst being consistent with objectives of the Council's current Local Transport Strategy.

6.2.2 Assessment criteria

The following criteria have been used to assess interventions:-

- 1. To facilitate reliable and convenient access to the city and movement within it, in particular by reducing congestion.
- 2. To reduce the need to travel, especially by car.
- 3. To reduce the adverse impacts of travel, including road accidents and environmental damage.
- 4. Promote walking and cycling to reduce use of the private car.
- 5. Integrated public transport to provide for all medium and longer distance movement demands to, from and around Edinburgh.

In addition to the above five criteria, the interventions have also been considered in terms of technical delivery, which considers how difficult

implementation might be and if there are any particular relevant issues that might influence implementation of the proposed intervention. This additional criterion also takes account of the standard tests for a planning condition – (i) necessary, (ii) relevant, (iii) enforceable, (iv) precise and (v) reasonable, as it envisaged that developers may be expected to fund some of the proposed interventions and contribute to others.

6.2.3 Development of interventions

In terms of accommodating development person trips, with a focus on reducing single occupancy vehicle trips, transport interventions should be aiming to encourage alternative sustainable modes of transport or reducing the need to travel. Public transport is likely to be the main mode to achieve this and, therefore, proposed interventions initially focus on this and involve provision of additional capacity. Thereafter, further proposed measures would seek to encourage walking and cycling trips. It is then accepted that some car trips will still occur that will impact on the local road network, so there may be a requirement for interventions that can help accommodate them and such measures are likely to address any road safety concerns or capacity enhancements at junctions. Measures to encourage reductions in the need to travel could be incorporated into a travel plan.

Actual interventions are discussed in Section 7.

6.2.4 Assessment of interventions

Appendix B contains the appraisal tables for the interventions generated for each proposed LDP residential site. Section 7 provides further detail of recommended interventions by each site / cluster of sites.

For all six criteria, the appraisal scoring has been based on following:-

- +3 major compliance with the criteria
- +2 moderate compliance with the criteria
- +1 minor compliance with the criteria
- 0 neutral performance against the criteria
- -1 minor conflict with the criteria
- -2 moderate conflict with the criteria
- -3 major conflict with the criteria

For the Technical Delivery criterion, scoring is undertaken but supported with text as this criterion is considered to be more subjective and, therefore, more difficult to score.

7 Assessment of interventions and recommendations

7.1 Introduction

For each site, potential transport interventions were identified that would accommodate significant proportions of person trips generated by the new housing and mitigate their impact on the existing transport network. The proposed scale of an individual development site has influenced the extent of suggested interventions while focusing on envisaged impact on the adjacent local transport network and also the Key Corridor deemed to be most affected by a particular site. It should be recognised that a proposed public transport capacity enhancement, whilst addressing the development trips, is likely to have a beneficial improvement over a wider area when implemented.

Interventions were grouped into three general categories:-

- Public transport;
- Active travel;
- Travel Plans; and
- Road improvements (which include road safety measures).

Because conditions are already congested at peak times on the majority of the key corridors and for reasons of minimising environmental and other impacts, there needs to be a high focus on ensuring trips are made on foot, by cycling and public transport. However, it is recognised, there will be residual number of trips made by car, probably necessitating some road improvements, although it should be recognised that junction improvements can improve conditions for pedestrians, cyclists and buses.

Each proposed intervention was assessed against the six criteria discussed in Section 6. The appraisal then recommended if a particular intervention should be delivered as part of the development or was not considered appropriate.

7.2 Recommendations

Interventions

Appendix B contains an appraisal table for each site. Each table identifies the individual site, the transport corridor it has impacts on the most and estimated number of units. For each suggested

intervention appraisal scores are given for the six criteria, with the sixth criterion, 'technical delivery' also noting key issues. A recommendation is given as to whether the intervention should be applied or not. The recommended interventions are those that are considered feasible to help try and achieve the estimated sustainable mode share target for each site, as set out in Table 5.5.

15 individual sites were assessed. The average number of identified interventions for a site was 11, with the lowest being 6 and the highest 17, although it should be noted that an intervention could be a variation of another intervention. Interventions tended to be site-specific, given the likelihood they could be linked to subsequent planning consent. However, there were three common interventions recommended for all of the sites:-

- Public transport – upgrade existing nearby bus stop facilities;
- High quality pedestrian/cycle routes within site, linking to suitable exit points around site boundary; and
- Preparation of a high quality travel plan.

The appraisal did take account of the proposed size of development and its envisaged level of impact on the network, in terms of number of interventions and their scale. In order to be consistent with LTS objectives and LDP aims, the majority of proposed interventions focus on sustainable modes of travel. Where any road improvement intervention has been recommended that will benefit single occupancy vehicles, it can often improve conditions for other road users, especially buses.

The analysis shows some of the proposed housing sites would potentially generate significant numbers of public transport trips, mainly by bus. This is to be welcomed and actively encouraged, but for some sites existing bus capacity and frequency will be insufficient to accommodate the new demand and some interventions involve provision of enhanced bus capacity. Whilst such provision may be quite expensive, the cost should be considered against that for any alternative road improvement that would be necessary to accommodate alternative car trips.

Travel Plans

As mentioned, one of the suggested interventions common to all sites is the application of a Travel Plan.

Historically, the production of a travel plan has been seen as 'tick box' exercise as part of the planning consent process, with limited monitoring and enforcement subsequently carried out, especially for residential developments. However, a robust Travel Plan can encourage sustainable travel and will help to mitigate the impact of housing that will not be fully developed for a number of years.

Mixed Use Development

It should be noted the appraisal has only considered the potential sites as housing developments only. In terms of helping to achieve sustainable mode share targets, the provision of some elements of mixed use development within a particular site could have an impact on the number of car trips generated. However, the provision of mixed use development cannot be a specific intervention.

Site Summary Sheets

Following the interventions appraisal, summary sheets have been prepared for all 15 sites, on an individual basis. Each sheet contains the following information:-

- Site number, site name and suggested unit capacity;
- Key Route Corridor(s);
- Any relevant committed transport intervention;
- Commentary on vehicular site access; and
- The recommended site-specific interventions, under separate headings (public transport, active travel, travel plan and road improvements).

These are set out in Appendix C. It considered the recommended interventions are appropriate for the individual sites and will mitigate significant proportions of the new generated development trips.

Common Interventions

Some of the proposed interventions are corridor-wide improvement measures that a site would benefit from. For the two strategic development areas where significant new development is proposed, namely West Edinburgh and South East Edinburgh, respectively, there are some common interventions that more than one site would benefit from. These include the following:-

Corridor 1 – West Edinburgh

Five sites assessed and common interventions include:-

(i) Enhance peak period bus capacity.

(ii) Maybury Road Junction improvement scheme.

(iii) Barnton Junction improvement scheme.

(iv) Craigs Road Junction improvement scheme.

Corridor 2 – South East Edinburgh

Six sites within the South East Corridor were assessed in relation to three key routes and one sub-route. Common interventions that apply various groups of sites include:-

(i) Upgrade existing bus stops on Gilmerton Road.

(ii) Enhance peak period bus capacity along Gilmerton Road route.

(iii) New external cycle link along Gilmerton Station Road to Lasswade Road and beyond.

(iv) Gilmerton Road/Gilmerton Station Road Junction upgrade.

(v) Gilmerton Road/Drum Street Junction improvement.

(vi) Upgrade existing bus stops on Burdiehouse Road.

(vii) Enhance peak period bus capacity along Burdiehouse Road route.

(viii) Burdiehouse Road/Frogston Road East Junction enhancement scheme.

Note the junction improvement schemes are likely to improve conditions for cyclists and buses.

8 Do Something: Scenario 3

8.1 Introduction

This section presents the results of the Do Something scenario analysis, demonstrating the impact of the suggested transport interventions discussed in Sections 6 and 7.

8.2 Results

Table 8.1 demonstrates the modal share assigned to each site which reflect the impacts of the site-specific transport interventions. The impact analysis results for the Do Something scenario are shown below, by corridor (Table 8.2) and by site (Table 8.3).

Table 8-1 Do Something Scenario 3 – estimated adjusted % mode share by site

Site	Corridor	Car Driver +taxi	Car Pax	Train / Tram	Bus	Cycle	Walk	Other	Total	Total Sustainable
Maybury 1	**W**	**39.9**	6.0	17.7	21.6	3.5	9.3	2.0	100.0	**60.1**
Maybury 2	**W**	**42.9**	6.0	13.2	23.6	3.3	9.0	2.0	100.0	**57.1**
IBG	**W**	**34.9**	6.0	21.7	20.6	4.5	10.3	2.0	100.0	**65.1**
Edinburgh Park	**W**	**36.9**	6.0	23.7	18.6	3.5	9.3	2.0	100.0	**63.1**
Cammo	**W**	**51.9**	6.0	1.7	26.1	3.7	8.6	2.0	100.0	**48.1**
Burdiehouse 1	**SE**	**51.9**	6.0	1.7	25.6	3.9	8.9	2.0	100.0	**48.1**
Burdiehouse 2	**SE**	**50.9**	6.0	1.7	28.6	2.5	8.3	2.0	100.0	**49.1**
Gilmerton 1	**SE**	**56.9**	6.0	1.7	21.6	3.2	8.6	2.0	100.0	**43.1**
Gilmerton 2	**SE**	**51.9**	6.0	1.7	25.6	4.0	8.8	2.0	100.0	**48.1**
Drum 1	**SE**	**53.9**	6.0	1.7	25.6	2.5	8.3	2.0	100.0	**46.1**
Moredunvale Road	**SE**	**54.9**	6.0	1.7	23.6	2.8	9.0	2.0	100.0	**45.1**
Newcraighall 1	**E**	**58.9**	6.0	1.7	21.6	2.0	7.8	2.0	100.0	**41.1**
Newcraighall 2	**E**	**58.9**	6.0	1.7	21.6	2.0	7.8	2.0	100.0	**41.1**
Riccarton Mains Road	**SW**	**52.9**	6.0	1.7	25.6	3.0	8.8	2.0	100.0	**47.1**
Curriemuirend	**SW**	**55.9**	6.0	1.7	22.6	3.1	8.7	2.0	100.0	**44.1**

Table 8-2 Do Something Scenario 3 – estimated demand by corridor – Full build out by 2025

	CORRIDOR 1 - West Edinburgh		CORRIDOR 2 - South East Edinburgh				CORRIDOR 3 - East Edinburgh		CORRIDOR 4 - North West Edinburgh	CORRIDOR 5 - South West Edinburgh		CORRIDOR 6 - South Edinburgh	CORRIDOR 7 - Orbital Edinburgh	
	A8 Glasgow Road	Stenhouse / Broomhouse	A701 Liberton Road	A772 Gilmerton Road	A7 Old Dalkeith Road	Lasswade Road	A1	A6095	A90 Queensferry Road	A71 Calder Road	A70 Lanark Road	A702 Biggar Road	A720 - Outer orbital	Inner Orbital
Corridor impact - by car (peak car trips)	**759**		**698**				**307**		**167**	**66**		**0**	**225**	
LDP only	684	75	268	274	66	90	123	184	167	27	40	0	193	31
LDP only as % over baseline peak hour flow	**15.4%**	**5.6%**	**17.9%**	**24.9%**	**3.5%**	**4.8%**	**2.3%**	**21.0%**	**4.4%**	**1.3%**	**1.6%**	**0.0%**	**3.1%**	**3.5%**
Background growth 2024/25	89	27	30	22	37	15	533	18	383	40	49	20	627	18
Committed residential 2024/25	183	25	39	51	11	15	17	26	21	27	41	0	32	5
LDP only as % over baseline peak hour flow plus background plus committed	**14.5%**	**1.7%**	**13.1%**	**23.3%**	**3.5%**	**4.7%**	**2.1%**	**1.8%**	**3.9%**	**1.3%**	**1.6%**	**0.0%**	**2.8%**	**3.5%**
LDP and committed residential and growth 2024/25	**956**	**127**	**337**	**347**	**115**	**119**	**673**	**227**	**572**	**94**	**130**	**20**	**851**	**54**
% over 2011 baseline peak hour flow	**21.5%**	**9.5%**	**22.5%**	**31.5%**	**6.2%**	**6.3%**	**12.6%**	**26.0%**	**14.9%**	**4.7%**	**5.3%**	**2.0%**	**13.6%**	**6.1%**

Table 8-3 Do Something Scenario 3 – estimated demand by site

NUMBER OF PEAK HOUR TRIPS GENERATED	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**	**FULL**
	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25	2024/25
LDP sites	**Committed sites in the vicinity of LDP sites**			**LDP sites only**			**LDP plus committed sites**		
	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail	peak hour daily trips by car	peak hour daily trips by bus	peak hour daily trips by rail
Maybury 1	20	11	9	227	123	101	248	134	110
Maybury 2	22	12	7	214	118	66	236	130	73
International business gateway	0	0	0	116	68	72	116	68	72
Edinburgh Park/The Gyle	66	33	43	202	102	129	268	135	172
Cammo	40	20	1	247	124	8	286	144	9
Burdiehouse 2	30	17	1	145	82	5	175	98	6
Gilmerton 1	25	9	1	32	12	1	57	22	2
Gilmerton 2	23	11	1	247	122	8	269	133	9
Drum 1	23	11	1	77	36	2	100	48	3
Newcraighall 1	23	8	1	151	55	4	174	64	5
Newcraighall 2	23	8	1	185	68	5	208	76	6
Burdiehouse 1	30	15	1	281	139	9	311	153	10
Riccarton Mains Road	13	6	0	25	12	1	38	18	1
Moredunvale Road	0	2	0	26	11	1	30	13	1
Curriemuirend	0	5	0	48	19	5	67	27	2
TOTAL number of trips generated	**471**	**220**	**70**	**2222**	**1091**	**418**	**2715**	**1313**	**485**

8.3 Analysis

Table 8.2 suggests that the impacts of the new housing sites are mitigated to varying degrees by the collective transport interventions. For the majority of the key corridors and individual roads, the estimated impact of the LDP sites over and above the impact of committed LDP developments and suggested background traffic growth is less than 5%.

However, from Table 8.2, there are three roads that are forecast to experience significant increases in traffic levels. These are:-

- West Edinburgh – A8 Glasgow Road +14.5%
- South East Edinburgh – A701 Liberton Road +13.1%
- South East Edinburgh – A722 Gilmerton Road +23.3%

Firstly, it should be noted that the analysis has considered full build-out of all the new housing sites and the committed LDP development to have been completed by 2025. However, it is extremely unlikely that this would occur, given historic build-out rates that suggest some sites will not be complete until after 2030, especially within West Edinburgh, hence these increases are unlikely to be realised at 2025.

Secondly, the analysis has been of a very high level that has allocated vehicular development traffic just to the specified corridors and roads. It is more likely that some of this vehicular development traffic will make use of alternative secondary routes, where feasible, in order to avoid some of the main routes. This is especially true within the South East Edinburgh Corridor where some of the traffic will not just be heading towards the city centre.

Thirdly, the estimated impact on a particular route is unlikely to be experienced along all of its length but may be experienced at certain connections. This is particularly relevant for the A8 Glasgow Road where the various West Edinburgh sites are likely to generate traffic that will focus on the Gogar and Maybury Junctions prior to dispersing along the network. This justifies the requirement for recommended interventions at both these locations.

Fourthly, the analysis has only considered those committed transport interventions that might directly affect a site and the proposed site-specific interventions. There has been no allowance for other city-wide measures the Council is considering or may consider; nor factors, such as fuel cost, which may affect traffic volumes during the next 10-12 years.

Notwithstanding the above, it is likely these three routes may experience noticeable increases in traffic volumes that will exacerbate existing conditions, tending to extend the existing peak periods and increase journey times. These increases are as a result of the cumulative impact of a number of sites and it is likely that if a site were assessed on its own, as per a standard transport assessment, the impact may be considered acceptable. This suggests there is likely to be a requirement for additional area-wide interventions, within the Edinburgh area, that seek to reduce traffic volumes along key corridors or on a city-wide basis.

8.4 Cross Boundary Issues

The new LDP housing sites will have some impact in terms of cross-boundary trips as people travel from the sites to locations outwith Edinburgh.

In general, these are minimal impacts, with the most number of new cross-boundary trips coming from (as expected) those larger developments. In order of magnitude, the estimated new person trips are:-

- West Lothian Council (total 82 daily person trips by all modes from all LDP proposals combined)
- Midlothian (73 trips)
- Glasgow City (56 trips)
- Fife (40 trips)
- Falkirk (36 trips)
- North Lanarkshire (33 trips)
- South Lanarkshire (21 trips)
- East Lothian (19 trips)

Applying one of the key assumptions used in the analysis, 10% of these daily person trips are estimated to be on the transport network during the "peak of the peak" periods – representing an estimate of the maximum impact at any one time. It is clear the new LDP sites would have negligible impacts on existing cross-boundary traffic flows.

It is acknowledged that other development within the city region in the context of delivering the Strategic Development Plan strategy, will have a cumulative impact on the transport network in and around Edinburgh. This development will come forward through the preparation of Local Development Plans for neighbouring authorities. It is expected that transport appraisals will be undertaken as part of the process of preparing the Local Development Plans providing the opportunity to take account of the cross boundary impacts on the transport network.

Table 8-4 Cross boundary travel - demand assessment

	boundary trips % and number of total daily)	Aberdeen City	Aberdeenshire	Angus	Argyll & Bute	Clackmannanshire	Dumfries & Galloway	Dundee City	East Ayrshire	East Dunbartonshire	East Lothian	East Renfrewshire	Eilean Siar	Falkirk	Fife	Glasgow City	Highland	Inverclyde	Midlothian	Moray	North Ayrshire	North Lanarkshire	Orkney Islands	Perth & Kinross	Renfrewshire	Scottish Borders	Shetland Islands	South Ayrshire	South Lanarkshire	Stirling	West Dunbartonshire	West Lothian
Maybury 1	7.7%	0.06%	0.03%	0.04%	0.01%	0.08%	0.04%	0.15%	0.04%	0.09%	0.22%	0.04%	0.00%	0.83%	0.87%	1.10%	0.02%	0.05%	0.51%	0.01%	0.06%	0.66%	0.00%	0.08%	0.14%	0.12%	0.00%	0.03%	0.37%	0.10%	0.05%	1.85%
no. of total daily trips	46	0	0	0	0	0	0	1	0	1	1	0	0	5	5	7	0	0	3	0	0	4	0	0	1	1	0	0	2	1	0	11
Maybury 2	7.3%	0.06%	0.03%	0.04%	0.01%	0.07%	0.04%	0.14%	0.04%	0.09%	0.21%	0.04%	0.00%	0.80%	0.80%	1.04%	0.02%	0.04%	0.49%	0.01%	0.06%	0.63%	0.00%	0.07%	0.14%	0.12%	0.00%	0.03%	0.35%	0.09%	0.05%	1.78%
no. of total daily trips	38	0	0	0	0	0	0	1	0	0	1	0	0	4	4	5	0	0	3	0	0	3	0	0	1	1	0	0	2	0	0	9
International business gateway	8.9%	0.06%	0.03%	0.04%	0.01%	0.08%	0.04%	0.15%	0.04%	0.10%	0.22%	0.05%	0.00%	0.96%	0.85%	1.23%	0.02%	0.05%	0.62%	0.01%	0.07%	0.77%	0.00%	0.08%	0.15%	0.12%	0.00%	0.04%	0.41%	0.10%	0.05%	2.57%
no. of total daily trips	31	0	0	0	0	0	0	1	0	0	1	0	0	3	3	4	0	0	2	0	0	3	0	0	1	0	0	0	1	0	0	9
Edinburgh Park/The Gyle	7.8%	0.06%	0.03%	0.04%	0.01%	0.08%	0.04%	0.14%	0.04%	0.09%	0.21%	0.04%	0.00%	0.84%	0.80%	1.09%	0.02%	0.05%	0.67%	0.01%	0.06%	0.66%	0.00%	0.07%	0.14%	0.12%	0.00%	0.03%	0.37%	0.09%	0.05%	1.88%
no. of total daily trips	45	0	0	0	0	0	0	1	0	1	1	0	0	5	5	6	0	0	4	0	0	4	0	0	1	1	0	0	2	1	0	11
Cammo	8.8%	0.08%	0.04%	0.05%	0.02%	0.09%	0.05%	0.18%	0.05%	0.11%	0.25%	0.05%	0.00%	0.94%	1.04%	1.26%	0.02%	0.05%	0.57%	0.02%	0.07%	0.76%	0.00%	0.09%	0.17%	0.14%	0.00%	0.04%	0.43%	0.11%	0.06%	2.05%
no. of total daily trips	44	0	0	0	0	0	0	1	0	1	1	0	0	5	5	6	0	0	3	0	0	4	0	0	1	1	0	0	2	1	0	10
Burdiehouse 2	12.9%	0.11%	0.05%	0.07%	0.02%	0.09%	0.09%	0.22%	0.10%	0.12%	0.71%	0.06%	0.00%	0.75%	1.03%	1.56%	0.03%	0.07%	3.49%	0.02%	0.10%	0.87%	0.00%	0.12%	0.22%	0.34%	0.00%	0.06%	0.63%	0.13%	0.08%	1.72%
no. of total daily trips	39	0	0	0	0	0	0	1	0	0	2	0	0	2	3	5	0	0	10	0	0	3	0	0	1	1	0	0	2	0	0	5
Gilmerton 1	9.2%	0.07%	0.04%	0.05%	0.02%	0.06%	0.06%	0.15%	0.07%	0.08%	0.51%	0.04%	0.00%	0.51%	0.73%	1.06%	0.02%	0.05%	2.71%	0.02%	0.07%	0.59%	0.00%	0.08%	0.15%	0.24%	0.00%	0.04%	0.43%	0.09%	0.05%	1.18%
no. of total daily trips	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1
Gilmerton 2	8.9%	0.07%	0.03%	0.04%	0.02%	0.06%	0.06%	0.14%	0.07%	0.08%	0.50%	0.04%	0.00%	0.48%	0.67%	0.99%	0.02%	0.05%	2.84%	0.01%	0.06%	0.55%	0.00%	0.07%	0.14%	0.23%	0.00%	0.04%	0.40%	0.08%	0.05%	1.12%
no. of total daily trips	44	0	0	0	0	0	0	1	0	0	2	0	0	2	3	5	0	0	14	0	0	3	0	0	1	1	0	0	2	0	0	6
Drum 1	8.3%	0.07%	0.03%	0.04%	0.01%	0.06%	0.05%	0.13%	0.06%	0.08%	0.47%	0.04%	0.00%	0.49%	0.65%	0.92%	0.02%	0.04%	2.63%	0.01%	0.06%	0.51%	0.00%	0.07%	0.13%	0.22%	0.00%	0.03%	0.37%	0.08%	0.05%	1.01%
no. of total daily trips	12	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	4	0	0	1	0	0	0	0	0	0	1	0	0	2
Newcraighall 1	8.0%	0.07%	0.04%	0.04%	0.02%	0.06%	0.05%	0.14%	0.07%	0.08%	0.71%	0.04%	0.00%	0.52%	0.69%	0.97%	0.02%	0.05%	1.78%	0.01%	0.06%	0.53%	0.00%	0.08%	0.14%	0.21%	0.00%	0.04%	0.45%	0.09%	0.05%	1.01%
no. of total daily trips	22	0	0	0	0	0	0	0	0	0	2	0	0	1	2	3	0	0	5	0	0	1	0	0	0	1	0	0	1	0	0	3
Newcraighall 2	8.8%	0.08%	0.04%	0.05%	0.02%	0.07%	0.06%	0.16%	0.08%	0.09%	0.78%	0.04%	0.00%	0.57%	0.76%	1.08%	0.03%	0.05%	1.93%	0.02%	0.07%	0.59%	0.00%	0.09%	0.15%	0.23%	0.00%	0.04%	0.50%	0.10%	0.05%	1.11%
no. of total daily trips	29	0	0	0	0	0	0	1	0	0	3	0	0	2	3	4	0	0	6	0	0	2	0	0	1	1	0	0	2	0	0	4
Burdiehouse 1	10.8%	0.09%	0.04%	0.05%	0.02%	0.08%	0.07%	0.18%	0.09%	0.10%	0.56%	0.05%	0.00%	0.69%	0.87%	1.37%	0.03%	0.06%	2.58%	0.02%	0.09%	0.78%	0.00%	0.10%	0.19%	0.27%	0.00%	0.05%	0.56%	0.11%	0.07%	1.65%
no. of total daily trips	62	1	0	0	0	0	0	1	1	1	3	0	0	4	5	8	0	0	15	0	0	4	0	1	1	2	0	0	3	1	0	9
Ricarton Mains Road	10.0%	0.07%	0.04%	0.05%	0.02%	0.08%	0.05%	0.16%	0.10%	0.10%	0.26%	0.05%	0.00%	0.85%	0.84%	1.39%	0.02%	0.06%	0.95%	0.01%	0.08%	0.85%	0.00%	0.08%	0.18%	0.16%	0.00%	0.04%	0.74%	0.11%	0.06%	2.54%
no. of total daily trips	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Moredunvale Road	6.1%	0.05%	0.03%	0.03%	0.01%	0.05%	0.04%	0.11%	0.05%	0.06%	0.33%	0.03%	0.00%	0.39%	0.52%	0.72%	0.02%	0.03%	1.67%	0.01%	0.05%	0.40%	0.00%	0.06%	0.10%	0.16%	0.00%	0.03%	0.28%	0.06%	0.04%	0.79%
no. of total daily trips	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Curriemuirend	4.7%	0.04%	0.02%	0.02%	0.01%	0.04%	0.03%	0.08%	0.05%	0.05%	0.14%	0.02%	0.00%	0.39%	0.39%	0.65%	0.01%	0.03%	0.59%	0.01%	0.04%	0.39%	0.00%	0.04%	0.08%	0.08%	0.00%	0.02%	0.34%	0.05%	0.03%	1.10%
no. of total daily trips	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
SUM		4	2	2	1	4	3	8	3	5	19	2	0	36	40	56	1	3	73	1	3	33	0	4	8	9	0	2	21	5	3	82
10% (indicative peak)		0	0	0	0	0	0	1	0	0	2	0	0	4	4	6	0	0	7	0	0	3	0	0	1	1	0	0	2	0	0	8

8.5 A720 City Bypass

The Orbital Edinburgh Corridor includes the Outer Orbital route, formed by the A720 City Bypass, and the Inner Orbital route, served by local Edinburgh roads running effectively parallel to the A720.

As described in previous sections, the study has considered the distribution of peak, travel to work trips from 15 LDP residential sites across a defined spatial network. Inevitably, some of these trips will make an orbital trip to reach their destinations. This orbital trip is easier to make in the current transport network by road rather than by public transport.

In Edinburgh, there are various options for such an orbital road-based trip – one is along the Orbital Bypass itself (the A720), which already suffers from congestion during peak times. However, there are options for those people choosing to avoid the A720 City Bypass or for whom an alternative route is more practical, across a collection of routes described in this study as an "inner orbital".

As a result of the above, any car-based trip assigned in the gravity models as potentially reaching its destination by an orbital movement has been assigned across the Outer Orbital (A720 City Bypass) and the Inner Orbital, with a percentage split as per current estimated traffic flows.

For the Do Something scenario, the assessment suggests that, in terms of generated road trips, full development of all 15 sites would have a cumulative impact of approximately 3.1% on the A720 during the AM peak period compared with the baseline peak hour flow and a 2.8% cumulative impact above the combined committed LDP and background growth traffic flows. Such impacts are relatively minor and within daily fluctuations. In addition, the individual impacts of each of the sites would be insignificant.

The assessment also noted a significant number of potential new public transport trips (mainly bus trips) that could benefit from the provision of enhanced orbital services. Potential passengers would probably find an express service to key destinations attractive and this supports proposals for such services along the A720 City Bypass or an alignment similar to that proposed by the Edinburgh Orbital Bus Scheme.

9 Conclusions

9.1 Introduction

This report has presented a study that has assessed the envisaged impact of 15 new housing sites proposed as part on the emerging Edinburgh LDP. The study has not extended to the use of transport computer modelling packages but is based on a proportionate and more appropriate 'first principles' analysis to establish the impact on the existing transport network.

The main objective of the study has been to identify transport interventions deemed necessary to support the new housing sites, with a focus on encouraging sustainable travel and reducing use of the private car.

Three scenarios have been assessed:-

1. Baseline (Do Nothing) Scenario;
2. Do Minimum Scenario; and
3. Do Something Scenario.

The results suggest the proposed transport interventions will minimise the detrimental impact of development on the majority of key corridors and routes, on the basis that they will achieve the suggested mode share targets. Three routes are likely to see significant increases in traffic flows that site-specific interventions are unlikely to address sufficiently to avoid increased congestions.

The results suggest the 15 housing sites will have little noticeable impact on cross-boundary flows, either individually or collectively, compared to existing traffic flows. Cumulative impact from the 15 sites on the A720 City Bypass is estimated to be in the order of just 3.0% in the Do Something scenario. Further analysis of cumulative impacts will be required by other authorities as part of the process of preparing their own Local Development Plans. This report can be used to inform transport appraisals undertaken by neighbouring authorities.

9.2 Modal share

To reduce the most detrimental impacts of new development, that is private vehicular trips, this study has produced a set of bespoke transport interventions. These interventions have been designed to promote a greater number of trips associated with LDP development

proposals by sustainable modes, thus reducing the impact on existing communities, the environment and economic development across the city.

Table 9.1 shows how estimated total modal share by sustainable modes (that is walking, cycling, public transport which includes bus, train and tram, motorcycle and car passenger trips) across the three scenarios that have been applied.

It is suggested the figures set out in the Do Something scenario could be used as the starting point for agreeing Travel Plan targets. It should be noted the values are purely estimates/targets at this time and actual achieved figures need to be monitored.

Table 9-1 Comparison of sustainable modal splits by scenario

Site	Corridor	Baseline	Do Minimum	Do Something	Do Something over Baseline - change
Maybury 1	**W**	**41.1**	**55.1**	**60.1**	19.0
Maybury 2	**W**	**41.1**	**51.1**	**57.1**	16.0
IBG	**W**	**41.1**	**60.1**	**65.1**	24.0
Edinburgh Park	**W**	**41.1**	**59.1**	**63.1**	22.0
Cammo	**W**	**41.1**	**41.1**	**48.1**	7.0
Burdiehouse 1	**SE**	**41.1**	**43.1**	**48.1**	7.0
Burdiehouse 2	**SE**	**41.1**	**43.1**	**49.1**	8.0
Gilmerton 1	**SE**	**41.1**	**42.1**	**43.1**	2.0
Gilmerton 2	**SE**	**41.1**	**43.1**	**48.1**	7.0
Drum 1	**SE**	**41.1**	**43.1**	**46.1**	5.0
Moredunvale Road	**SE**	**41.1**	**42.1**	**45.1**	4.0
Newcraighall 1	**E**	**41.1**	Not assessed, as development is already consented		
Newcraighall 2	**E**	**41.1**	Not assessed, as development is already consented		
Riccarton Mains Road	**SW**	**41.1**	**45.1**	**47.1**	6.0
Curriemuirend	**SW**	**41.1**	**43.1**	**44.1**	3.0

9.3 The necessity of development

No development can happen without resulting in some impact on the transport network. This study has sought to try and mitigate as much as possible potential trips generated from the LDP sites. It is possible

some of these trips may well be displaced from other parts of the transport network.

Another factor influencing the impact is the uncertain economic climate currently faced in the United Kingdom as a whole. As a result background traffic growth levels may well be less than anticipated over coming years (as traffic growth is traditionally coupled with economic growth).

This study has, however, considered the cumulative impact of a set of LDP housing proposals across the city and provided a strategic overview of where the greatest impacts on the transport network may occur and the types of interventions and modal share targets that may be required to mitigate impacts as far as is deemed reasonable practical, without wider, strategic measures.

LOCAL DEVELOPMENT PLAN

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ترجمے کے لئے حاضر আনন্দের সঙ্গে অনুবাদ করব

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